



GEO-ENABLED ELECTIONS PHASE ONE/YEAR ONE

Annual Report

The [National States Geographic Information Council](#) (NSGIC) launched the first phase of the Geo-Enabled Elections project (previously named GeoElections) on October 1, 2017. The first phase will conclude September 30, 2019.

The purpose of the Geo-Enabled Elections project is to facilitate adoption of geographic information systems (GIS) and related processes to enhance election management and citizen engagement across the United States. For this project, NSGIC is developing and promoting best practices for replacing the current street file precinct tables with a more precise, accurate, and accessible GIS-based approach to better manage all facets of elections.

Introduction

An electoral system with integrity - enhanced by accurate, authoritative geographic data and presented clearly and transparently - has never been more important. NSGIC's Geo-Enabled Elections project is encouraging state governments to replace non-spatial 'address file' tables with the visual and analytical advantages of election precinct and voter data in a natively geographic information systems format. The project leverages the strong working relationships NSGIC has with state geospatial information officers and coordinators and national nonprofits in the technology and elections spaces.

Eight of these senior state geographic information systems executives make up the project's steering group: Bert Granberg (UT), chair; Dan Ross (MN), Josh Tanner (OR), Neil MacGaffey (MA), Kenneth Nelson (KS), Shelby Johnson (AR), Erin Fashoway (MT), and Ekaterina Fitos (FL). Together, they have led 70 percent of states to complete a nationwide survey on elections data. In many cases, completing this survey required state geospatial information officers and coordinators to forge new relationships with elections offices. Survey results strongly indicated a need for coordination between many state agencies (e.g. state elections departments and departments of motor vehicles) to integrate voting systems with GIS. This project brings all of those actors together in cross-agency collaboration to use GIS to strengthen elections systems in municipalities, counties, and states across the country.

This two-year project includes development of an inventory of state implementations of GIS-based elections systems, workshops and presentations at national conferences, interviews with election officials, five pilot programs, a best practices guide and website, and a Geo-Enabled Elections Summit to convene stakeholders from the national, state, and local levels.

This project is diagrammatic of leadership and collaboration across government agencies and disciplines. Geographic information systems, technology, and products are increasingly understood by most government agencies as critical components of serving the public. But at the onset of this project, GIS technology, in most cases, was relatively new to state elections implementations. A digital framework for collecting, managing,



visualizing, and analyzing data, GIS provides the answer to one of the most crucial questions in making policy decisions and providing public services and products: *Where?* This project represents a national effort by state government geospatial information officers and coordinators to work with other state agencies, local elections officials and state elections offices, national GIS and elections organizations, and federal partners to identify opportunities to leverage this powerful technology to strengthen elections management and citizen engagement.

Principal Activities in Project Period

Establishment of Project Steering Group

In launching the Geo-Enabled Elections project, NSGIC established a steering group of eight GIS leaders representing states with varying levels of GIS integration in elections systems. The Steering Group meets regularly, with subgroups focused on individual project deliverables.

Bert Granberg - Chair

Director of Analytics, Modeling, and Data Services
Wasatch Front Regional Council

Erin Fashoway

GIS Coordinator
State of Montana

Ekaterina Fitos

Geospatial Information Officer
State of Florida

Shelby Johnson

Geographic Information Officer
State of Arkansas

Neil MacGaffey

Director of Mass GIS, Executive Office of Technology and Security Services

Ken Nelson

Geospatial Information Officer
State of Kansas

Dan Ross

Chief Geographic Information Officer
State of Minnesota

Josh Tanner

GIS Analyst/Web Administrator
State of Oregon

Establishment of Project Circle of Advisors

Eight subject matter experts were recruited to provide the project team with specialized expertise in election day implementation, terms and concepts; systems and technologies; auditing; and related work in public, private, nonprofit, and academic spaces. These advisors are convened as a body, as well as providing individual feedback and guidance.

Kimball Brace

Election Data Services

Veronica Degraffenreid

North Carolina Elections Operations

John Dziurlaj

Hilton Roscoe

Royce Jones

GDSI



Michael McDonald
University of Florida

Jennifer Morrell
Consultant

Tammy Patrick
Democracy Fund Voice

Paul Stenbjorn
Election Information Services

Sarah Whitt
Wisconsin Elections Commission

State GIS Experts Baseline Survey

NSGIC is a nonprofit membership organization with a core membership of state government geospatial information officers and state GIS coordinators. In early 2018, NSGIC conducted a survey of its core members to establish a baseline of states' position in the wide spectrum of geo-enabling election databases and systems, plans, and processes, and implementations. Thirty-five states and territories responded to the survey, providing information to inform the project trajectory and provide critical information in building best practices guidance. The [full report](#) is available on NSGIC's website.

