# NC OneMap

## Accountability Measures

**NC OneMap Governance Committee**

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# NC OneMap Accountability Measures

The purpose of this document is to describe each of the performance accountability measures developed by the NC OneMap Governance Committee, and to inform prioritization and application of the measures. Measures are listed under their respective performance objectives and goals as defined by the Governance Committee. Two items are incomplete for all measures, pending finalization of definitions and priorities: target/warning level/tolerance/benchmark, and staff assignments of responsibility.

**Objective 1:** NC OneMap provides access to geospatial data that are the "highest quality available" to ensure that the majority of GIS users in the state see NC OneMap as the primary and best resource when searching for geospatial data.

**Goal 1.1:** The NC OneMap database (data managed by CGIA) provides access to geospatial data that are complete, current, accurate, and reliable.

### Measure 1.1:

**Name/Short Description:** Percent of accessible NC OneMap layers from the NC OneMap Database that meet their specified requirements for completeness, currency, content, and scale (requirements vary by layer).

**Type of Measure:** Effectiveness measure.

**Full Definition/Description:** From an analysis of the NC OneMap Database, the number of accessible datasets (layers and imagery) that:
- are complete for the intended geographic extent,
- satisfy the update frequency stated in the geospatial metadata or stated in an action plan for the dataset, guided by the Statewide GIS Strategy,
- contain attributes that are consistent with a content standard or satisfy a stated business need, and
- are represented at a scale or resolution consistent with a standard or a stated business need.

Framework datasets (orthoimagery, hydrography, elevation, transportation, cadastral, governmental boundaries, and geodetic control) receive double the weight of non-Framework datasets to represent greater overall benefit from Framework data quality.

**Audience for Measure:** NC OneMap Governance Committee, GICC.

**Significance/Use/Actionability:** An assessment of the quality of datasets in the NC OneMap database will inform priorities for data maintenance, development and enhancement.

**Data Sources/Underlying measures required for analysis:** Analysis of datasets managed in the NC OneMap Database requires agreement on criteria for completeness, currency, content and scale, specific to each dataset (criteria will vary depending on business needs, business plans, action plans, and characteristics of each dataset).

**Data Limitations:** This method relies on adequate information on business needs and business plans to specify criteria.

**Calculation Logic/Steps:** After agreement on the assessment of each of the datasets, the calculation is the number of Framework datasets meeting quality criteria times 2, plus the number of non-Framework datasets meeting quality criteria, divided by the total number of accessible datasets, and expressed as a percent.

**Analysis Period/Reporting Frequency:** Updates every three years may be sufficient.

**Granularity of Analysis:** The universe is datasets managed in the NC OneMap Database that are included in the 32 geospatial data themes identified as priorities in the NC OneMap revitalization process. The priority data layer list displayed at the end of this document as Table 1. Statewide is the focus of completeness.

**Target/Warning Level/Tolerance/Benchmark:** [need research on reasonable expectations for target and warning level]

**Policy Issues:** The policy is to provide free public access to high quality geospatial information that benefits public and private users and informs public and private decisions.

**Responsible Staff Member and Contact Information:** To be determined.
**Date of Current Version:** To be developed and implemented.
**Revision History:** None.

**Goal 1.2:** NC OneMap provides reliable access to an increased depth and variety of critical and strategic datasets for base mapping, such as, but not limited to, geodetic control, elevation, orthophotography, surface waters, cadastral, streets and other transportation features, and jurisdictional boundaries.

**Measure 1.2a:**

**Name/Short Description:** Percent increase in geospatial data (datasets and web services) accessible through NC OneMap.

**Type of Measure:** Effectiveness measure.

**Full Definition/Description:** From an analysis of the NC OneMap Geospatial Portal, the percent increase in the number of accessible datasets (layers, imagery, map services and image services) from a base year to a target year.

**Audience for Measure:** NC OneMap Governance Committee, GICC.

**Significance/Use/Actionability:** An assessment of the quantity of datasets in the NC OneMap Database will inform priorities for data maintenance, development and enhancement.

**Data Sources/Underlying measures required for analysis:** The NC OneMap Geospatial Portal has a catalog of datasets including services. Analysis of the number of datasets managed in the NC OneMap Geospatial Portal requires agreement on criteria for inclusion in a count of datasets.

**Data Limitations:** None. The catalog of the NC OneMap Geospatial Portal is an adequate data source.

**Calculation Logic/Steps:** The calculation is the number of datasets in time period 2 minus the number of datasets in time period 1, divided by the number of datasets in time period 1, expressed as percent change.

**Analysis Period/Reporting Frequency:** Annual measurement.

**Granularity of Analysis:** The universe of datasets is the top 32 datasets as identified in the NC OneMap revitalization process. Datasets include vector and raster data formats, map services, and image services.

**Target/Warning Level/Tolerance/Benchmark:** [need research on reasonable expectations for target and warning level]

**Policy Issues:** The policy is to provide free public access to high quality geospatial information that benefits public and private users and informs public and private decisions.

**Responsible Staff Member and Contact Information:** To be determined.
**Date of Current Version:** To be developed and implemented.
**Revision History:** None.

### Measure 1.2b:
**Name/Short Description:** Percent of NC OneMap framework data layers available statewide and meeting maintenance requirements.

**Type of Measure:** Effectiveness measure.

**Full Definition/Description:** From an analysis of the seven Framework themes, the number of datasets (layers and imagery) that:
- are accessible through NC OneMap Geospatial Portal,
- are complete statewide, and
- satisfy the update frequency stated in an action plan for the dataset.

That quantity is divided by the total number of accessible Framework datasets and expressed as a percent.
The Framework themes are orthoimagery, elevation, hydrography, transportation, governmental boundaries, geodetic control, and cadastral (property boundaries and ownership attributes).

**Audience for Measure:** NC OneMap Governance Committee, GICC.

**Significance/Use/Actionability:**  An assessment of the quality of Framework datasets in the NC OneMap database will inform priorities for data maintenance, development and enhancement, and for data sharing.  In addition to CGIA, the NC Geodetic Survey (governmental boundaries), the NC Department of Transportation (transportation) and the NC Department of Public Safety (elevation) are custodians of Framework data.

