
GIS Data Action Plan-Draft

Supporting NCDOT Planning Partners



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# Overview

NCDOT is pleased to present Planning Organizations with our Transportation Planning Support Action Plan. At the request of our customers, we have been conducting needs analysis for supplemental support of planning organizations in regard to the North Carolina Strategic Transportation Investments (STI).

## The Objective

* **Goal #1**: Improve the user experience with regard to searching, finding, and using NCDOT GIS data
* **Goal #2**: Review and modify data services to better meet our customers’ needs
* **Goal #3**: Facilitate data request with the data owners for unpublished GIS data.
* **Goal #4**: Provide supplemental training and support for planning organization staff regarding GIS
* **Goal #5**: Facilitate addressing additional needs, not within NCDOTs domain, by helping connect planning partners to other organizations.

# Approach

## Rationale

Our approach was selected based on customer feedback from two surveys during March-May of 2017. This feedback supported keeping a dynamic delivery approach for GIS data requested by other organizations. Our March survey focused needs assessment and revealed that our current Web Service Publication approach will meet the majority of planning organization transportation GIS needs. Our second survey was GIS data focused, and supports a delivery approach that involves converting current Web Mapping Services to Web Feature Services, which will enable the requested user functionality, such as symbolization, and querying in ArcMap desktop software.

## Execution Strategy

We are focusing on three primary areas to increase support for both the 2017 (P5) and 2019 (P6) prioritization efforts. While some support may be implemented prior to the SPOT Online open submission period (July 5th –September 29th), the majority of the support will come online after the 2017 prioritization project submittal period and all will be rolled out in phases.

* Phase 1 – Short Term Support Actions for providing better GIS Data Discovery and coordinating GIS Data Request across state boundaries by providing a resource on the GIS Unit Connect site with helpful links.
* Phase 2 – Short Term Supplemental Training Support, which will kick-off with a workshop the day before the October RPO Business Meeting in Kernersville, NC.
* Phase 3 – Long Term Support Actions for improving GIS Data Discovery & Communications between Stakeholders and NCDOT Businesses, which are currently being initiated, but are not expected to be delivered until sometime in 2018 due to the complexity, cost, and other resources available for implementation.

## Technical/Project Approach

The GIS Unit will initiate efforts to convert existing Web Mapping Services to Web Feature Services. This effort will involve infrastructure upgrades and modifications, and an assessment of our current GIS Data Catalog to determine how many datasets must be modified. The frequency with which our current GIS data is published will remain the same, and according to our user survey, this frequency meets over 90% of planning partner’s needs.

## Supplemental Support - Timeline

Following is a complete list of all current GIS supplemental support being offered to our STI planning partners:

|  |  |  |
| --- | --- | --- |
| Support  | Description | Current/Planned |
| Maintaining current GIS data offerings | Data that is currently provided through GO!NC and NCDOT AGOL, SPOT websites (currently maintained by the GIS Unit) | Current |
| Facilitate Transportation Data Request Across State Boundaries | The GIS Unit will help RPOs coordinate transportation GIS Data request for neighboring states and posting helpful links to the GIS Unit Connect website.  | Current |
| Support SPOT On!ine for planning partners | SPOT On!ine will be supported year around for users, except for application maintenance periods. All communication regarding the use of SPOT will be handled via the NCDOT SPOT Office and questions and issues can be directed to SPOT@ncdot.gov  | Current |
| GIS Unit Connect Site-Other Resources | The GIS Unit Connect site will have a list of RPO resources under the “Other Resources” link.  |  |
| GIS Data Documentation | Documents will be accessible using the GIS Unit’s Connect Website. The GIS Data Catalog is downloadable in MS Excel format, and contains a link to each dataset’s metadata. | Current |
| Training - Data Mining | A survey of the world of NCDOT GIS Data. This training will be offered in October, 2017 at the RPO’s regular business meeting. This training will be offered via Skype, and will be recorded for future viewing. Attendees will learn what data we have, where it is located, how to access it, and who to contact for support (NCDOT or other). | Planned (2017) |
| GIS Data Catalog | The GIS Unit will post a catalog on our GIS data on the Transportation Planning Branch’s Connect Website. This catalog will list the data, type, and the method of access currently allowed (WMS, AGOL, SHP, Spatial Data Viewer, etc.). Metadata compliant with NCDOT GIS data standards will be accessible for each layer published, and a link to the metadata will be provided within the catalog. | Planned (2017) |
| Basic ArcMap Training | The RPOs will be allowed to take advantage of unclaimed seats for regularly scheduled Century Center training for no cost (other cost to be the responsibility of the RPO). Email gishelp@ncdot.gov for more details. | Planned (2017) |
| Training – Data Mining (online) | A survey of the world of NCDOT GIS Data. Original training held at the RPO October 2017 business meeting. Attendees will learn what data we have, where it is located, how to access it, and who to contact for support (NCDOT or other). | Planned (2018) |
| Data Discovery and Download Improvement Effort | The GIS Unit will create a page dedicated to the NCDOT’s transportation related GIS data on the planned Transportation Planning Branch Connect site. This site will help users search for data, provide contact information for data business owners. | Planned (2018) |
| GIS Data ‘Clip & Ship’ | The ability to select an area of interest from approved data layers and export to a shapefile will be introduced in a future solution. The specifics of how this functionality is provided is unavailable at the time of this action plan.  | Planned (2018) |