NSGIC State Representatives Share How Elections Systems Work in Their States

in the Q1/Q2 2018 survey with 31 state respondents

VOTER ADDRESSES

55%

of responding states verify voter registration addresses against a database of known addresses such as a driver's license or state ID database, a statewide point address set, a master address database used for 911 call routing, or a commercially available address database.



Confirmation of voter registration addresses is important, as it is a voter's physical address that determines his or her voting precinct, where his or her vote will be tallied, and the candidates or questions on the voter's ballot.

ELECTION PRECINCTS

50%

of states indicated they maintain statewide mapping of precincts. Within this group, 40% also maintain a GIS layer of sub-precincts.



Statewide voting precinct information in a GIS format is essential to geo-enabling elections. It is noteworthy that the majority of states do not have a content standard for attributes of statewide voting precincts.

OTHER DATA

82%

of responding states keep up-to-date GIS layers of city and county boundaries, essential for computer-based mapping of precincts.



State-wide GIS data layers - especially city, county, school, and special district boundaries - are essential to map precinct boundaries across the state. The survey reflected, however, that accuracy of current city and county boundary mapping varies considerably.





Geo-Enabled Elections Workshops

NSGIC Midyear Meeting | Salt Lake City, UT | February 2018

The project steering group met for a day-long workshop prior to the commencement of the February/March Midyear Meeting. Participants identified a list of six priorities to position states to geo-enable their elections systems:

- Statewide precinct layer with an associated maintenance process
- Current statewide address info
- Implementation options that give local control for locating address data
- Standardization of terminology
- System or process where GIS technologies and data are locally sourced and rolled up to the state
- Contextual map data (for example, current aerial photography)

Thirty participants joined for second half of the workshop, open to all attending the conference, included exercises in exploring the current state of GIS within elections systems, a panel discussion with case studies, and demonstrations of GIS software for election management.

NSGIC Annual Conference | Duluth, MN | October 2018

A steering group workshop explored the need for best practice guidance in verification of voter addresses, statewide voting precinct data, and other GIS data layers, especially city, county, school, and special district boundaries. Findings from the workshop contributed to the refinement of the draft of the best practices guidance.

Geo-Enabled Elections Presentations

NSGIC Midyear Meeting | Salt Lake City, UT | March 2018

Audience: Senior state and federal government representatives, private sector partners

Topics: Overview of Geo-Enabled Elections project and leadership; Solicitation of participation for pilot program and steering group

National Association of State Election Directors Summer Conference | Philadelphia, PA | July 2018

Audience: State election directors and national organizations working on election systems

Topics: Introduction to GIS and why it is important for elections; Insight into relationships with state GIS leaders and report findings; Invitation to join project-based online community

International Association of Government Officials | Reno, NV | July 2018

Audience: Election clerks, officials, recorders, and treasurers

Topics: Introduction to GIS and how it informs elections and redistricting; Presentation of findings of state GIS experts baseline survey of elections integration; Invitation to join project-based online community



NSGIC Annual Conference | Duluth, MN | October 2018

Audience: Senior state and federal government representatives, private sector partners

Topics: Election data management and modeling process; GIS applications of data built for elections; 2020

Census; Solicitation of outreach to state elections officials

Development of Best Practices Guidance

The project steering group and circle of advisors are shepherding the development of best practices guidance focused on two map layers and related web services: residential address points and election precinct boundaries. Guidance will address both minimum GIS content standards and coordination with elections officials in state governments. Consult Appendix C for a preliminary draft of the guidance.

Development of Pilot Project

In the second year of Phase One, a pilot project of five states will be conducted to implement identified best practices guidance and share their experience, lessons learned, successes, challenges, path for the future, and technology considerations. The pilot project will be conducted over a six-month period.

Pilot states will be determined with consideration to a variety of: geographic placement; stages of implementation; political climate; and who maintains the election districts (top down and bottom up systems).

As part of the development of the Geo-Enabled Elections microsite, a robust community platform will be deployed to provide the framework for pilot states to work together and learn from each other. Development of that platform began in Year 1, with full implementation expected in early 2019.

Findings and case studies developed as a result of the pilot project will be included in the final best practices guidance and presented at the Geo-Enabled Elections Summit held in Year Two.

Communications

Publications

The principal publication developed and released in Year One was the baseline report of the state of geo-enabled elections produced from results of a survey of state government GIS experts.

Additionally, several articles were published in the GeoJava online publication and disseminated through NSGIC communications channels.

Interviews of state elections directors were conducted in Year One and NSGIC expects to publish the findings in early 2019. Interviews included discussions of the current status and future expectations of voter registration database systems, at which level of governments registration databases are managed, and whether the databases can house geospatial information and objects. Elections directors also indicated openness to moving to a GIS-based approach.



Public Relations

Early in Year One, NSGIC determined the need for outreach to the elections community would be greater than expected. Significant effort was put into building relationships to facilitate dialogue between GIS and elections experts at the national and state levels. The NSGIC representative at national meetings liaised with a number of government and private sector organizations working in the election space and conducted follow-up information-gathering discussions by phone and in person.

