

2016-2017 Strategic Plan Update for the Indiana Geographic Information Office

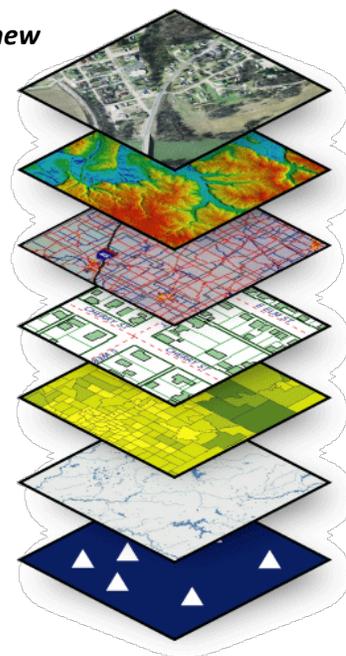
This strategic plan will identify and describe the steps necessary to build the physical, social, and administrative infrastructure necessary for the public, government, business and academic sectors to effectively discover, access, share, manage, and use digital geographic data throughout Indiana. This strategic plan consists of:

- An introduction to provide context for the plan
- A vision for the future of Geographic Information technology in Indiana
- A description of the needs that will be satisfied by the implementation of this plan
- A mission that defines what must be done to ensure the success of the Geographic Information Office
- Values that shape the actions necessary to accomplish the mission
- A description of major accomplishments.
- Goals, actions, and projects to guide daily, weekly, monthly actions toward accomplishing the mission

INTRODUCTION

What is GIS? Simply put, GIS is a way of organizing database records by tying them to geographically synchronized slices of the world so that “where” questions can be asked and answered. For example:

- ***Where in Indiana are parcels of land that would be perfect for a new Honda plant [June 2006]?*** Where in Indiana do land parcels exist with specific characteristics of land acreage, assessed value, community demographics (education, unemployment, household income), accessibility to interstate ramps and railroads, that would benefit a Honda plant? It turns out that GIS was able to answer that question – Decatur County. Mary Dickman, Decatur County Auditor's Office, said "...property information requests that used to take a couple of weeks are now answered in a matter of minutes." ¹
- ***Where across 32 Indiana counties should tornado damage response efforts be focused [Fall, 2002]?*** An Indianapolis-Marion County GIS Team responded immediately to support emergency response and disaster recovery efforts. They created maps for workers unfamiliar with the affected areas. They generated forms and maps for field crews to document the extent and value of property damage. The results helped local emergency



¹ The Indiana Geographic Information Council. “How Are People Using GIS?” 15 Dec. 2008 <<http://www.in.gov/igic/realworld/index.html>>.

management, public safety, public transit, public works, field inspectors, SEMA and FEMA coordinate their efforts more effectively.²

- **Where are Emerald Ash Borers infesting Indiana trees [Ongoing]?** Using the GIS improves the chances of eradicating and preventing further spread of the Emerald Ash Borer by:
 - Reducing the time spent analyzing problem areas, planning a response, and enacting those plans
 - Improving the quality of analysis with more accurate information
 - Providing an effective tool to keep employees and supervisors informed of the project status
 - Improving communication and relations with the public
 - Allowing foresters, entomologists, other DNR staff and project managers statewide to work together on management plans and make decisions without leaving their offices.³
- **Where is the weather making Hoosier roads unsafe [Ongoing]?** INDOT developed a GIS application called the Road Weather Information System (RWIS) and made it available via Ingo's web portal. The site pulls data from weather sensors across the state every fifteen minutes to create maps showing the most recent information. There are currently 30 sensors online with new ones being added as they become available. During a single large snow storm in December 2004, the site had tens of thousands of visitors over the five days snow was on the ground. Hoosier drivers were able to make intelligent, well-informed decisions about their travel plans.⁴



In fact, GIS has provided answers to these questions specifically and to many other “where” questions, to the benefit of Indiana citizens.

Geographic Information Technology also informs public policy. R.W. Greene, in a book about Public Policy says that “The realization is growing that almost everything that happens in a public policy context also happens in a geographic one: transportation planners, water resources studies, education subcommittees, redistricting boards, planning commissions, and crime task forces all must consider questions of *where* along with the usual ones of how, and why, and how much will it cost. GIS, by answering the first question, helps to answer the others.”⁵

In fact, decisions based on geospatial data (addresses, water valves, natural resource areas, roads and bridges, census data) are made at all levels of government as well as in public and business communities across the United States. It is therefore critical that the information be accurate, current, complete, accessible, and well organized. Geospatial Technology, often referred to as GIS, provides “the means to assemble geographic information that describes the arrangement and attributes of features and

² The Indiana Geographic Information Council. “How Are People Using GIS?” 15 Dec. 2008 <<http://www.in.gov/igic/realworld/index.html>>.

³ The Indiana Geographic Information Council. “How Are People Using GIS?” 15 Dec. 2008 <<http://www.in.gov/igic/realworld/index.html>>.

⁴ The Indiana Geographic Information Council. “How Are People Using GIS?” 15 Dec. 2008 <<http://www.in.gov/igic/realworld/index.html>>.

⁵ Greene, R.W.. “GIS in Public Policy”, ESRI Press, Redlands, CA. June 2000. p. xii.

phenomena on the Earth”.⁶ Organizing and integrating data by location is both natural and powerful, due in part to the pervasiveness of location data (as much as 85% of government data has a geospatial component) and in part because data patterns are much easier to see and understand when represented graphically as maps.

Federal level GIS planning has been articulated as the National Spatial Data Infrastructure, or NSDI. In Circular A-16, the U. S. Office of Management and Budget, under the direction of then director Mitchell E. Daniels, Jr., described the NSDI as the “technology, policies, standards, human resources and related activities necessary to acquire, process, distribute, use, maintain and preserve spatial data”.⁷ While the significance of each of these components and a plan for implementation at the state and local level has not been developed, it is understood that a national spatial data infrastructure will only occur as the result of integrating GIS at the state and local levels. In fact, The Fifty States Initiative recognizes “that it will not be possible to build the NSDI without taking advantage of the day-to-day efforts of state and local governments, and other stakeholder groups in the states. This requires effective statewide coordination mechanisms that routinely contribute to the development of the NSDI.”⁸



The State of Indiana has taken the first steps toward implementing a Statewide Spatial Data Infrastructure (SSDI) by passing a law that, among other things, creates the position of state Geographic Information Officer (GIO), ascribes duties to that officer, and establishes a fund to be used to promote Geographic Information activities in the state. In late October 2007, Indiana’s first GIO was hired.

In addition, statewide geospatial technology has been promoted in Indiana by several grass roots efforts in Indiana since about 1990, first by Indiana State GIS Forum, then by the Indiana GIS Initiative, and, since 2000 when its establishment was officially recognized by gubernatorial proclamation, by the Indiana Geographic Information Council (IGIC).

The aggregated impact of these efforts has significantly increased the value of geospatial resources in Indiana.

VALUE OF GIS

While the value of better data (comprehensive, current, accurate, and accessible) may be intuitive, the value must nonetheless be confirmed by measurement. For example, a study conducted by researchers from the McCombs School of Business at the University of Texas and Indian School of Business, which looked at industry sectors, estimated that insurance companies could realize a 105% return on equity (ROE) as a result of a 10% improvement in data quality and mobility.

Other studies which focused on geographic information and supporting technologies found similar positive relationships between cost and benefit:

⁶ National Research Council, Mapping Science Committee, “Toward a Coordinated Spatial Data Infrastructure for the Nation”, 1993.

