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Kimball W. Brace
President

Proposal
To

Michigan Independent Citizens Redistricting Commission

For
Line Drawing and Redistricting Technical Services

By

Election Data Services, Inc

February 10, 2021

"Experts in Elections Redistricting & GIS"

Proposal To Michigan Independent Citizens Redistricting Commission
For
Line Drawing and Redistricting Technical Services

It is with extreme pleasure that Election Data Services, Inc. submits the attached Proposal for Services to State of Michigan in response to Request for Proposal No. 920,210000000714, dated January 22, 2021.

Election Data Services, Inc. (EDS, Inc.) is bringing its extensive 44-year nationwide experience as a leader in the redistricting field and is joining forces with a team of individuals who will be subcontractors to provide additional assistance and map drawing capabilities to the Michigan Independent Citizens Redistricting Commission.

While EDS, Inc is sometimes viewed with Democratic leanings, because the Independent Citizens Redistricting Commission was set up as a bi-partisan Commission we have created a bi-partisan team of map drawers to assist the Commission.   Besides EDS, Inc.'s President Kimball Brace and staff member Ryan Taylor, EDS has teamed up with the top Republican map drawing firm Applied Research Coordinates and its President John Morgan. In addition, we have brought on board Mr. Kent Stigall, recently retired non-partisan technology director for the Commonwealth of Virginia's Division of Legislative Services who provided redistricting assistance to Virginia's state legislature for 35 years. Finally, the team also includes Citygate GIS's President Fred Hejazi who developed the AutoBound redistricting software for the past two decades and upgraded it to be AutoBound EDGE for use in the 2020 round of redistricting.

We recognize the Commission has an addition RFP on the street for a Voting Rights Act attorney, and as part of that proposal you are seeking an individual who can perform racial bloc voting analysis. EDS has done this type of work in the past and because such analysis is heavily dependent upon the database that is created, we are in a position to assist in this work. In addition, a former EDS staffer, Dr. Lisa Handley, has now become the premier racial bloc voting expert in the country for the past three decades and we could bring her into the project under our proposed contract.   This addition is not currently part of this proposal.

<u>**Election Data Services, Inc.**</u>

Since 1979, Election Data Services, Inc. (E.D.S. Inc.), has been actively involved in many aspects of the redistricting process, having gone through four full census and redistricting cycles. We have been a consultant to many state and local governmental organizations around the nation, providing strategic advice and consulting on redistricting matters, coordinating the development of extensive databases used in the redistricting process, creating and assisting others with the creation of districting plans, and analyzing many aspects of districts and district configurations. Over the past four decades, Election Data Services, Inc.'s redistricting clients have come from more than half the states and members of our team been called upon to provide reports, expert witness testimony, and assistance to attorneys in more than 75 different court cases.

An example of Election Data Services, Inc.'s role in a jurisdiction's redistricting process is the State of Rhode Island, where the company has responsible for coordinating all meetings and has testified at every meeting of their redistricting commission for the past three decades. In addition, it is our standard practice to meet with every state legislator of both parties, in both chambers, to review the member's district, its neighborhoods and the demographic characteristics of its voters. When the Census data is released, we conduct regional meetings around the state to review what the numbers mean for representation. We then work with legislative members, staff, and the general public to draw potential plan configurations. Plan alternatives are then taken to various parts of the state for further public input, in most instances in conjunction with the redistricting commission. In Rhode Island, the commission makes recommendations to the Legislature, who ultimately passes the plan as a piece of legislation.

Election Data Services, Inc. has also had extensive experience in a number of major metropolitan areas of the nation. Since 1980 we have assisted the City Council for the City of Chicago, IL in every redistricting each decade. This included creating the redistricting database, installing and utilizing redistricting software on local machines in city council chambers and working with councilpersons and staff to draft hundreds of redistricting plan concepts. We also set up the redistricting operation for New York City in 1990 and worked with council members that decade in drafting and finalizing a redistricting plan. We were involved in testifying in the City of Los Angeles about their redistricting plan during the 1980s. A full set of all our redistricting involvement through out the decades can be found in Kimball Brace's vita, which is attached to this proposal.

Between decades, Election Data Services has contracted with several states to perform work to update Census Bureau TIGER files and draw and adjust precinct boundaries for submission to the Bureau. This has included addresses matching statewide voter registration files to decipher where precincts are located. This has included on-going work in both Rhode Island and Illinois for each of the past three decades.

E.D.S. Inc. has been providing redistricting services since before the advent of GIS redistricting software and were uniquely placed when GIS was introduced into the process. We developed our own redistricting software for the 1990 round of redistricting which was used in numerous state and local redistricting projects. We continued developing GIS software applications to help state governments compile precinct configurations for submission to the Census Bureau under P.L. 94-171 (whereby, census data was compiled by precinct for use in redistricting). During the 2000 and 2010 redistricting process we developed our own analysis software and utilized both major redistricting software packages, including AutoBound.