Media relations efforts conducted in Year One resulted in earned media coverage by both geospatial and elections publications:

- [An Opportunity to Make Every Vote Count](#) | *Governing* | August 2018
- [How Geospatial Data Can Improve US Elections](#) | *Geospatial Solutions* | July 2018
- [New Report Reveals How US States Tap into Map Technology to Manage Elections](#) | *Directions Magazine* | July 2018
- [ElectionlineWeekly on New NSGIC Elections Mapping Report](#) | *Election Academy* | July 2018
- [NSGIC Issues Report on Geo-enabled Elections](#) | *Electricity* newsletter published by the Center for Technology and Civic Life | October 2018
- [Summer "Romance": #ElectionGeeks](#) | *electionline Weekly* | October 2018

Social media platforms were utilized to "boost the signal" of the need for geo-enabled elections, connecting with individuals and organizations and the GIS and elections spaces, and disseminating information about project activities.

NSGIC.org

The NSGIC website is the leading online source for information about state GIS issues. Search engine optimization, content marketing, social media efforts, frequent push communications, and industry media partnerships are utilized to drive traffic to the site. Integrated discussion forums, undergoing a major upgrade in 2019, provide for active information sharing and discussions on a variety of topics, including geo-enabling elections.

The Geo-Enabled Elections microsite is thus positioned to effectively serve as the auxiliary center for authoritative information about the status, benefits and challenges, and best practices guidance for geo-enabling elections. NSGIC has engaged the services of a communications firm specializing in website development and campaign design to raise awareness of social issues. Development of the enhanced microsite began in September 2018, will undergo beta testing in December 2018, and is expected to launch in early 2019. The launch plan includes tactics to stimulate discussions using the site's community platform.

Phase Two Opportunities

NSGIC has identified several major opportunities to impact geo-enabling elections for Phase Two of the project (pending funding).



Increased Awareness & Deepened Engagement

In both the GIS and elections spaces, a major component of Phase One has been building key relationships and establishing credibility by leveraging opportunities to speak at national-level meetings and pursuing one-on-one discussions. Phase Two will build on those efforts through continued discussions, new outreach, and mass communications.

Implementation Support & Training

Building on the pilot project, NSGIC will convene three additional cohorts of five to seven states to utilize the best practices guidance to geo-enable elections in their states. Feedback from additional implementations will be used to refine the guidance as a body of knowledge. NSGIC is also positioned to develop and provide education materials and training on the use of GIS in elections systems to the spectrum of actors from the secretaries of states to volunteer county election clerks.

Auditing

As with any data, it is necessary to check for accuracy, legitimacy, and relevance over time. NSGIC is positioned to develop and test methodologies for effective quality control, assessment, and auditing of GIS data within elections systems.



Geo-Enabling Elections: Best Practices Guidance

Draft 9.18

The development of this guidance will be informed by the findings of three major project activities:

- Baseline survey of status of geo-enabled elections as completed by state GIS experts
- Interviews of state elections officials
- Pilot projects

The guidance document in its final form will include case studies to illustrate both successes and failures to effectively demonstrate the benefits of geo-enabling elections.

Convene a Team of Specialists

Geo-enabling elections requires collaboration at a high level between leaders in elections, information technology and database administration, and geospatial information technology. Working together, these officials should identify key elements of the geo-enabling process: project goals; requirements; schedule; budget; and governance.

Collect and Sustain a Statewide Voting Unit GIS Layer

To geo-enable elections, the voting unit GIS layer must include the precinct tabulation areas, as well as ballot area boundaries ('splits' and 'subs'). A simple data model should be adopted and shared, including validation rules and processes.

It is also critical to identify at which point updates can be made to data during the elections schedule. An application programming interface (API) should be developed for single and bulk voting unit using point-in-polygon GIS query capabilities.

Finally, a web map should be created for stakeholder and public viewing of the most current voting unit data.

Adopt and Implement a Statewide Geocoding Strategy

An overall strategy should include a method for assigning geographic coordinates for each residential address using state, local, and/or commercial GIS reference data. It should also include a method for manually placing or assigning geographic coordinates for geocoding correction or omission. A complete lineage, or, at minimum, basic record-level metadata should be kept, describing how, when, and by whom geographic coordinates were updated.



Assemble and Provide Best Available Contextual GIS Layers

Layers should include: state office boundaries; corporate boundaries for cities, towns, school districts and service districts; and aerial photography, base maps, parcels, and address points. In future versions, each layer should be defined and described in more detail.

Define and Implement Data Validation Processes

An analysis of information provided in interviews of state elections directors indicates minimal to no audits of GIS data. Processes should include: operational data quality controls; periodic full review and reporting; and change log, metadata, and period archiving.