## RPO GIS Data Needs Assessment

The GIS Unit conducted two user surveys to evaluate current conditions in the typical user environments, and what data and data functionality users currently have vs. what users needed to take advantage of NCDOT current GIS data offerings. The results confirmed that most planning organizations have technology infrastructure to support Web Mapping Services (WMS) and that the NCDOT Quarterly Publications are sufficient for their planning needs. WMS format offers several advantages, the most important one being that GIS data published in this way is always up-to-date and the NCDOT current processes and procedures are already in place to support this type of data. Additional functionality can be enabled in the future if the business owners agree to user request. The NCDOT can help facilitate putting users in touch with data owners to make those request.
As a result of our research, NCDOT has focused resources and hired GIS contractors to support other business units with publishing their data. The extra resources are for the specific purposes of ensuring that the current offerings are up-to-date, and that any future requests can be published via the existing WMS processes and procedures using the current GIS Unit standards.

Guidance for Requesting Data for GIS Data & New Functional Capabilities

Source: Survey Monkey
GIS Unit Survey/March 2017

To facilitate the customer’s request for GIS data or functionality that is not currently supported by NCDOT, the GIS Unit will assist the customer with providing their request to the correct business owner. The NCDOT business responsible for the ownership (i.e. Transportation Planning Branch or SPOT Office), maintenance and decision regarding publishing the requested data, will communicate their decision regarding the customer’s request directly to the customer (i.e. RPO contact). Customers can send request regarding GIS data to gishelp@ncdot.gov with the dataset name listed in the data catalog, and/or the attributes desired listed in the metadata, and the GIS unit will contact the business owner on their behalf.



## NCDOT GIS Training Support (Training courses, schedules)

NCDOT GIS Unit regularly offers ArcGIS software training for NCDOT staff at its Century Center location. These courses are designed for NCDOT staff, but when empty seats are available for regularly scheduled training, NCDOT will offer to provide the class to transportation planning partners for no direct cost of the class. Additional cost associated with attending these courses (travel, hotel, meals, etc.) will remain the responsibility of the transportation planning organization. Please be aware that NCDOT reserves the right to cancel classes if the minimum of 3 participants is not met. Planning partners should note that NCDOT maintains an enterprise license and maintenance agreement with ESRI, and the expectation is that planning partners will maintain a current version of the ESRI software in order to consume our support services. For information on availability, please contact gishelp@ncdot.gov.

The most current NCDOT GIS Unit Training Schedule can be found at: <https://connect.ncdot.gov/resources/gis/Pages/RPO-Resources.aspx>
Click *RPO Resources* to find RPO support documents, links to the current GIS Training Schedule, and more.

For a current course schedule, specifies on how to register for and attend one of these classes, or other information, please email gishelp@ncdot.gov.

SPOT On!line Year-around Access FAQ
SPOT On!ine Year-around can be found [here](https://gis13.services.ncdot.gov/SpotOn%21ine/login.aspx). You can find the SPOT On!ine User’s Manual [here](https://connect.ncdot.gov/business/Purchasing/ITSolicitationReferenceLibrary/TOP3S%20RFP%20Reference%20Library/SPOT%20On%21ine%20System%20User%20Guide.pdf). The NCDOT SPOT office is the owner of the SPOT Application, and therefore is the point of contact for all planning partner related SPOT needs such as:

* New user accounts/deleting user accounts
* Help with SPOT usage
* Application training for NCDOT users and planning partners
* Sending notices to SPOT users regarding system maintenance periods and outages (when SPOT is offline for specific periods)
* Enhancement request

**SPOT GIS Data**

* Users are to be aware that SPOT data is ‘static’. This means it will not be updated prior to the next prioritization submission period
* Next Prioritization Cycle is estimated to be in 2019

**Creating Draft Projects**

* The ‘submit’ option will be disabled at the end of the current submission period (September 2017) until the next Prioritization Cycle opens
* Users can save projects as ‘Draft’
* Users will have access to the cost estimator tool in draft mode
* Projects classified as Draft can only be seen by organization (MPO, RPO, or Division) that entered the project
* Users are expected to delete their own draft projects periodically if not longer needed. NCDOT will not automate cleaning up draft projects until the next prioritization maintenance cycle. At that time, all projects will be deleted from the system for system upgrade purposes.