**Data Sources/Underlying measures required for analysis:** Analysis of Framework datasets accessible through the NC OneMap Geospatial Portal requires agreement on criteria for completeness and currency, specific to each dataset (criteria will vary depending on business needs, business plans, action plans, and characteristics of each dataset).

**Data Limitations:** This method relies on adequate information on business needs and business plans to specify criteria.

**Calculation Logic/Steps:** After agreement on the assessment of each of the datasets, the calculation is the number meeting the quality threshold divided by the total number, expressed as a percent.  A weighted result would require a set of multipliers based on classes of value or priority that would result in a higher score if the most valuable datasets meet quality criteria.

**Analysis Period/Reporting Frequency:** Updates every three years may be sufficient.

**Granularity of Analysis:** The universe of datasets is the datasets within the seven Framework themes.  For example, there are multiple transportation datasets in the Transportation theme.

**Target/Warning Level/Tolerance/Benchmark:**  [need research on reasonable expectations for target and warning level]

**Policy Issues:** The policy is to provide free public access to high quality geospatial information that benefits public and private users and informs public and private decisions, and to place emphasis on the Framework datasets.

**Responsible Staff Member and Contact Information:** To be determined.
**Date of Current Version:** To be developed and implemented.
**Revision History:** None.

**Goal 1.3:** NC OneMap provides data layers that comply with GICC standards and documentation requirements (metadata).

### Measure 1.3:

**Name/Short Description:** Percent of NC OneMap priority data layers that have an applicable data standard and that are consistent with that standard.

**Type of Measure:** Effectiveness measure.

**Full Definition/Description:** From an analysis of the 32 priority themes for the NC OneMap Database, the number of accessible datasets (layers and imagery) that:

- have an applicable data standard,
- were developed or enhanced to meet specifications for scale, accuracy, methods, or other technical aspects, and
- have attributes that are consistent with a content standard.

That quantity is divided by the total number of datasets that have an applicable standard, expressed as a percent. Note that measure 1.1 is inclusive of datasets with an applicable standard.

**Audience for Measure:** NC OneMap Governance Committee, GICC.

**Significance/Use/Actionability:** An assessment of the quality of datasets in the NC OneMap database will inform priorities for data maintenance, development and enhancement.

**Data Sources/Underlying measures required for analysis:** Sources of standards include the GICC, the NC Secretary of State, the Federal Geographic Data Committee, and the National Geodetic Survey.

**Data Limitations:** This method relies on interpretation of standards for practical application to NC datasets, and a set of criteria for each standard to set a threshold for designation as consistent or not consistent. In addition, adequate information on business needs and business plans is required to assess whether NC inconsistencies with a standard are justified by a business case specific to NC.

**Calculation Logic/Steps:** The universe is datasets that have an associated standard. The calculation is the number of datasets that are consistent with a standard divided by the total number, expressed as a percent.

**Analysis Period/Reporting Frequency:** Updates every three years may be sufficient.

**Granularity of Analysis:** The measure implies a set of criteria that need to be met to qualify as being consistent with a standard.

**Target/Warning Level/Tolerance/Benchmark:** [need research on reasonable expectations for target and warning level]

**Policy Issues:** The policy is to provide free public access to high quality geospatial information that benefits public and private users and informs public and private decisions.

**Responsible Staff Member and Contact Information:** To be determined.
**Date of Current Version:** To be developed and implemented.
**Revision History:** None.

**Objective 2:** NC OneMap is accessible and usable over the Internet, at a satisfactory level of performance, for all statewide users, including government agencies, utilities, private firms, schools, universities, and individual citizens.

**Goal 2.1:** NC OneMap publically available data on the Internet are widely used and free to search, discover, view, and acquire.

### Measure 2.1a:

**Name/Short Description:**  Number of quarters in a calendar year during which visitors to NC OneMap exceed a threshold that represents significant use of the site (to be determined).

**Type of Measure:** Outcome measure.

**Full Definition/Description:** From monthly counts of visitors to NC OneMap servers, summed by quarter, the number of quarters in a calendar year during which visitors exceeded a quarterly total of [a number to be determined] visitors.  The threshold is based on [a method to be determined).  Visits to pages related to http://data.nconemap.com (Geospatial Portal and Data Explorer) are included.

**Audience for Measure:** NC OneMap Governance Committee and GICC

**Significance/Use/Actionability:**  NC OneMap is intended to reach a significant audience and provide regular value to site visitors.  The threshold needs to represent significant use.  Exceeding the threshold is the expected outcome.  Not reaching the threshold would indicate a need to publicize NC OneMap and evaluate the current functions and content.

**Data Sources/Underlying measures required for analysis:** Statistics generated by server software represent visits to the relevant servers. This is distinct from user hits (transactions).  A count of visits better represents the instances of people using the site under the assumption that visitors derive value in ways that may require a few or many hits on the servers.

**Data Limitations:** This method relies on server statistics that indirectly represent value to users.  Visitors may or may not satisfy a need for information and may or may not return for information.

**Calculation Logic/Steps:** The logic is to classify a given quarter as exceeding a threshold or not by calculating the number of hits in a quarter minus the threshold.  The calculation is, for a period of 12 months, the number of quarters classified as exceeding the threshold.

**Analysis Period/Reporting Frequency:** Annual.

**Granularity of Analysis:** This approach combines all types of visitors.

**Target/Warning Level/Tolerance/Benchmark:** The target is four quarters. The warning level is two quarters.

**Policy Issues:** The policy is to provide free public access to high quality geospatial information that benefits public and private users and informs public and private decisions.

**Responsible Staff Member and Contact Information:** To be determined.
**Date of Current Version:** To be developed and implemented.
**Revision History:** None.