⁷ U. S. Office of Management and Budget, Circular No. A-16, Revised, August 19, 2002.

⁸ Federal Geographic Data Committee, “2008 NSDI CAP Program Announcement Number 08HQPA0002”, 2007.

- A 2008 Indiana ROI study concluded that **the return on investment of statewide orthophotography acquired in 2005 was 34:1** in less than three years of use, and supported \$1.7 billion in local, regional, and statewide projects. (Jill Saligoe-Simmel, 2008).
- Analysis performed by a team from Richard Zerbe and Associates which focused on the costs and benefits of the development and use of GIS within King County, Washington agencies determined that **“GIS technology appears to be an efficient, highly beneficial investment for King County.** The full report presents various figures, but the most conservative estimate found that the use of GIS produced approximately \$775 million in net benefits over the eighteen year period from 1992 to 2010.” (Richard Zerbe and Associates, 2012).
- A 2007-2008 analysis performed by the Geospatial Information Technology Association (GITA) on behalf of the Iowa Geographic Information Council, calculated a **20 year Net Present Value of \$271 million associated with the costs and benefits of the geospatial information technology** for all 99 counties of Iowa, 11 state agencies, three utilities plus Iowa One Call, and consulting firms.” (Stewart, 2008).

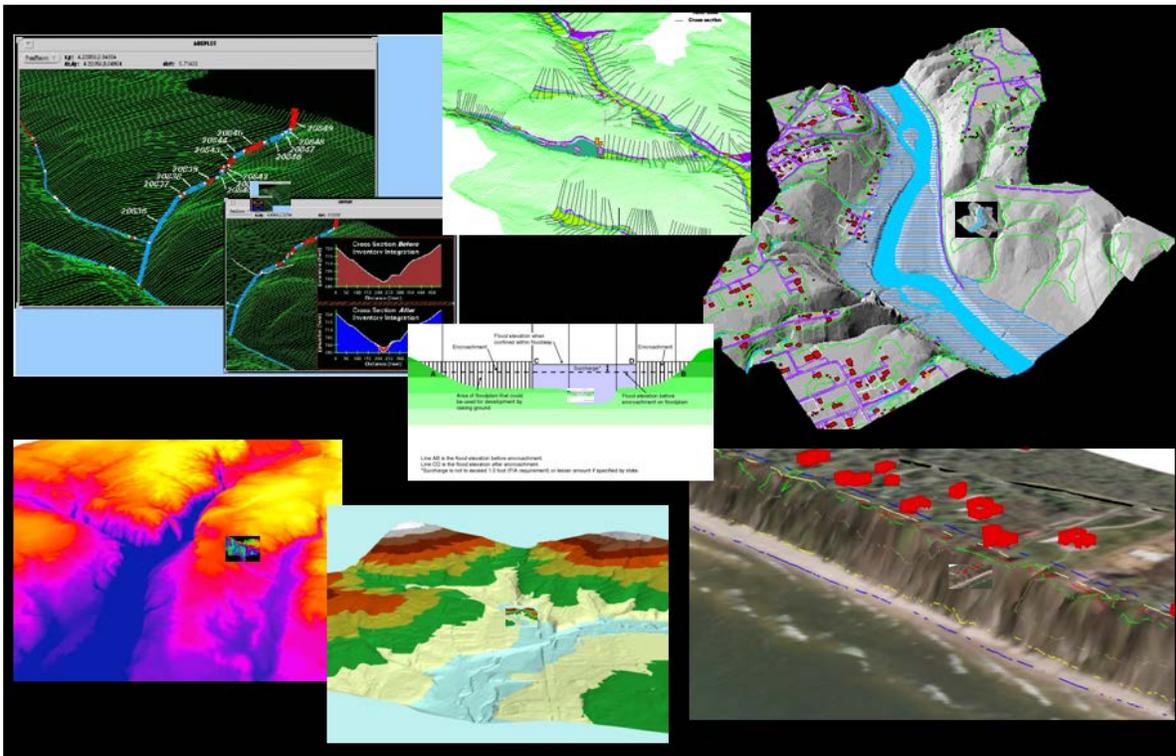
Another way to look at value is through the eyes of the beneficiaries. Here is a sampling of testimonials about how the orthoimagery program made accessible by the IndianaMap has helped Hoosier citizens and businesses:

- “I wanted to again say a very big thanks for sending us the 2012 photography a little ahead of schedule. It was very important in helping us to complete our wind farm analysis project. We not only completed the project on time under a very, very tight schedule but we did so in a way that won praise from the Commissioners and from the public. At one point during my presentation I even said that I was going to make a shameless plug for my department then proceeded to explain to the Commissioners and to the public how the County could not have done the countywide analysis without the use of GIS. I also told the Commissioners of your efforts to help us get the photography early and noted it as one good example of State-Local cooperation.”
- “Providing the orthophotography in the IndianaMap tool is a bonus for our region in promoting economic development. Consistently the photography is utilized in a myriad of transportation, environmental and economic planning projects. The photography was utilized in corridor planning initiatives by consultants and our agency.”
- “...we are a small firm that frequently competes against larger firms with many more resources. The high resolution photography allows us to provide a highly professional product that compares favorable against work done by larger national companies. We believe that this levels the playing field and allow us to capture more projects, keeping projects and jobs in Indiana.”
- “The money saved has been tremendous, but the bigger issue is how many projects have become a reality because of the availability of this imagery. Many projects that we have done require good imagery for many reasons, and the cost of obtaining this imagery would have been prohibitive without having access to the publicly paid for imagery. Any way you look at this has



been a positive use of government funds to promote GIS and business in Indiana.”

- “There is just no way to estimate the cost. The value derived from the orthophotography is overwhelming, and is multiplied throughout our operations in many ways time and again.”
- “The free distribution of aerial photos allows us to pass on the savings directly to the various units of government that we work for.”
- “Without the [ortho] photos the projects listed above would still be ideas. The photography has allowed for these projects to begin. The money saved has allowed our office to operate without risk of budget cuts. We cannot afford to spend money on aerial photography due to our county size and the current budget crisis.”
- “The orthophotography has helped save communities money by allowing us (civil engineering consultants) to use more accurate data. Most of the studies we have used the data on do not have budgets for aerial photography and elevation data so we would have had to use the next best available data which may have been out dated or less accurate.”



The value of GIS is documentable and significant, yet, there is much work to be done before the value of GIS in Indiana can be fully realized.

- Data sharing practices between local, state, and federal government are inconsistent at best and non-existent in many situations. Moreover, some counties have adopted a business model that charges a fee, even to other governments, for copies of geographic information beyond the

costs directly associated with the copying. The result is that Indiana citizens pay twice for that information. We must establish a data exchange process between local and state government that best serves all Hoosiers. In addition, the Indiana Access to Public Records Act (APRA) should be changed to treat “electronic map” (GIS) data the same as all other public information. Currently APPRA allows government agencies to charge an amount for a copy of electronic map data that is equal to the direct cost to create the copy **plus a reasonable percentage of the cost to maintain the geographic information system that produced the data.** This additional system cost exists only for geographic information, even though this data is public information.

