CASE STUDY #5

HAWAII

Marc Arakawa, of Computer Services in the Hawaii Office of Elections, shared the following information on how they have geo-enabled their elections over the last decade.

WHY?

Our use of GIS in elections started with redistricting. GIS was used very effectively by our State Reapportionment Commission in 2001 and 2011. They used GIS to balance district populations and to create a series of paper maps showing the new district boundaries. In 2011 they also published online maps so the public could more easily see where the new boundaries were being drawn.

Online redistricting maps - 2011 Hawaii Reapportionment Commission

After redistricting, each of our counties needed to create new precincts and correctly assign voters to these new precincts. The voter management system in use at that time used street segments and address ranges to assign voters to precincts. Without GIS, this was an intensive manual process to examine the streets and determine the new address ranges for the new precincts.

In both 2001 and 2011, after redistricting was complete, we contracted the Commission's GIS consultant (Esri) to assist our counties in using GIS to more efficiently determine the new address ranges and voter assignments.

In 2015 we began the migration to a new voter management system that included support for online voter registration. We contracted Esri to work with our voter management software vendor (BPro) to incorporate GIS capabilities for both online voter registration and internal county voter management statewide.

The way our system works is when a voter signs up to vote, we only allow voters to select addresses from a suggestion drop-down menu. Each address corresponds to an address point which has coordinates to determine which precinct it is in.

There was extensive work over two years to migrate voter locations from the old street segment/address range system to the new address point system. First, we had to ensure that the address points themselves were correctly located relative to the district/precinct boundary lines. Then we had to make sure each voter was assigned to the correct address point.

The two systems, old and new, were used concurrently and voter precinct assignments were compared and reconciled between the two systems. In 2017 the old system was fully retired. The address point system now supports all voter registration and precinct assignments in the state.

Each county is responsible for verifying and adding new address points. We periodically check the address points and assigned precincts to make sure the system is working correctly. Mismatches are researched and then either the address point or the assigned precinct is corrected

WHO?

In Hawaii, we have a GIS division within the State Office of Planning that offers GIS classes, tools and licenses when available. We also have an existing relationship with Esri as we have been working with them with the previous voter registration addressing system and reapportionment.

Each of our counties has its own GIS resources too. Coordination and data sharing between state and county GIS offices, and between state and county election offices, is critical to make the best use of GIS in elections.

IMPROVEMENTS

One problem we have in Hawaii is how to keep our addresses up-to-date. There are always new subdivisions with new roads, etc. Each of our counties is responsible for updating their address points. We are working on ways to support them and make this update process more efficient while maintaining the accuracy needed for precinct assignment.
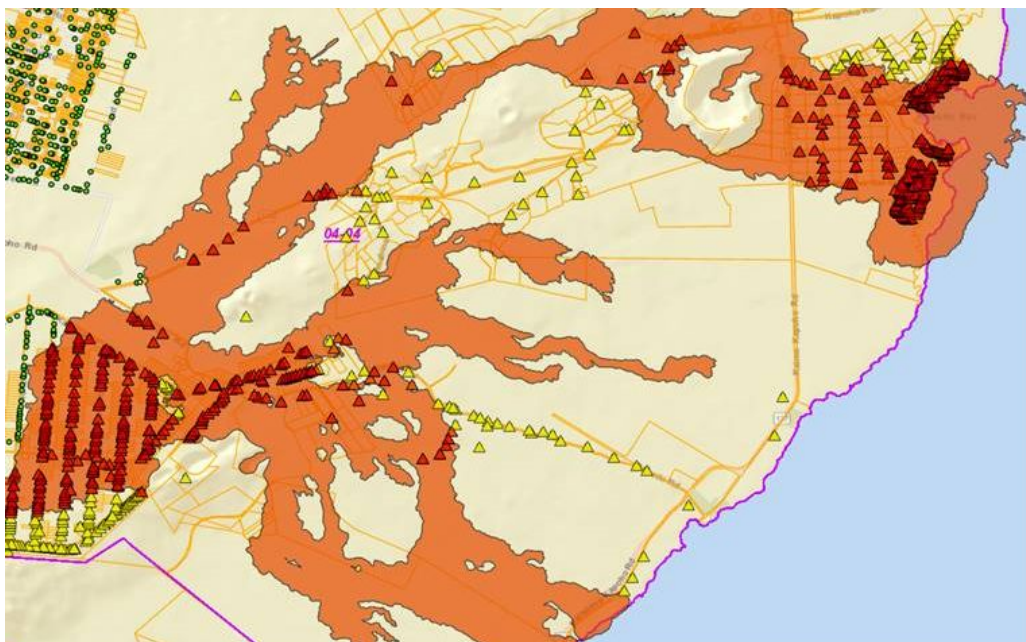
CHALLENGES

In Hawaii, one constraint we have is security. Working in elections, we always have to be security-minded about potential security vulnerabilities. Also if any information is made public, however insignificant, we need to think about how it could be used to piece together other voter information. There is a lot of amazing data and visuals we can display, now that we have this addressing system in place. In some cases, we choose not to release it publicly for privacy and security reasons.

SUCCESSES

One piece of advice Hawaii has for you is test thoroughly. Still an election-related benefit, this past election year, we realized we can react to natural disasters and determine the impact in a way that wasn't possible in the old system.

As you may have heard, during our last election year, the island of Hawaii experienced lava flows prior to the primary election, affecting homes and roads. Our consultants were able to obtain a spatial data layer of the path of the lava flow. We were then able to determine which homes were in the direct path of the lava flow and also which homes lost access because the road to their home was obstructed by lava.

With this information, we were able to determine how many registered voters were affected and how many of these voters had previously mailed in their ballot. We used this information to determine whether to open additional early voting locations and polling places on election day.

Please contact Marc Arakawa if you have any questions. Thank you.

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