### Measure 2.1b:
**Name/Short Description:** Percent increase in NC OneMap visits from discrete sources (users).

**Type of Measure:** Outcome measure.

**Full Definition/Description:** From monthly counts of visits to NC OneMap servers, the percent increase in visits from the same month in the previous year. Using the same month will control for seasonal differences. Visits to pages related to http://data.nconemap.com (Geospatial Portal and Data Explorer) are included.

**Audience for Measure:** NC OneMap Governance Committee and GICC

**Significance/Use/Actionability:** NC OneMap is intended to reach a growing audience and provide regular value to site visitors. Increases over time indicate more users and/or more visits per user. Unchanging or declining visits would indicate a need to publicize NC OneMap and evaluate the current functions and content.

**Data Sources/Underlying measures required for analysis:** Statistics generated by server software represent visits to the relevant servers. This is distinct from user hits (transactions). A count of visits better represents the instances of people using the site under the assumption that visitors derive value in ways that may require a few or many hits on the servers.

**Data Limitations:** This method relies on server statistics that indirectly represent value to users. Visitors may or may not satisfy a need for information and may or may not return for information.

**Calculation Logic/Steps:** The logic is to compare the number of visits during a month to the number of visits in the same month in the previous year.  The calculation is the number of visits in month1 year2 minus the number of visits in month1 year1, divided by the visits in month1 year1, expressed as percent change.

**Analysis Period/Reporting Frequency:** Quarterly.

**Granularity of Analysis:** This approach combines all types of visitors.

**Target/Warning Level/Tolerance/Benchmark:**  [need research on reasonable expectations for target and warning level]

**Policy Issues:** The policy is to provide free public access to high quality geospatial information that benefits public and private users and informs public and private decisions.

**Responsible Staff Member and Contact Information:** To be determined.
**Date of Current Version:** To be developed and implemented.
**Revision History:** None.

**Goal 2.2:** NC OneMap data are available 24 hours per day/seven days per week at a satisfactory level of performance.

### Measure 2.2a:

**Name/Short Description:** Percent of hours per year that NC OneMap is up and running (X hours/8760 or X hours/8784 for a leap year).

**Type of Measure:** Process

**Full Definition/Description:** The percent of hours per year that the NC OneMap Geospatial Portal (servers and software that enable public access to data and services) is operating, using 8760 or 8784 as the total number of hours in a year.

**Audience for Measure:** NC OneMap Governance Committee and GICC

**Significance/Use/Actionability:** The lower the percent, the more urgent the need to create a redundant service that, transparent to users, would assure continuous operation of the NC OneMap Geospatial Portal.

**Data Sources/Underlying measures required for analysis:** System performance statistics from server monitoring software.

**Data Limitations:** None.

**Calculation Logic/Steps:** The calculation is the number of hours that the NC OneMap Geospatial Portal is up and running (summing minutes to the nearest hour) divided by 8760 (or 8784) hours, expressed as a percent.

**Analysis Period/Reporting Frequency:** Annual.

**Granularity of Analysis:** Time measured in hours.

**Target/Warning Level/Tolerance/Benchmark:**  To be determined.

**Policy Issues:** Reliable public access to geospatial information.

**Responsible Staff Member and Contact Information:** To be determined.
**Date of Current Version:** To be developed and implemented.
**Revision History:**  None.

**Measure 2.2b:**
**Name/Short Description:** Average time duration between NC OneMap outages.

**Type of Measure:** Process

**Full Definition/Description:** The mean time duration between outages of the NC OneMap Geospatial Portal.

**Audience for Measure:** NC OneMap Governance Committee and GICC

**Significance/Use/Actionability:** The shorter the duration of time between outages, the more urgent the need to create a redundant service that, transparent to users, would assure continuous operation of the NC OneMap Geospatial Portal.

**Data Sources/Underlying measures required for analysis:** System performance statistics from server monitoring software.

**Data Limitations:** None.

**Calculation Logic/Steps:** The calculation is the time between each recorded outage in a year, divided by the number of outages, expressed in days and hours.

**Analysis Period/Reporting Frequency:** Annual.

**Granularity of Analysis:** Time measured in hours and minutes.

**Target/Warning Level/Tolerance/Benchmark:** To be determined.

**Policy Issues:** Reliable public access to geospatial information.

**Responsible Staff Member and Contact Information:** To be determined.
**Date of Current Version:** To be developed and implemented.
**Revision History:** None.

### Measure 2.2c:

**Name/Short Description:** Average time duration of NC OneMap outages.

**Type of Measure:** Process

**Full Definition/Description:** The mean time duration of outages of the NC OneMap Geospatial Portal.

**Audience for Measure:** NC OneMap Governance Committee and GICC

**Significance/Use/Actionability:** The longer the duration of outages, the more urgent the need to create a redundant service that, transparent to users, would assure continuous operation of the NC OneMap Geospatial Portal.

**Data Sources/Underlying measures required for analysis:** System performance statistics from server monitoring software.

**Data Limitations:** None.

**Calculation Logic/Steps:** The calculation is the sum of the duration of all outages in a year, divided by the number of outages, expressed as hours and minutes.

**Analysis Period/Reporting Frequency:** Annual.

**Granularity of Analysis:** Time measured in hours and minutes.

**Target/Warning Level/Tolerance/Benchmark:** To be determined.

**Policy Issues:** Reliable public access to geospatial information.

**Responsible Staff Member and Contact Information:** To be determined.
**Date of Current Version:** To be developed and implemented.
**Revision History:** None.

**Measure 2.2d:**
**Name/Short Description:** Percent of months during which performance of NC OneMap non-geoprocessing services meets goals.

**Type of Measure:** Process

**Full Definition/Description:** Percent of months during which NC OneMap non-geoprocessing services meet performance goals.  Non-geoprocessing services display imagery, map layers, or maps.  Geoprocessing (e.g., matching a desired address to a street network, identifying the nearest address to a location of interest, selecting features within a desired distance of a location) are not included in this measure.  The primary performance goal is for image services (e.g., 2010 statewide orthoimagery) to refresh in 2.0 seconds or less.