- While some standards have been developed for a few key data sets, a comprehensive set of standards for geospatial data does not exist. As a result, data sharing and data integration processes are unnecessarily complex. A comprehensive set of recommended data standards must be created and distributed to all Indiana GIS data creators so that data can be more easily shared and integrated.
- Although the GIS server environment has been consolidated within the state campus, the GIS desktop software is procured agency-by-agency with little chance to lower the expense to state government through cost sharing. It should be consolidated under the Geographic Information Office within the Indiana Office of Technology. The GIO must continue to pursue an enterprise agreement with ESRI, the state’s GIS software provider, for an enterprise agreement which benefits all state agencies.
- Many state government agencies (Department of Health, FSSA, IDEM, DNR, INDOT, and others) have need for a land parcel data set and other key data created at the local level but integrated to cover the state. The collection and integration of local government data is not currently controlled by any consistent and on-going process.
- Governments are not the only users of Geographic Information. Universities, non-profits, and for profit businesses have an interest in GIS. Strategic partners, particularly the Indiana Geological Survey, the Indiana Business Research Center, the Indiana Geographic Information Council, and the State Data Library currently provide or facilitate public access to Indiana’s spatial data assets. We must, however, be mindful of ways to expand and improve that access by providing more data, higher quality data, new tools, new access points, and new modalities of access.

The following pages will describe how the Indiana Geographic Information Office will assist individuals, governments, organizations, and businesses to work in partnership to focus resources to create and maintain the components of the IndianaMap, the SSDI for Indiana.

VISION

The vision of the Geographic Information Office is to contribute to the quality of Indiana as a place to live and work by cultivating statewide geographic information resources (relationships, data, and technology) so that individuals and organizations across the state and at all levels of wealth and technological sophistication have suitable access to accurate and relevant geographic information and technology.

MISSION

The mission of the Geographic Information Office is to facilitate the development, maintenance, distribution, and use of comprehensive statewide geographic data and geospatial



technology to empower governments, universities, and businesses to address issues affecting the Indiana's physical, economic, and social well-being.

VALUES

The following values will guide decisions about GIS in Indiana:

- Geographic information is a state asset. Framework data, in particular, should be seamless across the state, current, accurate, and freely and conveniently accessible.
- Data, as one of the few things in life that increase in value the more they are used, should be created once, maintained as necessary, and used many times.
- Business and social purposes should drive IndianaMap development.
- All levels of government – federal, state, county, and city – as well as universities, and the private sector should be collaboratively involved in planning, creating, distributing, funding, and maintaining Indiana GIS data and tools.
- GIS data should be freely accessible, while ensuring that personal privacy and confidentiality is protected and maintained as defined by federal and state law.

ACCOMPLISHMENTS (For more details, see Appendix A)

- **Orthophotography/LiDAR**
 - The state of Indiana completed a three-year project to provide 1-foot resolution orthophotography and elevation data for the entire state, and are beginning a new three-year update project resolution (2016-2018).
- **Data Sharing**
 - Indiana is leading the way in extending the value of its GIS data by setting up a process that collects and aggregates local geospatial data, distributes that data within state government and to the public, and contributes the data to federal data portals. Since its inception, **92** of our **92 (100%)** counties have agreed to share their information so that Indiana citizens and others will receive the added benefit of these data available as statewide data sets.
- **IndianaMap**
 - IndianaMap is the largest publicly available collection of Indiana geographic information system (GIS) map data.
- **Indiana Broadband Mapping**
 - Program is a multi-year, multi-agency effort to map areas in the state that are currently served by the state's 100+ broadband providers. The results are integrated into broadband availability maps, and provide solid foundation for future broadband deployment efforts. **(Completed- December 31, 2015)**
- **National Hydrography Dataset (NHD)**
 - Indiana is currently improving the accuracy and level of detail of the data about the surface waters in the state.
- **GIS Server Consolidation**
 - State agency GIS servers and associated software have been consolidated resulting in elimination of redundancy while increasing capability.
- **GIS Enterprise License Management**
 - The State of Indiana now officially has an EA (Enterprise Agreement) with Esri.

- **GIS Helpdesk**
 - Technical GIS support is offered to State of Indiana agencies that do not have internal Helpdesk GIS Systems.
- **GIS Events**
 - GIS DAY at the State (yearly)
 - GIS User Group Meeting (yearly)
 - GIS Coordination Meetings (quarterly)
- **GIS Training**
 - Fundamentals of GIS
 - Intermediate GIS Concepts
 - Advanced GIS (Data Management in the Geodatabase)
 - Specialized Training
 - ArcGIS Online
- **Continuous Coordination**
 - GIS coordination occurs across levels of government through active participation on various coordinating GIS committees, including IGIC Legislative Committee, IGIC IndianaMap Steering Committee, IGIC Waters Works Group, IGIC Executive Committee, IGIC Board of Directors, Indianapolis Mapping and Geographic Infrastructure System (IMAGIS) Board of Directors, SAVI Board of Directors, North East Indiana GIS User Group, and National States Geographic Council Data Sharing Workgroup.

STRENGTHS, WEAKNESSES, OPPORTUNITIES, AND THREATS (SWOT)

The section identifies Strengths and Weaknesses (internal) and Opportunities and Threats (external) related to the work of the Geographic Information Office.

Strengths

- Support from State Chief Information Officer. This is one of nine Coordination Criteria in the “State Model for Coordination of Geographic Information Technology” developed by NSGIC (National States’ Geographic Information Council). Indiana has met 8 of the 9 criteria, with Sustainable Funding as the one criterion that has not been met.
- Strong relationships with key GIS decision makers throughout Indiana (federal, state, and local government, universities, and private sector).
- The Geographic Information Office is recognized as the legitimate authority for GIS policy in Indiana.
- 100% participation of counties in the Indiana Data Sharing Initiative.
- Close working relationship with the Indiana Geographic Information Council.
- The GIS community in Indiana is, by and large, willing to cooperate and partner to accomplish statewide goals.
- I.C. 4-23-7.3 established a GIS Mapping and Standards fund as the financial vehicle for GIS project funding.

Weaknesses

- Lack of sustainable funding for statewide GIS projects such as orthophotography. Although Indiana legislators created a GIS Fund as part of I.C. 4-23-7.3, they did not allocate funding.



- The GIO has no direct authority over GIS budgets of other state agencies. Planning and cost sharing efforts are only voluntary.

- The office is staffed with 2.5 full time employees (the Geographic Information Officer, GIS Project Manager and ½ time GIS Administrator) Therefore opportunities are missed to support smaller agencies and organizations with map

creation and application development.

- Although the state's GIS server infrastructure has been consolidated, we do not have a dedicated server administrator who has a background in both GIS server administration and also IT. This creates a risk point and sometimes results in delayed response to normal day-to-day requests. We currently are paying a 3rd party to provide the GIS server expertise while developing replacement skills within IOT.

Opportunities

- Develop or extend relationships with key GIS decision makers in other states and at national level.
- Counties are willing to share costs of an ongoing ortho photography program. This will reduce the cost to the state and increase the possibility that such a program could exist.
- There is an opportunity to work with elected officials at the county level to influence legislative funding for GIS activities and to increase communication between state and local government.
- We have an opportunity to better serve small, resource limited agencies and organizations by creating maps and map-based applications. The Geographic Information Office is currently not staffed to provide these services, but could with the addition of one full time GIS technician/developer.
- More and more mobile handheld devices are being used in government and elsewhere to conduct business. GIS applications are needed for these devices as on other computing platforms. Many State government agencies have adopted the use GIS on mobile handheld devices. There is an opportunity to provide benefit to agencies having a need for GIS on mobile devices by understanding and employing best practices for this application area. In addition, mobile location applications provide an opportunity to generate revenue to help support creation and maintenance of statewide GIS data resources, such as orthoimagery.