NCDOT GIS Data Catalog

The NCDOT GIS Unit has recently compiled a [GIS Data Catalog](https://connect.ncdot.gov/resources/gis/Documents/GIS%20Data%20Catalog.xlsx) for customer reference. The catalog is provided in MS Excel format, and contains a sheet for each method of delivery, a list of data for each method, and links to the metadata online. The complete metadata contains a list of fields in the source data. The catalog is currently published on the GIS Unit’s connect page in MS Excel format here, but will be replaced by a better data discovery tool in the near future. The current methods of GIS data delivery include:

* GO!NC

* NCDOT Connect (Each Unit’s Connect Site has resources)

## NC DOT Resources

* **GO!NC**
	+ GO!NC provides access to NCDOT business unit geospatial data through easy-to-use maps and applications.
	+ GO!NC Support, link
	+ SPOT On!ine

**NCDOT Enterprise GIS**<https://connect.ncdot.gov/resources/gis/Pages/default.aspx>

* + DE Letters
	+ SR Roads Lookup
	+ Contour & Elevation Data
	+ Bike Maps

**NCDOT GIS Data Layers-**\*\*Note – Some layers are updated by GIS Unit, but not all

<https://connect.ncdot.gov/resources/gis/pages/gis-data-layers.aspx>

## Links (NCDOT data links & other useful links)

**Center for Geographic Information and Analysis (CGIA)**

<http://www.cgia.state.nc.us/DataResources.aspx>

**NC OneMap Geospatial Portal**

<http://data.nconemap.gov/geoportal/catalog/main/home.page>

**State Data Center**
<http://sdc.state.nc.us>

**State Demographics**
<http://www.demog.state.nc.us>

**State Library**
<http://statelibrary.dcr.state.nc.us>

**NC Dept. of Transportation**
<http://www.ncdot.org/it/gis/DataDistribution>

**NC Flood Risk Information System**<http://www.ncfloodmaps.com>

**NC Geodetic Survey**<http://www.ncgs.state.nc.us>

**NC Geological Survey**<http://www.geology.enr.state.nc.us>

**US Census Bureau**<http://www.census.gov>

**Access to Local Geospatial Data and County GIS web services**See [Access to Local Geospatial Data Online](http://www.cgia.state.nc.us/Portals/7/documents/Access_LocalData_Online.pdf) for the status of the availability of parcels and street centerlines for all 100 counties dated 2013.

**Local Council of Governments (COGS) -**As regional organizations that offer GIS Analysis and Mapping Services for members COGS are a potential resource for some stakeholders.

For a complete listing of North Carolina county GIS web services visit [North Carolina State University Libraries](http://www.lib.ncsu.edu/gis/counties.html). <http://www.lib.ncsu.edu/gis/counties.html>

## Glossary

ESRI Dictionary
<http://support.esri.com/other-resources/gis-dictionary>

## FAQ

***Is there a webpage with all the NCDOT Links?***<https://connect.ncdot.gov/resources/gis/Pages/GISLinks.aspx>

***What is GO!NC?***Information on GO!NC can be found here: <https://connect.ncdot.gov/resources/gis/Pages/default.aspx>

***How do I use GO!NC?***The GO!NC Quick Reference Guide can be found here: <https://xfer.services.ncdot.gov/gisdot/GONC/Documents/GONCMapViewerQuickReferenceGuide.pdf>

***What is a Web Map Service (WMS)?***A WMS is a method of deploying GIS data through a live connection to a published dataset. Each time the user accesses the WMS, they have the most recent ‘live’ dataset in their map. In technical terms, it is a standard protocol for serving GIS data directly from a data source, such as a database.

***What is a Web Feature Service (WFS)?***

A WFS is a method of deploying GIS data with additional functionality for users. This method is more resource intensive, and must have infrastructure to support the thousands or millions of ‘calls’ the users issue to the dataset. It is a more expensive method of deploying GIS data when compared to a Web Map Service (WMS), but can be justified if there is a business need that supports the purchasing of infrastructure.

***What can I do with a Web Map Service (WMS)?***

* Visualize GIS data by adding it into a mapping software application (ArcMap/AGOL/QGIS/Other)
* Investigate/Query the data by viewing it in Arc Catalog and using the Identify Tool & Select by Attributes function.
* Search and locate features by using the Find Tool.
* Interact with data using Arc Toolbox, such as creating distance buffers using the Buffers Tool.
* Represent features using Symbology Editor and Labeling Manager (if enabled)
* View Layer Attributes (if enabled)

***What are some advantages of using a Web Map Service (WMS)?***

* Users have the most recent data in their maps, without the need for downloading and storing files on their own systems.
* Data can be accessed anywhere using a mapping software application (ArcMap/QGIS/Other). For example: A user can access the data in the map as long as they have an internet connection.
* Layers are loaded into ArcMap ready to go, with pre-styled with labels and symbology.
* Data is backed up on the NCDOT servers and available as long as our servers are up.

**Other Links of Interest:**

[ArcGIS Server: Common Reasons for Using Web Map Services](http://server.arcgis.com/en/server/latest/publish-services/linux/common-reasons-for-using-map-services.htm)

[Web Map Service (Wikipedia)](https://en.wikipedia.org/wiki/Web_Map_Service)

[Web Feature Service (Wikipedia)](https://en.wikipedia.org/wiki/Web_Feature_Service)