**Audience for Measure:** NC OneMap Governance Committee and GICC

**Significance/Use/Actionability:** Performance of the most data-intense service (orthoimagery) needs to meet user expectations to make the NC OneMap Geospatial Portal a reliable, trusted source for imagery and map services.

**Data Sources/Underlying measures required for analysis:** System performance statistics from server monitoring software.

**Data Limitations:** None.

**Calculation Logic/Steps:** The first calculation is the mean time in seconds and fractions of a second that is recorded for image services to refresh, measured over a month, and recorded for twelve months.  The second calculation is the number of months that the mean value is 2.0 seconds or smaller, divided by twelve months, expressed as a percent.

**Analysis Period/Reporting Frequency:** Annual.

**Granularity of Analysis:** Time measured in hours and minutes.

**Target/Warning Level/Tolerance/Benchmark:**  To be determined.

**Policy Issues:** Reliable public access to geospatial information.

**Responsible Staff Member and Contact Information:** To be determined.
**Date of Current Version:** To be developed and implemented.
**Revision History:**  None.

**Goal 2.3:** NC OneMap provides web services, from within and without North Carolina, to meet a wide range of public and private business needs.

**Measure 2.3a:**

**Name/Short Description:** Percent increase in the number of applications consuming NC OneMap web services as identified by survey respondents.

**Type of Measure:** Effectiveness measure.

**Full Definition/Description:** From surveys of users of the NC OneMap Geospatial Portal (http://data.nconemap.com), the percent increase in the number of applications that consume a web map service and/or image service from NC OneMap.

**Audience for Measure:** NC OneMap Governance Committee and GICC

**Significance/Use/Actionability:** Information on the trend in consumption of services from NC OneMap will inform priorities for technical infrastructure, data maintenance and data development.

**Data Sources/Underlying measures required for analysis:** Survey sent to selected email contacts known to NC OneMap data managers and to selected listservs that are likely to include users of geospatial data.

**Data Limitations:** This method relies on adequate response from users of NC OneMap using information for business purposes, public or private.  It is not clear if the number of respondents will be large enough to do a valid analysis of a trend.

**Calculation Logic/Steps:** The survey needs to identify respondents who have been familiar with the NC OneMap Geospatial Portal since time 1 (e.g., June 2011), and determine the number of applications consuming services from NC OneMap in time 1 and time 2.  Note:  when repeated for time 3 compared to time 2, the counts rely on the time 3 respondents indicating applications in the respective time periods.  The calculation is the number of applications identified as consuming services in time 2, minus the number identified as consuming services in time 1, divided by the number identified as consuming services in time 1, expressed as percent change.  This is not a longitudinal analysis that would rely on the same respondents to provide information in multiple time periods.

**Analysis Period/Reporting Frequency:** Biennial.

**Granularity of Analysis:** Statewide is the focus.  Separate results will be reported for public and private sector survey respondents.  Results by business type and/or organization type will require adequate numbers of responses in each strata.

**Target/Warning Level/Tolerance/Benchmark:** [need research on reasonable expectations for target and warning level]

**Policy Issues:** The policy is to provide free public access to high quality geospatial information that benefits public and private users and informs public and private decisions. Also, the implied policy is greater reliance on map services and image services to reduce redundant storage of datasets and centralize access to services from a hybrid of central (NC OneMap server) and dispersed (state and county servers) datasets.

**Responsible Staff Member and Contact Information:** To be determined.
**Date of Current Version:** To be developed and implemented.
**Revision History:** None.

### Measure 2.3b:
**Name/Short Description:** Percent of survey respondents who identify at least one business need satisfied by NC OneMap web services.

**Type of Measure:** Effectiveness measure.

**Full Definition/Description:** From a surveys of users of the NC OneMap Geospatial Portal (http://data.nconemap.com), the percent of survey respondents who have used NC OneMap and identify at least one business need satisfied by NC OneMap web map services and/or image services (from a list of business needs). Information on organization type and business type will be requested in the survey (to stratify the samples).

**Audience for Measure:** NC OneMap Governance Committee and GICC

**Significance/Use/Actionability:** Information on the type of business need will inform priorities for data maintenance and data development. An assessment of the magnitude of business needs satisfied will inform estimations of user benefits.

**Data Sources/Underlying measures required for analysis:** Survey sent to selected email contacts known to NC OneMap data managers and to selected listservs that are likely to include users of geospatial data.

**Data Limitations:** This method relies on adequate response from users of NC OneMap, both those using information for business purposes and those who are not.

**Calculation Logic/Steps:** Positive responses by strata, each divided by respondents by strata. Combined positive responses divided by total respondents.

**Analysis Period/Reporting Frequency:** Biennial.

**Granularity of Analysis:** Statewide is the focus, though users in the Southeast and beyond are benefiting.  Separate results will be reported for public and private sector survey respondents.  Results by business type and/or organization type will require adequate numbers of responses in each strata.

**Target/Warning Level/Tolerance/Benchmark:**  [need research on reasonable expectations for target and warning level]

**Policy Issues:** The policy is to provide free public access to high quality geospatial information that benefits public and private users and informs public and private decisions.  Also, the implied policy is greater reliance on map services and image services to reduce redundant storage of datasets and centralize access to services from a hybrid of central (NC OneMap server) and dispersed (state and county servers) datasets.

**Responsible Staff Member and Contact Information:** To be determined.
**Date of Current Version:** To be developed and implemented.
**Revision History:** None.

**Objective 3:** NC OneMap is responsive to real-world users and their geospatial data and services needs.

**Goal 3.1:** NC OneMap provides for interactive user comments, suggestions, and requests and responds to them appropriately.

### Measure 3.1a:

**Name/Short Description:** Percent of user questions, comments, suggestions, and requests to NC OneMap responded to within specified response standards.

**Type of Measure:** Effectiveness measure.

**Full Definition/Description:** From an analysis of CGIA communication with NC OneMap users: the percent of responses by CGIA staff to user comments, suggestions and requests to NC OneMap that occurred within [hours to be specified, e.g., 24 hours].

**Audience for Measure:** NC OneMap Governance Committee, GICC, and CGIA performance management.

**Significance/Use/Actionability:** Information on response times will inform priorities for communication and customer service.