Threats

- The optimum refresh cycle for orthophotography is three years. No persistent funding mechanism exists to refresh this data beyond 2016.
- The Indiana Department of Transportation no longer provides financial support of the IndianaMap web portal. However the IndianaMap has grown to be “the go to” geospatial data resource for the public.
- Most geographic information data sets change continually. Archiving GIS data is therefore a challenge, and involves both technical and policy issues. Moreover, this is an area that has yet to develop best practices. However, these data have the potential to provide a powerful visual of change over time.
- The provision in APRA that allows government agencies to charge more for copies of GIS data than the direct cost of creating the copy (as is the case for all other public information in Indiana) creates an environment in which cash strapped agencies view the data as a potential revenue generator. However, the value of the data is directly proportional to the amount it is used and it is used less as the cost for a copy increases. Moreover, the consequence of one government paying another government for the same public information is that taxpayers must pay for the data twice. GIS data, like all other public information, should be freely and conveniently accessible to those who paid for its creation and maintenance – the public.

GOALS (from I.C. 4-23-7.3)

The state GIS Officer shall do the following:

1. Facilitate cooperation between units of the federal, state, and local governments.
2. Integrate GIS data developed and maintained by state agencies and political subdivisions into the statewide base map.
3. Develop and maintain statewide framework data layers associated with a statewide base map.
4. Provide public access to GIS data and framework data in locations throughout Indiana.
5. Serve as the Geographic Information Officer for state agencies.

OVERARCHING GOALS FOR 2016

- Increase access of Ortho/LiDAR data by 25% in 2016 compared to 2015. Metric: Number of successful file download requests from Indiana Spatial Data Portal
- Increase access of IndianaMap data by 25% in 2016 compared to 2015. Metric: Number of page visits to maps.indiana.edu
- Establish technology to measure use of GIS by Indiana State Government Agencies by 4/1/2014. Metric: Total hours of usage of desktop GIS software.
- Continue to have 100% participation of counties in the Indiana Data Sharing Initiative.

ACTION ITEMS AND RELATED TASKS

To accomplish its goals, the GIO will establish actions that are clear and concise; attainable; measurable; and have a target date for completion.

1) Facilitate cooperation between units of the federal, state, and local governments.

- a) Continue work with committees, boards, and work groups. **(Ongoing)**
- b) Attend NSGIC annual meeting with the purpose of learning best practices and to advocating policy on behalf of Indiana. In particular, GIO will advocate for federal funding for state and local government GIS activities. **(October 2016 Annual Conference – Indianapolis, IN)**
- c) Meet quarterly with Indiana’s USGS liaison to discuss potential federal grants and to stay current with federal GIS initiatives. **(Ongoing, quarterly)**

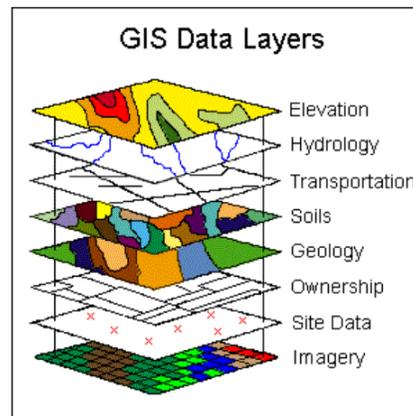
2) Integrate GIS data developed and maintained by state agencies and political subdivisions into the statewide base map.

- a) Continue to encourage all 92 counties to share their GIS data through face-to-face meetings and by finding funding that they can use for GIS operations. **(Ongoing)**
- b) Follow-through with the current GIS Data Sharing Initiative by harvesting data on a monthly basis.
- c) Look for funding to continue support of the GIS Data Sharing Initiative.
- d) Work with legislators to change APRA so that the cost of a copy of electronic map (GIS) data is consistent with the cost of all other public information.

3) Develop and maintain statewide framework data layers associated with a statewide base map.

This action item is heavily dependent on available funding; therefore many of the tasks are related to finding funds. These data layers and associated costs are:

- Orthophotography (\$550,000 per year)
- LiDAR (\$2.8 Million in 2019 refresh)
- Hydrography [Local-resolution NHD & GNIS updates, regulated drains] (\$1.5 million remaining)
- Cadastre, Boundaries & PLSS [parcels, county boundaries, tie cards] (Including in Data Sharing Initiative)
- Elevation & Geodetic Control [Height modernization (\$1.5 million one-time), Local SPCS standards, state & local government control networks]
- Streets & Addresses [part of the Data Sharing Initiative (\$184,000)]



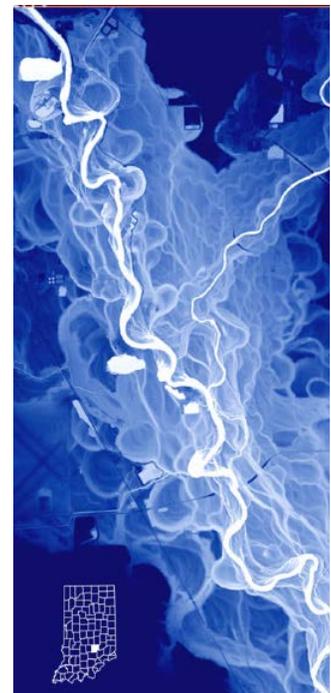
- a) Continue to work with IGIC legislative committee to inform legislators and identify potential legislative champions to support funding for GIS activities. **(Ongoing)**

- b) Continue to look for grant and partnering opportunities to support framework development/maintenance projects. **(Ongoing)**
 - c) Advocate at NSGIC and elsewhere that the National Map model should begin with local data and should be funded appropriately at the local level. **(Ongoing and at NSGIC annual meeting)**
- 4) Provide public access to GIS data and framework data in locations throughout Indiana.**
- a) Continue to work with IGIC and others to find funding for the IndianaMap Web Portal (\$120,000 per year minimum) **(Ongoing)**
 - b) Investigate other venues from which to disseminate Indiana GIS data (Ongoing)
- 5) Serve as the Geographic Information Officer for state agencies.**
- a) The State of Indiana now officially has an EA (Enterprise Agreement) with Esri.
 - i) We owe Esri \$500,000 per year (for the next three (3) years) and we must create a “pay for service” charge back mechanism.
 - b) Assess the current enterprise server environment to ensure optimum operation. (Ongoing)
 - c) Investigate and evaluate emerging software solutions and platforms such as ArcGIS Portal and Google MapMaker. **(On-going)**
 - d) Perform agency-by-agency GIS needs assessment and cost/benefit. **(January through June 2016)**
 - e) Establish map publishing standards for paper and digital products. **(Initial standards by September 1, 2016 then ongoing)**
 - f) Evaluate agency geospatial projects to make sure that each project is following state guidelines and is providing maximum value. **(Ongoing)**

CONCLUSION

Indiana geospatial activities are successful due to effective collaboration between the Indiana Geographic Information Office, the Indiana Geographic Information Council, local and federal government partners, and state universities. On-going as well as short and long term opportunities exist to improve or increase:

- Cooperation between and among units of the federal, state, and local governments.
- Integration of GIS data developed and maintained by state agencies and political subdivisions into the statewide base map.
- Development and maintenance of statewide framework data layers associated with a statewide base map
- Provision of public access to GIS data and framework data in locations throughout Indiana.
- The value of the Geographic Information Office to state agencies.



This strategic plan defines the vision, mission, values, goals, and action items to incrementally improve the geospatial resources in Indiana.