Since the early 1990s, E.D.S., Inc. has studied and issued yearly reports on the apportionment process as new population estimates have been released by the US Census Bureau and private demographic firms. We have become a staple for the press and others to cite when commenting on the impact of population shifts between different states. These reports can be found at our website: www.electiondataservices.com, under the "Research" tab. We have maintained a historical table back to 1789, along with decennial calculations conducted on Census data each decade from 1940 to current, as well as interim census estimates back to the early 1990s.

E.D.S. Inc. regularly collects election returns for every state in the nation. In 1992 we published a 500-page volume of county-level voter registration and voter turnout data, and election returns for the entire nation (*The Election Data Book: A Statistical Portrait of Voting in America, 1992* (Bernan Press, 1993)). While we only published the single volume, we have continued to compile an electronic county-level database for each general election since that time, which we sell to numerous institutions and organizations.

E.D.S. Inc. offers a wide variety of graphics services, from the creation of maps and posters to working with Census Bureau electronic mapping files. For every election year since 1988, E.D.S. Inc. has produced a full color poster of the

nationwide election results within days after the November general elections. This poster can be seen in most congressional offices and the White House and is sold worldwide.

Election Data Services, Inc. has been viewed by clients, the press, academics, and the general public as a research facility and consulting firm dealing with many aspects of the electoral process. Because of our specialization in redistricting, we have been hired by state and local governments across the nation to provide software, database development services, and consulting services for the creation of districting plans and the analysis of many aspects of the redistricting process.

In addition, the company provides assistance in the election administration field to state and local jurisdictions in such areas as precinct management, voter registration systems, and voting equipment evaluation. Since 1980, the company has also maintained a county and township level database of which voting equipment is used in every jurisdiction in the nation.

Members of the Map Drawing Team

Kimball Brace

Kimball Brace has been president of Election Data Services, Inc. since he started the company in 1977. As a result, he has been involved in all of the past redistricting activities of the company, in most instances directing the focus and development of tasks, computer programs and research efforts as they relate to redistricting, reapportionment, the census, and election administration.

Mr. Brace frequently gives speeches to groups and organizations and participate in numerous conferences and panels on various aspects of apportionment, redistricting, and the census. Since the early 1980s, he has been a regular participant and speaker at annual and bi-annual meetings of the Task Force on Redistricting of the National Conference of State Legislatures ("NCSL"). He has also been on their faculty, as NCSL has conducted five regional "Get Ready for Redistricting" seminars each decade since 1980.

Mr. Brace was also appointed by the U.S. Secretary of Commerce to the 2010 Census Advisory Committee, a 20-person advisory board to the Director of the Census Bureau. In 2020 he was asked to be NCSL's representative on an on-

going series of half-day small-group expert meetings, arranged by the Committee on National Statistics (CNSTAT), to delve deeply into and provide informal discussion/feedback with Census Bureau staff as they develop the differential privacy-based Disclosure Avoidance System for the 2020 census. He was also sent by the U.S. State Department and the International Foundation for Electoral Systems (IFES) to the Central Asian country of Kazakstan to present a three-day workshop on redistricting. He has also been regularly called upon by members of the press with questions on redistricting, reapportionment, the census, election administration issues, and politics in general.

Over the past four decades, Mr. Brace has also been involved in many aspects of the election administration process. This includes assisting federal, state, and local governments in such areas as voting equipment evaluation and selection, improvements to voter registration systems, and maintenance of precincts and street files. Beginning in 2008, he has been a poll worker in Prince William County, VA where he lives. Because the state holds elections every year and due to his interest in all aspects of election administration, he has graduated to being "chief judge" in the precincts to which he has been assigned.

 In 2012 the county experienced long lines at the polls on Election Day and he was appointed to a 20-person task force by the County Board of Supervisors to investigate the cause of the problems. Because of his data background, he compiled and analyzed all the data collected by the task force and presented updates at their bi-weekly meetings over the 5-month life of the task force. With the retirement of the County's General Registrar (director of elections for the county), he was asked to take over the 11-person office. While he declined the full-time job offer, he did agree to serve as the Acting General Registrar for four months while the county conducted a search for a full-time replacement. He has continued to be actively involved in election administration issues within the county since that time.

Following the 2000 Presidential election, Mr. Brace was called by 40 to 50 reporters a day to provide information and comment on the election administration field around the nation. He was also interviewed by NBC, CBS, ABC and CNN numerous times about the 2000 election controversy. In addition, he was retained by the Gore-Lieberman Campaign Committee and provided expert witness testimony about voting equipment in the <u>Bush v. Gore </u>lower court evidentiary hearing on December 2, 2000. In 2004, 2006 and 2008, he was a consultant to

NBC News on election administration matters and provided on-air commentary on election night.