**Data Sources/Underlying measures required for analysis:** The data sources are email records and telephone logs pertaining to questions, requests, comments and suggestions from users of NC OneMap to CGIA staff.

**Data Limitations:** This method relies on analysis of communication records, systematic logging of phone communication, access to email records, and an adequate number of contacts from NC OneMap users to make the results meaningful.

**Calculation Logic/Steps:** Measure of the duration between a contact and a response for each contact.  Classify each contact/response as meeting a target (e.g., 24 hours) or not meeting a target.  Divide the responses meeting the target by all responses and express as a percent.

**Analysis Period/Reporting Frequency:** Biennial.

**Granularity of Analysis:** Statewide is the focus.

**Target/Warning Level/Tolerance/Benchmark:**  [need research on reasonable expectations for target and warning level]

**Policy Issues:** The policy is to provide high quality customer service related to geospatial information and interactive tools that benefit public and private users and informs public and private decisions.

**Responsible Staff Member and Contact Information:** To be determined.
**Date of Current Version:** To be developed and implemented.
**Revision History:** None.

### Measure 3.1b:

**Name/Short Description:** Percent of survey respondents who are satisfied with NC OneMap interactive tools.

**Type of Measure:** Effectiveness measure.

**Full Definition/Description:** From a survey of users of the NC OneMap Geospatial Portal (http://data.nconemap.com): the percent of survey respondents who have used one or more NC OneMap interactive tools and indicate satisfaction with the tools.  Interactive tools respond to specific user entries or actions; current interactive tools are the Geospatial Portal (find data by keywords) and the Data Explorer (find and display data in a map viewer).  Including a list of interactive tools in a survey will help clarify the questions and responses.

**Audience for Measure:** NC OneMap Governance Committee and GICC

**Significance/Use/Actionability:**  Information on user satisfaction will inform priorities for application maintenance and application development.

**Data Sources/Underlying measures required for analysis:** Survey sent to selected email contacts known to NC OneMap data managers and to selected listservs that are likely to include users of geospatial data and interactive tools.

**Data Limitations:** This method relies on adequate response from users of NC OneMap, particularly those using one or more interactive tools.

**Calculation Logic/Steps:** Positive responses from tool users divided by tool users identified in the survey, expressed as a percent.

**Analysis Period/Reporting Frequency:** Biennial.

**Granularity of Analysis:** Statewide is the focus, with consideration of all interactive tools on NC OneMap.

**Target/Warning Level/Tolerance/Benchmark:** [need research on reasonable expectations for target and warning level]

**Policy Issues:** The policy is to provide free public access to high quality geospatial information and interactive tools that benefit public and private users and informs public and private decisions.

**Responsible Staff Member and Contact Information:** To be determined.
**Date of Current Version:** To be developed and implemented.
**Revision History:** None.


**Measure 3.1c:**
**Name/Short Description:** Percent of people who made a comment, suggestion, or request to NC OneMap and were satisfied with the NC OneMap response.

**Type of Measure:** Outcome measure.

**Full Definition/Description:** From an analysis of CGIA communication with NC OneMap users: the percent of people who communicated a comment, suggestion or request to NC OneMap and were satisfied with the response.

**Audience for Measure:** NC OneMap Governance Committee and GICC

**Significance/Use/Actionability:** Information on user satisfaction will inform priorities for communication and customer service.

**Data Sources/Underlying measures required for analysis:** The data sources are email records and telephone logs pertaining to questions, requests, comments and suggestions from users of NC OneMap to CGIA staff.

**Data Limitations:** This method relies on adequate response from users of NC OneMap, particularly those who contacted NC OneMap.

**Calculation Logic/Steps:** Positive responses from NC OneMap users who contacted NC OneMap, divided by all users who contacted NC OneMap, expressed as a percent.

**Analysis Period/Reporting Frequency:** Biennial.

**Granularity of Analysis:** Statewide is the focus.

**Target/Warning Level/Tolerance/Benchmark:** [need research on reasonable expectations for target and warning level]

**Policy Issues:** The policy is to provide high quality customer service related to geospatial information and interactive tools that benefit public and private users and informs public and private decisions.

**Responsible Staff Member and Contact Information:** To be determined.
**Date of Current Version:** To be developed and implemented.
**Revision History:** None.

**Goal 3.2:** NC OneMap has increased awareness among current users, and new sectors of business, government, and the general public, about its improvements, including the Geospatial Portal and the availability of new data and services.

**Measure 3.2:**

**Name/Short Description:** Percent of survey respondents who are aware of NC OneMap data and services.

**Type of Measure:** Outcome measure.

**Full Definition/Description:** From surveys of geospatial professionals and potential users in public and private organizations: the percent of respondents who indicate use of NC OneMap Geospatial Portal for one or more purposes.  The assumption is that awareness goes beyond familiarity with a name to include visiting and using a website.

**Audience for Measure:** NC OneMap Governance Committee and GICC

**Significance/Use/Actionability:**  Information on the extent of awareness will inform communication strategies with the purpose of making more potential users aware of NC OneMap and realizing more benefits from the resources.

**Data Sources/Underlying measures required for analysis:** Survey sent to selected listservs that are likely to include users and potential users of geospatial data.

**Data Limitations:** This method relies on adequate response from users and potential users of NC OneMap.  The survey needs to reach those who could benefit from NC OneMap resources, particularly those who are not participating in the GIS community.

**Calculation Logic/Steps:** Positive responses divided by respondents.  Responses could be stratified by organization type and business type, depending on the number of responses.

**Analysis Period/Reporting Frequency:** Biennial.

**Granularity of Analysis:** Statewide is the focus, though users in the Southeast and beyond are benefiting.  Separate results will be reported for public and private sector survey respondents.  Results by business type and/or organization type will require adequate numbers of responses in each category.

**Target/Warning Level/Tolerance/Benchmark:**  [need research on reasonable expectations for target and warning level]

**Policy Issues:** The policy is to provide free public access to high quality geospatial information that benefits public and private users and informs public and private decisions.