Image courtesy of the Indiana Geological Survey

Appendix A. ACCOMPLISHMENTS

With a mission to facilitate the development, maintenance, and distribution of comprehensive statewide geographic data, the Indiana Geographic Information Office has accomplished a great deal as evidenced by the following projects.

2011-2013 ORTHOPHOTOGRAPHY/LiDAR

One Time Funding: \$4.6 million (base project) contributed by INDOT, OCRA, IDHS, USGS, USDA, NGA, NTIA

Statutory Responsibilities:

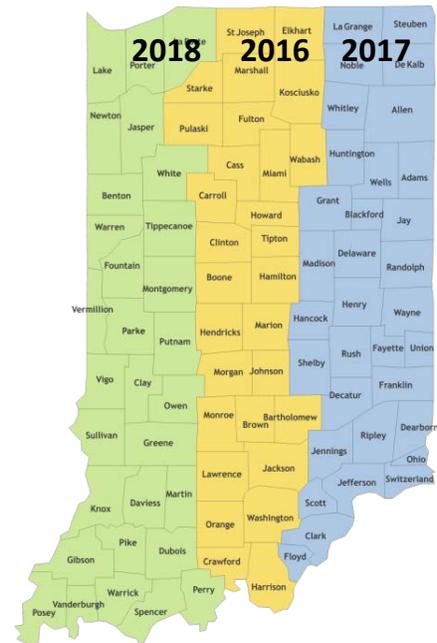
- ✓ Facilitate GIS data cooperation
- ✓ Integrate GIS data into the statewide base map
- ✓ Develop and maintain statewide data layers
- ✓ Provide public access to GIS data
- ✓ Serve as Geographic Information Officer for state agencies

Orthophotography is an aerial photo which can be used as a map to:

- Measure Distance
- Calculate Area
- Determine Shapes of Features
- Calculate Directions
- Determine GPS Coordinates
- Perform Change Detection

The state of Indiana performed three-year project to provide 1-foot resolution orthophotography and elevation data for the entire state of Indiana. The imagery and elevation data is used by numerous state agencies, and is shared with county governments for use in applications such as tax assessment, property management, economic development and flood control analysis. These data are also available to the public via the IndianaMap.

A south-to-north acquisition was performed in 2011 to complete approximately 30 of the 92 counties in the center column of the state. The eastern counties were flown in 2012 and the remaining western counties will be flown in spring 2013. The statewide program also includes new U.S. Geological Survey (USGS) compliant light detection and ranging (LiDAR) elevation data.



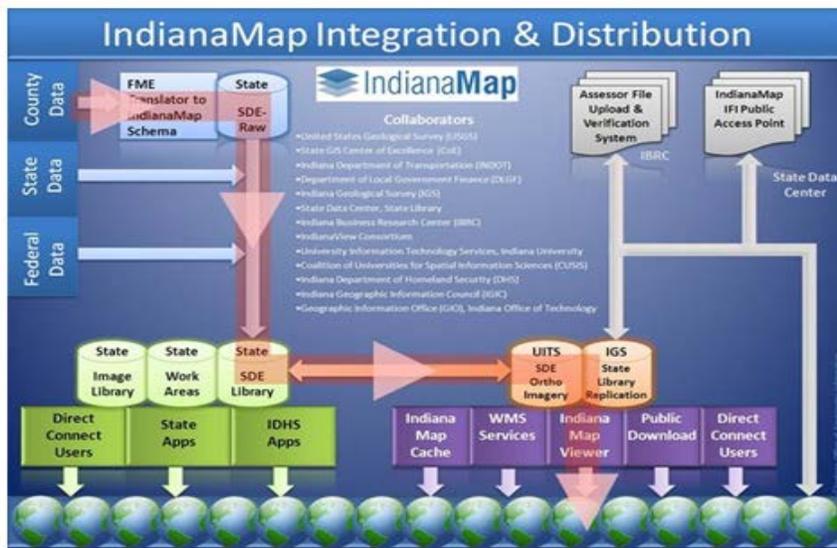
[Full program.](#)

DATA SHARING INITIATIVE (ONGOING)

One Time Funding: \$1.8 million contributed by Indiana Department of Homeland Security and the National Telecommunications and Information Administration (NITA)

Statutory Responsibilities:

- ✓ Facilitate GIS data cooperation
- ✓ Integrate GIS data into the statewide base map
- ✓ Develop and maintain statewide data layers
- ✓ Provide public access to GIS data
- ✓ Serve as Geographic Information Officer for state agencies



Indiana has created a model for the nation of how to share and distribute state and local data sets. This benefits Hoosiers by saving substantial tax payer funds by “reusing” the same maps and data many times, and benefits others by strengthening our national geospatial data holding.

The Indiana Geographic Office joined with other GIS partners to develop and

publish four new statewide geographic data layers using existing county data: land parcels, address points that connect a street address with a geographic coordinate, street centerlines with street name and address ranges, and local administrative boundaries such as school and election districts. Since its inception, 92 of our 92 counties (**100%**) have agreed to share this information so that Indiana citizens and others will receive the added benefit of these data available as statewide data sets. As a result of this Data Sharing initiative, these layers are already being used by State Police, Indiana Department of Homeland Security, Department of Natural Resources, and the Secretary of State’s office, as well as Indiana universities and the private sector.

These new data layers, along with other geographic information are freely available to the public from the IndianaMap

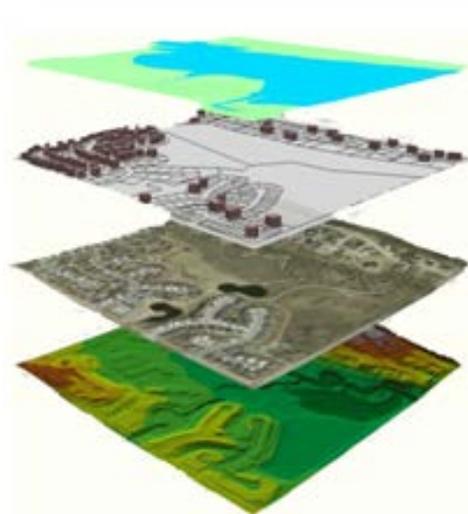


(www.IndianaMap.org) and, as a result, have effectively lowered the cost of doing business in Indiana as documented in a recent return on investment study (<http://www.igic.org/projects/indianamap/IndianaMapNews.pdf>). Indiana companies have recognized the benefit of over 230 layers of publicly available, highly accurate, and current geospatial information offered for viewing and download at the [IndianaMap](http://www.IndianaMap.org).

The true value of the statewide data sharing initiative was revealed recently when Clark County needed to respond quickly to the March 2012 tornados that devastated parts of southern Indiana. “We wanted to be able to quickly produce field maps and other geospatial data products to help our community, the Indiana Department of Homeland Security, and FEMA understand and best respond to the rapidly changing situation in our county,” said Vicky Kent Haire, Clark County Assessor. “Having accurate land parcels, road centerlines, and other data already integrated in statewide data layers before the event saved a lot of time in a situation in which every minute was critical.”

DATA LAYERS

Four important geospatial data layers have been compiled from data maintained by various county agencies in Indiana are:



Address Points

http://maps.indiana.edu/Infrastructure/Streets_Address_Points_IDHS.html

Street Centerlines

http://maps.indiana.edu/Infrastructure/Streets_Centerlines_IDHS.html

Land Parcels

http://maps.indiana.edu/Reference/Land_Parcels_County_IDHS.html

Administrative Boundaries

http://maps.indiana.edu/Government/Boundaries_Miscellaneous_IDHS.html

Metadata and the download link for the four layers can be found at the [IndianaMap](http://www.IndianaMap.org).

