

# NC Bipartisan State Board of Elections & Ethics Enforcement



## ELECTIONS OPEN SOURCE GIS IMPLEMENTATION

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# Tools

<b>Current - ESRI</b>	<b>Proposed – Open Source</b>
ArcGIS Desktop	qGIS
ArcGIS Server	PostGIS, Geoserver,PgRouting
SQL Server	PostgreSQL
ESRI API for Javascript	OpenLayers
Python	Python, OGR (GDAL) Library, OSM Nominatim



## GIS Projects

1. GIS Audit: Statewide Election Jurisdictional Audit – **Almost Done!!**
2. On Demand Audit: On Demand Election Jurisdictional Audit – **Almost done!!**
3. Interactive GIS: GIS Feature services + interactive map – **Work in progress!!**
4. API's for geocoding addresses and driving directions – **Yet to begin.**
  1. Open Streetmap Nominatim for driving directions??
  2. PgRouting – Routing functionality for PostgreSQL/PostGIS



## Project 1: GIS Audit

**Task:** To automate the process to validate statewide voters jurisdiction assignment against spatial data on a weekly basis.

**Output:** Reports, Shp files, KMZ and Feature Services.

**Process flow:** voter info (sql business tables) + Address Points + Jurisdiction boundaries.

All voters x 7 jurisdictions

Results – kmz, shp, ArcGIS Feature Service for interactive map.



## Project 2: On Demand Audit

**Task:** To enable counties to validate voter jurisdiction assignment including local jurisdictions (County commissioner, School boards etc.) against spatial data uploaded by county.

**Output:** Shp files, KMZ

**Process flow:** Business data (voter info)  
+ Address Points + Jurisdiction boundaries  
(shp files uploaded by counties)



# On Demand Audit (Current)

SBE-31600: [External] r Task 34967: Setup GeoSer | Task 34967: Setup GeoSer | PostgreSQL: Documentati | geoserver - How to zoom | Limited Layer Extent | Aoxsoft | Incidents | GIS On Demand Audit X +

w2703/webapps/gisondemandaudit

### GIS OnDemand Audit

**Step 1 - Select County**

Email

County

**Step 2 - Attach Shape File**

1. To complete a shapefile, a minimum of four files are required; with one of each of these extensions: .shp, .shx, .dbf, .prj  
a. Example: main.shp; main.shx; main.dbf; main.prj
2. Shapefile to be in 'NAD\_1983\_StatePlane\_North\_Carolina\_FIPS\_3200\_Feet' coordinate system.

Shape File

**Step 3 - Choose Jurisdiction**

Jurisdiction Type

Jurisdiction Value

**Step 4 - Verify & Submit**

GIS DATA  SEIMS DATA



## Project 3: Interactive Map

**Task:** For counties to rectify address points on a web browser and to map addresses.

**Output:** output from GIS Audit:

1. Flagged Voter Address Points
2. Potential Voter Address Points (DMV Addresses and other NC Addresses)
3. Unmapped addresses as list.



# Interactive Map (Current)

vr_address	zip_vr	city_cy	pt_edit
100 SWEET VISTA LN	27540	HOLLY SPRINGS	N
1083 MAGNOLIA FARM WAY	27526	FUQUAY VARINA	N
102 TRINITY GROVE DR	27513	CARY	N
102 ZOA CT	27513	CARY	N
103 DUXBURY DR	27513	CARY	N
104 TECUMSEH CT	27513	CARY	N
10428 TEN TEN RD	27603	RALEIGH	N
106 ELSHORE CT	27513	CARY	N
108 TECUMSEH CT	27513	CARY	N
111 TRINITY GROVE DR	27513	CARY	N
1121 BARNFORD HILL RD	27587	WAKE FOREST	N
113 ACKLEY CT	27513	CARY	N
113 BRIDGE ST	27526	FUQUAY VARINA	N
117 TRINITY GROVE DR	27513	CARY	N
1209 TRINITY RD	27513	CARY	N
1263 S PERSON ST	27601	RALEIGH	N
1314 DOMINION OAK CIR	27519	CARY	N
1326 TRINITY RD	27513	CARY	N
1433 TRINITY RD	27513	CARY	N
1504 PLEASANTS RD	27591	WENDELL	N
1624 TUNNEL ST	27591	WENDELL	N
1760 CONFIDENTIAL	27689	RALEIGH	N
1717 DOMINION DAK CIR	27519	CARY	N
200 BUCK JONES RD UNIT 7	27606	RALEIGH	N



# Open Source Application Development Process

## Key milestones:

- Installation – PostgreSQL, PostGIS, Geoserver and GDAL for python.
- How to execute SQL Server, PostgreSQL procs functions from python?
- Automation in mind (think parameters, create python functions, connect pieces).
- Export data from SQL Server (csv) using python.
- Import csv data into Postgres using python.
- Import spatial data into Postgres (using ogr2ogr) using python
- How to create spatial queries?
- Export output to Shp files, KMZ, update services (using ogr2ogr).
- email using python.
- How to launch jobs using windows scheduler.
- PostGreSQL db management – logged vs non-logged tables, manage indexes, backups, restoring dbs.



THANK YOU!

QUESTIONS?

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