**Responsible Staff Member and Contact Information:** To be determined.
**Date of Current Version:** To be developed and implemented.
**Revision History:** None.

**Goal 3.3:** NC OneMap has increased instances of geospatial data users using image services and map services to meet their business needs.

**Measure 3.3:**

**Name/Short Description:** Percent increase in NC OneMap map service use.

**Type of Measure:** Effectiveness measure.

**Full Definition/Description:** From statistics on NC OneMap servers, the percent change in map service hits from time period 1 to time period 2.  This is related to measure 2.3a (instances of applications consuming services) with an emphasis on intensity of use for anonymous users.

**Audience for Measure:** NC OneMap Governance Committee and GICC

**Significance/Use/Actionability:**  Information on the trend in use of services from NC OneMap will inform priorities for technical infrastructure, data maintenance and data development.

**Data Sources/Underlying measures required for analysis:** Statistics from NC OneMap servers for map services and image services provide indicators of intensity of use.  The time periods need to have enough frequency to display a trend.

**Data Limitations:** This method relies on server hits that represent frequency of user actions (displaying, panning, zooming, etc.) involving map services and image services. It does not reflect quality of use, simplicity of use, or the value of user business processes.

**Calculation Logic/Steps:** The number of user hits, by server, measured on a monthly basis.  A 3-month moving average of hits would smooth out possible seasonal effects on users. The measurement is the moving average in time 2 minus the moving average in time 1, divided by the moving average in time 1, expressed as percent change.

**Analysis Period/Reporting Frequency:** Annual.

**Granularity of Analysis:** Statewide is the focus. This does not include breakdown of user types.

**Target/Warning Level/Tolerance/Benchmark:**  [need research on reasonable expectations for target and warning level]

**Policy Issues:** The policy is to provide free public access to high quality geospatial information that benefits public and private users and informs public and private

decisions.  Also, the implied policy is greater reliance on map services and image services to reduce redundant storage of datasets and centralize access to services from a hybrid of central (NC OneMap server) and dispersed (state and county servers) datasets.

**Responsible Staff Member and Contact Information:** To be determined.
**Date of Current Version:** To be developed and implemented.
**Revision History:** None.

**Goal 3.4:** NC OneMap has a memorandum of understanding (MOU) with each data provider that sets expectations for consistency with data standards and for currency of data.

   **Measure 3.4a:**
   **Name/Short Description:** Percent of all NC OneMap data providers that have a memorandum of understanding (MOU) regarding data sharing in place with CGIA.

   **Type of Measure:** Process measure.

   **Full Definition/Description:** Data producers have two ways to provide content to the NC OneMap Geospatial Portal.  The first method is to transfer datasets periodically to the NC OneMap Database.  The second method is for a data producer to host the data outside of NC OneMap and submit metadata for hosted data or publish services (and metadata) that can be added to the NC OneMap Catalog.  Both methods have been accomplished with informal agreements that rely on periodic communication between a data producer and the NC OneMap Database Administrator.  An alternative is a formal agreement in the form of a memorandum of understanding that specifies the expectations and responsibilities of a data producer and the NC OneMap Database Administrator.  For the latter approach, the measure is the percent of all data providers to NC OneMap Geospatial Portal that have a memorandum of understanding in place with NC OneMap.

   **Audience for Measure:** NC OneMap Governance Committee and GICC

   **Significance/Use/Actionability:**  An agreement, informal or formal, increases the likelihood that datasets in NC OneMap will be maintained by data producers on a regular basis.  An MOU is intended to support the tasks of monitoring, tracking and assessing provision of data for the NC OneMap Geospatial Portal.  Note that a formal agreement, if it restricts data sharing, is inconsistent with the GICC's previous work on data sharing.  The GICC adopted ten recommendations for geospatial data sharing at the November 7, 2007 meeting as proposed by an ad hoc Committee.  The first of ten recommendations:
      "Avoid formal agreements.  Written agreements that unnecessarily restrict the free exchange of geospatial data will be avoided.  Exceptions could include circumstances that involve:
         a. Records that are protected by General Statute, such as those under the authority of the State Veterinarian; or are otherwise deemed confidential by appropriate authorities;
         b. Records that could pose a public safety or security risk, as written in law, or when
         appropriately restricted as part of a structured decision-making process guided by the "Guidelines for Providing Appropriate Access to Geospatial Data in Response to Security Concerns," adopted by the Council (ATTACHMENT B).
      In the rare exception, if a formal agreement is necessary the data producer is the appropriate authority to decide on the need for that agreement."[1]

**Data Sources/Underlying measures required for analysis:** The NC OneMap administrator can generate a list of data providers to the NC OneMap Geospatial Portal.

**Data Limitations:** CGIA does not currently have formal MOUs with any of the data providers.

**Calculation Logic/Steps:** For computing the percent of providers with MOUs, the denominator is the count of data producers (agencies) that publish metadata or services to NC OneMap Geospatial Portal, plus the count of data producers that submit datasets to the NC OneMap Database. The numerator is the count of data producers that have MOUs with NC OneMap.

**Analysis Period/Reporting Frequency:** Annual.

**Granularity of Analysis:** Statewide is the focus.

**Target/Warning Level/Tolerance/Benchmark:** [need research on reasonable expectations for target and warning level]

**Policy Issues:** The policy is to provide free public access to high quality geospatial information that benefits public and private users and informs public and private decisions, and to maintain geospatial data on a regular basis for currency of NC OneMap geospatial data.

**Responsible Staff Member and Contact Information:** To be determined.
**Date of Current Version:** To be developed and implemented.
**Revision History:** None.


**Measure 3.4b:**
**Name/Short Description:** Percent of datasets provided to NC OneMap that meet requirements for currency and consistency.