Data Specifics

All Indiana counties have committed to share GIS data, resulting in:

- Over 6,800 Jurisdictional Boundaries
- 616,888 Street Centerlines Segments
- 3,117,569 Address Points
- 3,576,546 Land Parcels

BENEFIT OF THE PROJECT

Service to Citizens - Response to large natural disasters, like recent Indiana flooding, often takes coordinated response from local officials, responders, volunteers, Indiana National Guard, local and State Police, Federal agencies, the Red Cross, Animal Rescue, and many more - and that takes coordinated data. In a time when every second counts, the [IndianaMap](#) can help assure those who need it are reading from the same playbook - they'll have consistent, quality, timely information for decision-making. The IndianaMap helps coordinate information for response to help save lives and property of those communities that participate.

"GIS, in this response, on this disaster and other disasters, is extremely valuable, as you know. We will certainly use this data, because we like to use the best available data and that's the data that's most always State and Local. Because a lot of the [emergency response] people that come into a disaster are from other states, they're just simply not familiar enough to know that Brown County is south [of Indianapolis] and Hamilton is north. They just don't know that sort of thing. So we answer an awful lot of questions. We also look analytically at where people are who have been impacted by disasters, and that's what we've done here." - Sean Donovan, Joint Field Operations, FEMA, speaking about the value of State and Local GIS data.

MEDIA COVERAGE

The Long and Winding Road – To Data Sharing Success in Indiana
[FME Insider Newsletter](#)- Fall 2012

A Very Spatial Podcast

A Very Spatial Podcast is a weekly source for information on Geography and geospatial technologies. Geography touches most things done every day, but rarely thought of. This podcast seeks to point out how it is filtering into digital and daily lives.

[Dare to Dream - Indiana Map](#)

[A VerySpatial Podcast – Episode 192](#) (Full Episode)

[IndianaMap](#) (ONGOING)

Funding: \$3.0+ million contributed by INDOT, NTIA, Indiana Geological Survey, Indiana University

Statutory Responsibilities:

- ✓ Facilitate GIS data cooperation
- ✓ Integrate GIS data into the statewide base map
- ✓ Develop and maintain statewide data layers
- ✓ Provide public access to GIS data
- ✓ Serve as Geographic Information Officer for state agencies

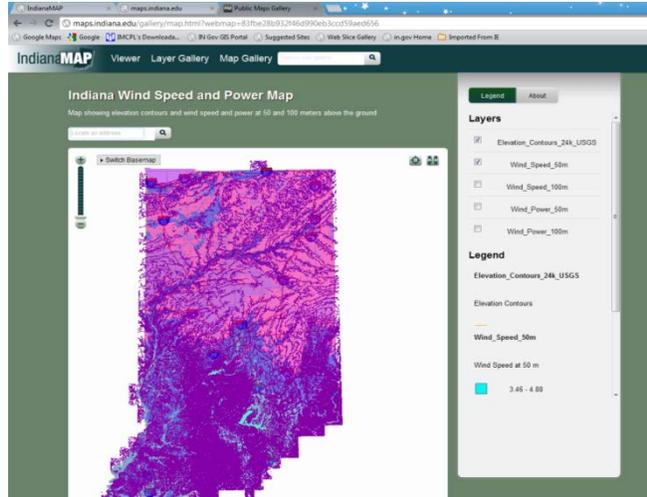
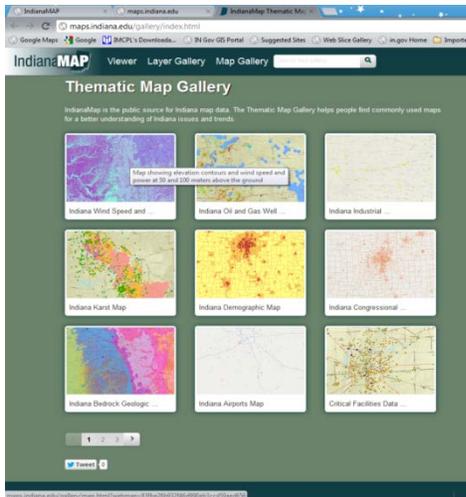


The IndianaMap is an investment in Indiana. It is a diverse and flexible system that provides information about Indiana. It is a utility providing a modern information system to a large community of users. The IndianaMap is a trustworthy source of geospatial data and services that provides users with both documented and authoritative information.

IndianaMap is the largest publicly available collection of Indiana geographic information system (GIS) map data. It is made possible by an alliance of partners from federal, state, local organizations and agencies, and universities with the IndianaMap. You can:

- Access easy-to-use interactive web maps from a computer or mobile device
- Select from a gallery of predefined maps to view or customize
- Download free GIS data and metadata
- Learn about IndianaMap GIS projects, initiatives, and news
- Discover and explore and more...

www.indianamap.org



INDIANA BROADBAND MAP (PROJECT COMPLETED)

www.IndianaBroadbandMap.com

The data on the broadband website was last updated October 1, 2015.

Funding for this website and project was provided by a grant from the National Telecommunications and Information Administration (NTIA). The grant and funding ended December 31, 2015. The information on this website will not be updated until new funding is secured. In the meantime, we are keeping this site up as a service to the citizens of Indiana.

One Time Funding: \$3.2 million contributed by National Telecommunications and Information Administration (NITA)

Statutory Responsibilities:

- ✓ Facilitate GIS data cooperation
- ✓ Integrate GIS data into the statewide base map
- ✓ Develop and maintain statewide data layers
- ✓ Provide public access to GIS data
- ✓ Serve as Geographic Information Officer for state agencies

The Indiana broadband mapping program is a multi-year, multi-agency effort to map areas in the state that are currently served by the state's 100+ broadband providers. The results are integrated into a national broadband availability map that provide a solid foundation for future broadband deployment efforts at the state and national level.

"Broadband access supports our economy, attracts businesses, and enables Indiana to be globally competitive. It improves the quality of life for Hoosiers through better communication and learning." Jim Sparks – Indiana Geographic Information Officer

The National Telecommunications and Information Administration (NTIA) issued the [State Broadband Data and Development Grant Program Notice of Funds Availability](#) Docket No. 0660-ZA (July 8, 2009) (NOFA), which defines broadband:

...two-way data transmission to and from the Internet with advertised speeds of at least 768 kilobits per second (kbps) downstream and at least 200 kbps upstream to end users, or providing sufficient capacity in a middle mile project to support the provision of broadband service to end users...

