NASS 2023 IDEAS Award Nomination
West Virginia Secretary of State Mac Warner

Geographic Information Systems (GIS) Advancements in the 2022 West Virginia Elections

General Subject Area: Elections

Summary: With the West Virginia Legislature’s elimination of multi-member House of Delegates districts coinciding with the ten-year U.S. Census and redistricting process that had suffered COVID-driven delays surrounding its normal timelines, voters and election officials in West Virginia (WV) knew to brace for a dramatic change to the landscape with limited time to redistrict and inform voters before the 2022 Primary Election. GIS data curated and mapping tools developed in partnership with the WV GIS Technical Center were critical in helping county clerks redistrict voters accurately and efficiently. These redistricting tools also became the foundation for a new interactive map for voters and stakeholders. Just by providing an address, the public may use the interactive map to lookup precincts, districts, physical polling locations, and sample ballots. With 98% of registered voters currently assigned to voting jurisdictions that are matched with GIS mapping data, the West Virginia Secretary of State’s Office (WV SOS) views these GIS tools as a launching point for many other innovations in the field of election management systems in the foreseeable future.

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History: While most states already use Geographic Information Systems (GIS) technology and applications in other areas of government services and citizen engagement, the concept of using GIS to augment elections management systems is still seeking to garner nationwide traction. The 2022 National States Geographic Information Council (NSGIC) "State Election Director Report" finds that while 86% of all U.S. states and territories know about Geo-Enabled Elections (GEE), only 35% of states surveyed are actively using geospatial data for voter registration systems.

Seeing the opportunity to get out in front of using technology that is now considered a best practice in the elections community, WV Secretary of State Mac Warner began his office's investment in the concept in earnest by becoming a participant in NSGIC's Geo-Enabled Elections Pilot Project. This project facilitated a cascade of relationship building between the WV SOS and several GIS entities around the state. The first of these relationships was with the WV State GIS Coordinator, who was part of the WV GEE Pilot core team and the chair of the state’s GIS Policy Council. In April of 2019, a state GEE subcommittee was created under the Council and fostered the future and substantial connection of the WV SOS to the WV GIS Technical Center (WV GIS) at West Virginia University.

Important to note is that between the 2010 and 2020 Census efforts, West Virginia's state-level redistricting office was retired, leaving gaps in several areas of operation surrounding the redistricting activity needed in 2021. Clear channels of communication up and downstream between local, state and federal stakeholders about the maintenance of voting districts were degraded. Institutional and historical knowledge of mapping and the expertise to affect necessary changes were fragmented.

As the timeline around the 2020 U.S. Census work was being revealed, along with that of the ensuing statutory redistricting duties of the WV Legislature, it became clear that a crisp and modern set of tools would be needed to give the county clerks the best possible chance of completing their own required redistricting efforts, both accurately and efficiently. The groundwork laid in previous years around incorporating GIS technology into election administration became the foundation of that toolkit.

Significance: In the fall of 2021, when county clerks were beginning to prepare for redistricting, the state’s GEE work was available to help the clerks and the state meet the following goals to aid in developing a path forward:

- Identify election districts;
- Determine which boundaries among the districts were in need of maintenance;
- Maintaining accurate municipal and county Census records;
- Identify and secure statewide and/or local addressing and mapping resources; and
- Foster the bi-directional communication needed across all stakeholders.

To achieve these goals, the WV GIS team, acting as the “parent” clearinghouse for master files, developed two substantive, interactive GIS mapping tools along similar, but separate tracks:

- **County Clerk Redistricting Tool** (*link withheld for privacy and security*)
  - County clerks use to plot existing voter addresses against newly created districts.
  - Offers validity and mis-match checks against mapping and addressing authorities.
  - Provides ongoing auditing capabilities for voting district and address maintenance.

- **Interactive Voter Lookup Tool** ([https://www.mapwv.gov/vote/](https://www.mapwv.gov/vote/))
  - A publicly accessible interactive voting boundaries site.
  - The first of its kind in the state.
  - Voters can look up voting precinct and district information based on their registration address.
  - Voters can view sample ballots.
  - Voters can view Election Day and Early Voting physical polling locations.
To assist with the development of these GIS tools and the redistricting process, the WV SOS office conducted over 115 one-on-one and statewide meetings with county clerks and their staffs between the fall of 2021 and the 2022 Primary Election.

Each of West Virginia’s 55 counties also received a $5,000.00 grant from the Governor’s Office to offset the cost of the GIS talent needed to affect redistricting changes that served the master toolkit(s).

**Impact/Results:**

- By October 2022, 93.6% of voter registration addresses match 911 address mapping authorities and 98% of registered voters are assigned a precinct that is matched with GIS mapping data.

- Modernizes existing two-dimensional voter and election management tools into three-dimensional ones.

- The tools that have been created live in perpetuity as a mechanism for the public and for the local election officials charged with maintaining the geographic districts they represent and administer for voter registration and Census compliance.

- Leverages unique technical skillsets, germane to the task, already present within state government.

- Serves rural communities with the same or similar degree of equity as previously available to urban communities.

- Galvanizes clear(er) communications channels among local, state, and federal stakeholders to allow for continued improvements not only during ten-year Census and redistricting cycles, but also around other district-changing events.

**Conclusion:**

While substantial development of West Virginia’s GIS-enabled mapping technology and tools was born, in part, out of necessity to handle compounding issues and demanding timelines specific to the redistricting process, the impact of this investment extends far beyond the year 2022 and the successes achieved. The County Clerk Redistricting Tool and the first-of-its-kind interactive voter lookup tool serve as the foundation for a buildout that includes statewide voter registration system (SVRS) upgrades allowing GIS-based assignment of voters to districts and precincts. Pre- and post-election auditing powered by GIS map files managed by the stakeholders will compliment this process by ensuring those voters were assigned properly. Once complete, the entire GIS election management system package presents itself as a promising solution to deliver on the principal mission of ensuring the right ballot is delivered to the right voter, every time.
Supporting Materials:

3/2/22 Press Release: Warner releases interactive map to help voters identify new voting districts and precincts for May Primary Election

WV Geo-Enabled SVRS Tool:

County User Toolbar gives clerks access to topographical and measurement tools

= Address or Districts Need Reviewed

= Voter Address and Districts Match Mapping Data
Interactive Voter Lookup Tool:

Precinct and district data for each voter by providing their registration address. Link to sample ballot also included.

Also includes list of early voting locations within the county with street addresses and hours of operation.

*Early voting locations available to the voter based on their registration address.*