**Type of Measure:** Outcome measure.

**Full Definition/Description:** Data producers have two ways to provide content to the NC OneMap Geospatial Portal. The first method is to transfer datasets periodically to the NC OneMap Database. The second method is for a data producer to host the data outside of NC OneMap and submit metadata for hosted data or publish services (and metadata) that can be added to the NC OneMap Catalog. For either method, data quality includes currency and consistency. Consequently, each dataset needs a set of requirements for currency and a content standard (or a content recommendation in the absence of a standard). Given requirements for currency and consistency, the measure

is the percent of datasets provided to the NC OneMap Geospatial Portal that meet their respective requirements.

**Audience for Measure:** NC OneMap Governance Committee and GICC

**Significance/Use/Actionability:**  Data quality (in this case currency and consistency) is essential to user confidence in using the NC OneMap Geospatial Portal for data discovery and access.  Full benefits of the Portal are realized if the site is a reliable source of the best available geospatial data, giving users the confidence to not contact data managers directly and not collect the same data directly from producers.

**Data Sources/Underlying measures required for analysis:**  Each dataset needs a recommended update frequency and either a content standard if one applies or recommended content.  An analysis would include comparison of expected updates and metadata records, and a comparison of a content standard and a metadata record.

**Data Limitations:** This measure relies on complete, accurate metadata records as well as details on update frequency and content standards by dataset.

**Calculation Logic/Steps:** For computing the percent of datasets that meet these two quality criteria, the denominator is the count of applicable datasets.  The numerator is the count of applicable datasets that are both current and consistent with a content standard or recommendation.  The ratio is expressed as a percent.

**Analysis Period/Reporting Frequency:** Annual.

**Granularity of Analysis:** Statewide is the focus.

**Target/Warning Level/Tolerance/Benchmark:**  [need research on reasonable expectations for target and warning level]

**Policy Issues:** The policy is to provide free public access to high quality geospatial information that benefits public and private users and informs public and private decisions.

**Responsible Staff Member and Contact Information:** To be determined.
**Date of Current Version:** To be developed and implemented.
**Revision History:** None.

**Goal 3.5:** NC OneMap has innovative partnerships with local governments to archive geospatial data off-site for data retention and disaster recovery.

There is no measure defined for Goal 3.5.  This goal is no less worthy to achieve than the other goals, but defining an outcome measure related to practices by state or local partners over which NC OneMap no control is problematic.  A measure may become apparent with the establishment of one or more innovative partnerships.

**Objective 4:** NC OneMap is appropriately sustained financially.

**Goal 4.1:** NC OneMap has an increased percentage of funding from State appropriations and other sources and a decreased dependence on receipts from CGIA Professional Services.

### Measure 4.1:
**Name/Short Description:** Percent of NC OneMap funding (for staff, systems, software, and operations) provided by receipts from the CGIA Services Program.

**Type of Measure:** Outcome measure (goal attainment, not program outcomes).

**Full Definition/Description:** From the annual budget for the NC OneMap Program, identification of the sources of revenue and the total costs for NC OneMap (for staff, systems, software, operations, travel).  The measure is the percent of revenue coming from receipts from the CGIA Services Program.

**Audience for Measure:** NC OneMap Governance Committee and GICC

**Significance/Use/Actionability:**  The assumption is that reliance on receipts from the CGIA Services Program for all or a large part of revenue for NC OneMap is risky, unstable, and unsustainable.  The higher the percent of revenue that comes from receipts from technical services, the higher the risk to sustainability and viability of NC OneMap.

**Data Sources/Underlying measures required for analysis:** The NC OneMap budget is the source for this measure.

**Data Limitations:** None.

**Calculation Logic/Steps:** In a budget year, receipts from the Services Program divided by total revenue, expressed as a percent.

**Analysis Period/Reporting Frequency:** Annual.

**Granularity of Analysis:** Receipts and appropriations need not be broken down by source and other revenue need not be itemized.

**Target/Warning Level/Tolerance/Benchmark:**  [need research on reasonable expectations for target and warning level]

**Policy Issues:** The policy is to sustain a program that provides free public access to high quality geospatial information that benefits public and private users and informs public and private decisions, and to not burden CGIA's technical services program and its

clients with hourly rates that support staff who are not directly performing technical services for projects.

**Responsible Staff Member and Contact Information:** To be determined.
**Date of Current Version:** To be developed and implemented.
**Revision History:** None.

**Notes:**

Types of Performance Measures:

1. **Inputs**: resources available to meet goals: money, people, equipment, time
2. **Process**: work; the activities/means that transform inputs into outputs; level of service being provided or an assessment of need for a service
3. **Outputs**: products/services produced by the process that are <u>intermediate</u> to achieving goals
4. **Outcomes**: the end results specified in the goals and objectives; goal attainment
5. **Efficiency** (inputs/outputs)
6. **Effectiveness (**reflects on the outputs; e.g., the quality of service provided, and customer satisfaction with quality)
7. **Timeliness or responsiveness**
8. **Cost/effectiveness** (inputs/outcomes)
9. **Fairness** (equitable treatment of customers)

**Table 1. Priority Datasets for NC OneMap**

| Layers (numbered for reference only; framework layers shaded gray) | Statewide Dataset Owner | Percent complete statewide | Development in progress | Map service hosted by CGIA | Map service hosted by other | Download -able data | Metadata |
|---|---|---|---|---|---|---|---|
| 1a. Imagery: Orthoimagery | CGIA | 100 | | 1 | | 1 | 1 |
| 1b. Imagery: NAIP (color and color IR) | NC Agriculture | 100 | | | 1 | 1 | 1 |
| 2a. Cadastral: all property compiled | To be determined | | | | | | |
| 2b. Subset: Public Lands, State Owned | State Property Office | 100 | | 1 | | 1 | 1 |
| 2c. Subset: Public Lands, Federal Ownership | DENR, Natural Heritage Program | 100 | | 1 | | 1 | 1 |
| 3a. Transportation: Highways | NC DOT | 100 | | 1 | | 1 | 1 |
| 3b. Transportation: Street Centerlines (ISRN and LRS) | NCDOT | varies | | 1 | | 1 | 1 |
| 3c. Transportation: Street Centerlines compilation of local sources | NCDOT | | Working Group for Roads & Transp. | | | | |
| 3d. Transportation: Railroads | NCDOT | | NCDOT | | | | |