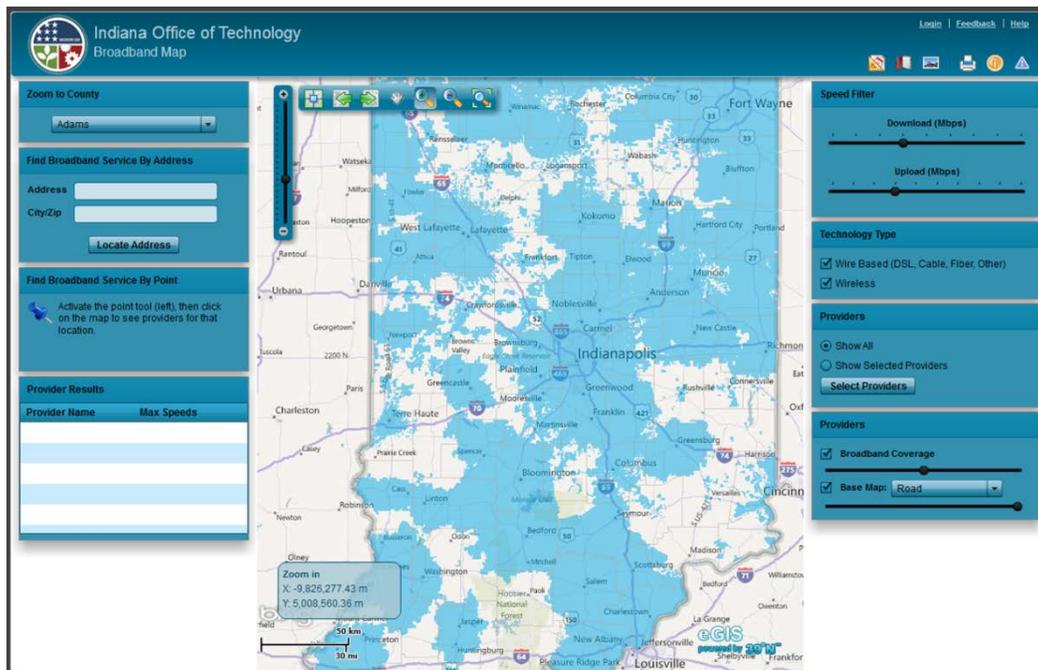
- The grant to Indiana was awarded 5 October, 2009 in the amount of \$1.3 million for a two-year project.
- The grant was amended in August 2010 to a new total of 3.2 million (second lowest of all states and territories) and the project was extended an additional 3 years.

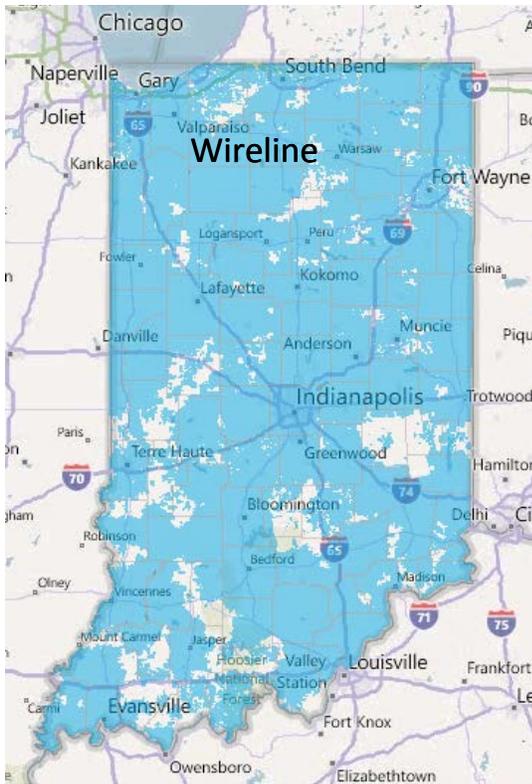


Pursuant to the Broadband Data Improvement Act (BDIA) and the NOFA, IOT must collect certain data regarding the availability of broadband services, the technology used to provide service, the speed of the service, and the location of certain broadband infrastructure. IOT is required to provide the data twice annually to the NTIA.

The results of this project can be seen on the National Broadband Map at www.broadbandmap.gov or from our own map application at www.indianabroadbandmap.com

The data on this website was last updated October 1, 2015.





NATIONAL HYDROGRAPHY DATASET (NHD) (Projected completion: January 2016)

One Time Funding: \$1.4 million (base project) contributed by Office of Community and Rural Affairs (OCRA)

Statutory Responsibilities:

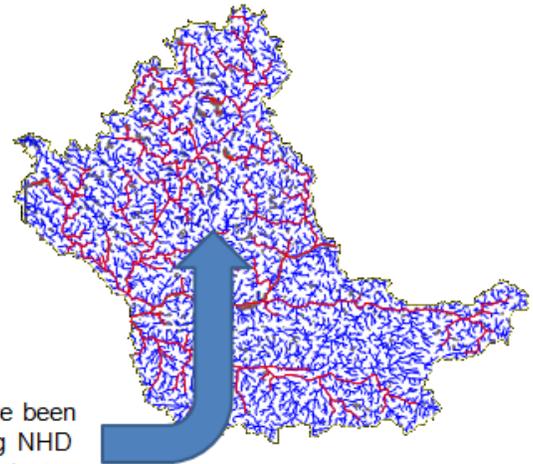
- ✓ Facilitate GIS data cooperation
- ✓ Integrate GIS data into the statewide base map
- ✓ Develop and maintain statewide data layers
- ✓ Provide public access to GIS data
- ✓ Serve as Geographic Information Officer for state agencies

The National Hydrography Dataset (NHD) is the surface water component of The National Map. The NHD is a digital dataset used by geographic information systems (GIS). It contains features such as lakes, ponds, streams, rivers, canals, dams and stream gages. These data are designed to be used in general mapping and in the analysis of surface-water systems.

In mapping, the NHD is used with other data themes such as elevation, boundaries, and transportation to produce general reference maps. The NHD is often used by scientists using Geographic Information Systems (GIS). GIS technologies take advantage of a rich set of attributes imbedded in the NHD to generate specialized information. These analyses are possible because the NHD contains a flow network that allows for tracing water downstream or upstream. It also uses an addressing system based on reach codes and linear referencing to link specific information about the water such as water discharge rates, water quality, and fish population. Using basic NHD features like flow network, linked information, and other characteristics, it is possible to study cause and affect relationships, such as how a source of poor water quality upstream might affect a fish population downstream.

Indiana Project

Indiana is currently improving the accuracy and density of our NHD. Watersheds are submitted to the USGS as the final step of the improvement process. These data can be obtained at <http://nhd.usgs.gov/data.html>.



Streams in blue have been added to the existing NHD (red) through this project

GIS SERVER CONSOLIDATION (COMPLETED)

Maintenance Funding: \$100 thousand contributed annually by participating state agencies

Statutory Responsibilities:

- ✓ Facilitate GIS data cooperation
- ✓ Integrate GIS data into the statewide base map
- ✓ Develop and maintain statewide data layers
- ✓ Provide public access to GIS data
- ✓ Serve as Geographic Information Officer for state agencies

State agency GIS servers and associated software were consolidated and centralized resulting in elimination of redundancy and increased capability. The costs of maintenance are allocated to agencies through a cost share arrangement based on level of use.

The GIO has improved communication and coordination within state government by creating a central library of geospatial data, distributing a GIS newsletter, organizing an annual information conference day for state employees and others (over 350 participants in 2014 and 2015), and creating a GIS SharePoint site to organize and distribute pertinent information about GIS for state employees (<https://myshare.in.gov/gis>).

Committees and Workgroups

Cadastre, Boundaries & PLSS Workgroup

Chair: Lorraine Wright, Consultant

Mission: To develop plans, standards, and technical implementation guidance for these IndianaMap framework data layers.

Objectives

- Develop data standards and identify appropriate standards-based data schema.
- Develop plans that include the following:
 - Inventory of existing data
 - Stakeholder data requirements
 - Data stewards
 - Costs
 - Work flow
 - Data transfer mechanisms (with support of Data Integration Workgroup)
 - Update frequency
 - Maintenance frequency
- Refine and maintain plans as necessary.
- Develop metrics and review status of framework data implementation as input to the biennial report published by the State Geographic Information Officer.