| Layers (numbered for reference only; framework layers shaded gray) | Statewide Dataset Owner | Percent complete statewide | Development in progress | Map service hosted by CGIA | Map service hosted by other | Download able data | Metadata |
|---|---|---|---|---|---|---|---|
| 3e. Transportation: Airports | CGIA | 100 | | 1 | | 1 | 1 |
| 3f. Transportation: Bridges | NCDOT | | | 1 | | 1 | 1 |
| 4a. Governmental units: Municipal | NCDOT | 100 | | 1 | | 1 | 1 |
| 4b. Governmental units: County | Geodetic Survey | 100 | | 1 | | 1 | 1 |
| 5a. Surface Waters: classified streams | DENR/DWQ | 100 | | 1 | | 1 | 1 |
| 5b. Stream mapping | CGIA | 19 | NHD research | 1 | | 1 | 0 |
| 5c. Hydrologic units and river basins | DENR/DWQ | 100 | | 1 | | 1 | 1 |
| 6. Geodetic Control | DENR/NCGS | 100 | | 1 | | 1 | 1 |
| 7. Elevation | NCEM/GTM | 100 | | 0 | 0 | 1 | 1 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 8. Address points | CGIA | | 2012 CGIA project for update | 0 | 0 | 1 | 0 |
| 9. Flood Zones | NCEM/GTM | 100 | | | 1 | 1 | 1 |
| 10. Building Footprints | NCEM/GTM | | Attribution in progress | | | | |

| Layers (numbered for reference only) | Statewide Dataset Owner | Percent complete statewide | Development in progress | Map service hosted by CGIA | Map service hosted by other | Download able data | Metadata |
|---|---|---|---|---|---|---|---|
| 11. Cached base  map services | NCDOT/CGIA | 100 | | | 1 | | |
| 12. Land Cover | USGS | 100 | | 0 | 0 | 1 | 1 |
| 13. Soils | USDA/NRCS | 99 | | | 1 | 1 | 1 |
| 14a. Schools K-12, public | CGIA | 100 | | 1 | | 1 | 1 |
| 14b. Schools K-12, nonpublic | CGIA | 100 | | 1 | | 1 | 1 |
| 14c. Community colleges and universities | CGIA | 100 | | 1 | | 1 | 1 |
| 15. Hospitals | DHHS | 100 | | 1 | | 1 | 1 |
| 16. Hurricane Storm Surge Inundation | CGIA | 100 | | 1 | | 1 | 1 |
| 17a. Surface Water Intakes | DENR/PWS | 100 | | 1 | | 1 | 1 |
| 17b. Watersheds (water supply) | DENR/DWQ | 100 | | 1 | | 1 | 1 |
| 17c. Public Water Supply Water Sources | DENR/PWS | 100 | | 0 | 0 | 1 | 1 |
| 17d. Type A Public Water Systems | CGIA | 100 | | 1 | | 1 | 1 |
| 17e. Public water distribution pipes | CGIA | 85 | | 1 | | 1 | 1 |

| Layers (numbered for reference only) | Statewide Dataset Owner | Percent complete statewide | Development in progress | Map service hosted by CGIA | Map service hosted by other | Download able data | Metadata |
|---|---|---|---|---|---|---|---|
| 18. NPDES sites | DENR/DWQ | 100 | | 1 | | 1 | 1 |
| 19a. PSAP areas (areas served by 911 communication centers) | To be determined | 100 | | 1 | | 1 | 1 |
| 19b. Fire districts | To be determined | | | | | | |
| 19c. Fire Stations | To be determined | 100 | | 1 | | 1 | 1 |
| 19d. Law enforcement districts | To be determined | | | | | | |
| 19e. Law Enforcement Locations | To be determined | 100 | | 1 | | 1 | 1 |
| 19f. Emergency Medical Services Districts | To be determined | | | | | | |
| 19g. Emergency Service Zones | To be determined | | | | | | |
| 20a. National Wetlands Inventory | USFWS | 100 | | | 1 | 1 | 1 |
| 20b. Wetlands (coastal only) | DENR/DCM | 100 | | 0 | 0 | 1 | 1 |

| Layers (numbered for reference only) | Statewide Dataset Owner | Percent complete statewide | Development in progress | Map service hosted by CGIA | Map service hosted by other | Download able data | Metadata |
|---|---|---|---|---|---|---|---|
| 21a. Hazardous Substance Disposal Sites (multiple files) | DENR/DWM | 100 | | 1 | | 1 | 1 |
| 21b. Landfills (active and inactive sets) | DENR/DWM | 100 | | 1 | | 1 | 1 |
| 22a. Type A Public Sewer Systems | CGIA | 100 | | 1 | | 1 | 1 |
| 22b. Sewer Pipes | CGIA | 85 | | 1 | | 1 | 1 |
| 23a. NC House Districts | NCGA | 100 | | 0 | | 1 | 1 |
| 23b. NC Senate Districts | NCGA | 100 | | 0 | | 1 | 1 |
| 23c. US Congressional Districts | NCGA | 100 | | 0 | | 1 | 1 |
| 24. Demographics (blocks, block groups, tracts) | CGIA | 100 | | 1 | | 1 | 1 |
| 25. Managed Areas (of conservation interest) | DENR/NHP | 99 | | 1 | | 1 | 1 |
| 26. Natural Heritage Program areas (multiple features) | DENR/NHP | 100 | | 1 | | 1 | 1 |
| 27. Geology | NCGS | 100 | | 0 | 0 | 1 | 1 |
| 28. Land Use | none | | | | | | |
| 29. Extraterritorial Jurisdictions (ETJ) | none | | | | | | |
| 30. Digital Raster Graphics | USGS | 100 | | | 1 | 1 | 1 |
| 31. Historic districts and buildings | DCR/HPO | | DCR/HPO | 0 | 0 | 0 | 0 |
| 32. Shellfish growing areas | DENR/DMF | 100 | | 1 | | 1 | 1 |