Accomplishments

- Completed the County Boundary Template, with five counties merging their data into the geodatabase.
- Formed a project sub-committee to investigate methodology to create a digital archive and viewing tool of historic Indiana Government Land Records
- Gave five workgroup presentations including the Purdue Road School, several IGIC events and an ISPLSF board meeting.

Data Sharing Committee

Chair: Shaun Scholer, City of Richmond/Wayne County Interlocal

Mission: To provide blueprints to guide the community of stakeholders on how to build and maintain the IndianaMap. To address policy issues and partnership agreements regarding data access and distribution, data security, and data exchange through an adopted Statewide Data Integration Plan.

Objectives

- Work with the Cadastral, Boundaries, PLSS Workgroup and the Street Centerline and Addresses Workgroup on the County Data Sharing layers.
- Work to advance and improve the results and applications of the ongoing County Data Sharing Initiative.
- Help promote the availability, quality, currency and use of Indiana’s Authoritative data layers by the wider community of geospatial data distribution outlets (e.g. OpenTopography Server, Google Earth/Maps, Bing Maps, OpenStreetMaps, ArcGIS.com, Esri Community Base Maps, and distribution through other IGIC Partners (USGS, NRCS, Purdue University, University of Notre Dame, BSU, ISU, WTH, Surdex/Vaultus, and others).
- Continue to support the development and evolution of new data standards and models that support data sharing and stewardship efforts across Indiana.
- Help advance the Local -> State -> Federal data sharing roll-up and data stewardship model.
- Help improve the documentation [metadata] and the discovery of Indiana’s local and state geospatial data through national portals like NSGIC’s GIS Inventory (Ramona), Data.gov, and the Geospatial Platform.

Accomplishments

Members participated in the Geospatial Cloud testing of IndianaMap Cadastral data [parcels] as part of the State’s FGDC Geo-Cloud CAP Grant. We also discussed the County Data Sharing Harvest Results and strategized how to share the Indiana Ortho-LiDAR program data through other channels, including Google, Bing, the Esri Community Mapping Program, AGO, NW Group – Vaultus, The SI Organization, DIELMO, and Others.

Elevation Workgroup

Chair: Dave Nail, US Geological Survey

Mission: To develop plans, standards, and technical implementation guidance for these IndianaMap framework data layers.

Objectives

- Develop data standards and identify appropriate standards-based data schema.
- Develop plans that include the following:
 - Inventory of existing data
 - Stakeholder data requirements
 - Data stewards
 - Costs

- Work flow
- Data transfer mechanisms (with support of Data Integration Workgroup)
- Update frequency
- Maintenance frequency
- Refine and maintain plans as necessary.
- Develop metrics and review status of framework data implementation as input to the biennial report published by the State Geographic Information Officer.

Accomplishments

- Open Topography Update (Phil Worrall): <http://bit.ly/Xwy86P>
The 2011-2013 LiDAR data was been delivered to Open Topography and is being loaded.
- Initial development of a LiDAR User's group portal <https://lidar.collaborate.org/dashboard>
- Workgroup members participated in the review and QA/QC of the 2011-2013 LiDAR data.
- Workgroup members participated in an Ortho-LiDAR training, hands-on workshop. "IndianaMap: 4-Band Imagery and Digital Elevation Model Applications" are available on IGIC's Dropbox folder: <https://www.dropbox.com/sh/4lwriozu8395htn/HBTkUMV4FY>
- IGIC exhibited and presented at Indiana's Society of Professional Land Surveyor's (ISPLS) Convention
- Workgroup members presented on several topics related to LiDAR, OpenTopography, LAS tools, and mobile applications at IGIC's 2013 annual GIS conference

GIS Response Corps Committee

Chair: Chris Severns, Indiana Department of Transportation, and Leane Kmetz, City of Westfield

Mission

To create an inclusive and representative statewide network of response corps members dedicated to:

- Enhancing accessibility to geospatial applications, technologies, and products which assist Emergency Management Practitioners in their decision making process in the event of an emergency.
- Help integrate geospatial data and technology into all-hazards emergency management planning, response and recovery.
- Creating a network of geospatial professionals across the state to support emergency management efforts.
- Encouraging use of geospatial data and technology among those working in Emergency Support Functions.
- Promote the standardization of mapping methods and tools to increase access and the value of geospatial data to First Responders.

Objectives

- Provide geospatial support in the event additional GIS resources are required to support emergency related missions across Indiana.
- Identify geospatial personnel, technologies, and products that are appropriate for the emergency event.
- Define processes and recommended data sources and technologies to support response and recovery phases of an emergency event.
- Train Response Corps volunteers and local emergency management staff on NIMS and the use of GIS best-practices for before, during and after a disaster.

Accomplishments

- Attended and shared several presentations from emergency response and GIS personnel from around the country that have provided information about disaster response and the experiences gained through their work in response.
- Increase collaboration between Corps members to help with the development the District 1 and 5 GIS Response teams.
- Assisted in the development of response teams. At this time, District 1 in Northwest Indiana and District 5 in central Indiana are making a great deal of progress towards the functionality of the response teams. They have both acquired supplies and technology to be able to respond in the field and are making good progress towards being able to deploy.

Streets and Addresses Workgroup

Chair: Charline Avey, Consultant

Mission: To develop plans, standards, and technical implementation guidance for these IndianaMap framework data layers.

Objectives

- Provide support for the IndianaMap Data Sharing Initiative and the development of quality control reporting methods on the harvested county data.
- Gather best practices from other entities and develop a requirements document for uses of the point addresses and street centerlines.
- Develop priorities for quality improvement of both the address points and street centerlines, so that we develop authoritative statewide point address and road centerline GIS layers to provide statewide geocoding and routing web services built upon the best-available local data.
- Investigate the requirements to be prepared to support national initiatives including Transportation for the Nation, Next Generation E911, UP Postal Service and 2020 US Census requirements.

Accomplishments

The committee held regular email communications on topics including ongoing statewide county data sharing harvests, and emerging Federal initiatives to develop a national solution for GIS road centerlines and point addresses (Map-21 & Census NAD).

Waters Workgroup

Chair: Mike Martin, Indiana Department of Natural Resources

Mission: To develop plans, standards, and technical implementation guidance for the IndianaMap Hydrology framework data layers.

Objectives

- Support ongoing work in the Local-Resolution NHD improvement project.
- Support the design, development, assignment and stewardship of USGS NHD GNIS Names for the new Local-Resolution NHD geometry.
- Include the new Local-Resolution HUC-8 sub-basins in the IndianaMap holdings.
- Work with IGIC for inventory of local data availability and incorporate into data plan
- Assist State GIO with identification and pursuit of funding opportunities
- Assist State GIO with identification, development and training of sub-stewards for maintenance
- Sponsor “Using the NHD” workshop
- Find opportunities to work with other states and federal agencies to advance our mission

Accomplishments

Local resolution data for the Upper East Fork White was completed by USGS. This is the 8th HUC8 to be loaded into the National Map at Local-resolution. Eight additional sub basins are in-process and will eventually be completed and uploaded as Phase 1 of the project. Work on the Phase 2 subbasins (northern tier) has also begun. Worked with the Office of Community and Rural Affairs (OCRA), USGS and IDEM to acquire funding for Phase 3.

Three local resolution feature classes were submitted and published on the IndianaMap. The NHD Flowlines, NHD Waterbodies and NHD Areas feature classes include all features within the first 8 subbasins that have been uploaded to USGS. Updates will be made as additional subbasins are completed.

Work continues on creating the GeoSynchronization project for GNIS names. The process will simplify review and approvals of names submitted for NHD features.