For the purposes of this proposal, Mr. Brace will serve as the sole contact person for the team during the RFP process and will coordinate various team members during the entire redistricting process.

Ryan Taylor

Ryan Taylor is an experienced associate of many consulting projects composing the full gamut of the redistricting process. He has been contracted to provide professional services relating to demographic research and analysis, guiding a variety of interested parties both public and private through the system, drafting of a variety of redistricting plans that demonstrate the variety of outcomes and goals inherit in the process, and the subsequent task of updating managed databases of voters and streets ensuring election ballots are properly updated. He is well versed in the features of ESRI ArcGIS and Citygate Redistricting Software, having been hired as a Specialist to aid redistricting teams in their work. Over the course of his 12-year GIS and Redistricting career, Mr. Taylor has performed work for clients in 7 states, providing analysis and strategy to a wide variety of clients.

Mr. Taylor has also provided GIS services to clients related to Census, Election and Demographic data management apart from Redistricting needs. From 2015 to 2020 he was hired by both the states of Illinois and Rhode Island to prepare census geography for the 2021 Census by working with local county, city, and township officials to suggest proper census block boundaries, voting district boundaries, and fixing inaccurate Rhode Island town boundaries that had been causing problems when comparing census geography to locally held bases. These efforts will make redistricting in both States a more efficient endeavor.

Mr. Taylor values efficient and equitable election access across the country. Recently, he worked with the City of Chicago to help them understand where in the city they needed to provide ballots in non-English language to residents in specific parts of the city. He utilized American Community Survey data joined with census blocks and precinct boundaries to inform city officials what language ballots to make available to specific precincts. This allowed the City of Chicago to comply with

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Section 203 of the Voting Rights Act, to help language minorities be more involved with the democratic process.

Prior to his career focused on Redistricting and Elections, Mr. Taylor was contracted to provide GIS Analysis reports for the University of Oregon's Resource Assistance for Rural Environments (RARE) program. He took on the role of an Assistant City Planner in multiple towns to develop Comprehensive Plan Updates, Buildable Lands Analyses, and Master Park Plans. This was a year-long contract that then led to the once-a-decade opportunity to work with redistricting.

Ryan Taylor obtained a master's degree in Urban Planning focusing on GIS and International Development from the University of California, Los Angeles. He developed a passion for the capabilities of GIS while at the University of California, San Diego, where he first started studying census data and geography for his Bachelor of Urban Studies and Planning in 2000. Between college and grad-school Mr. Taylor worked in the Chumash Casino Accounting and Table Games department while annually volunteering with Habitat for Humanity locally and 6 foreign countries around the world.

John Morgan

John Morgan is an experienced executive, talented communicator, and valued resource for demographic and political analysis. He is currently President of Applied Research Coordinates, a consulting firm specializing in politics, demographics and their applications. Over the course of his career, Mr. Morgan has performed work in over 40 states, providing analysis and strategy to a wide variety of clients.

Mr. Morgan managed a large national political organization—GOPAC—for three years. With its multi-million dollar budget and emphasis on politics in every corner of the country, he has demonstrated his abilities to work on projects both large and small. Mr. Morgan is an expert on redistricting, consulting for numerous state redistricting commissions, legislatures and testifying in court cases.

Mr. Morgan has been a sought out as a public speaker and seen as an authority by leading news organizations. He has spoken before the House Republican Conference, the Woodrow Wilson Institute as well as many Republican

organizations across the country. Mr. Morgan has appeared on C-SPAN, and NPR as well as being quoted in print outlets.

Mr. Morgan has testified in multiple court cases involving census data and the redistricted process. He has been called as an expert witness in cases as well as advising state officials, attorneys and other stake holders in these types of cases. He has done redistricting work in 19 states over three redistricting cycles -1991, 2001 and 2011.

Mr. Morgan has long been committed to sharing his experience and skills with others. He has traveled the country training literally thousands of persons in campaign and redistricting techniques and strategies.

He graduated with honors from the University of Chicago, where he wrote his Bachelor's Honors thesis on "The Net Effects of Gerrymandering 1896-1932." His demographic study on LaSalle, Illinois was published in *The History of the Illinois and Michigan Canal, Volume Five.*

Mr. Morgan has personally visited 49 states and sixty percent of the counties in the United States. Mr. Morgan has two daughters and currently resides in Springfield, Virginia. He has served on the Board of Directors for the Fairfax HS Theater Boosters and volunteered for the Veterans Campaign, a non-partisan organization dedicated to helping veterans seek public office. He has finished two Ironman 70.3 triathlons and the Marine Corp marathon.

Kent Stigall

Kent has over 35 years of experience working in the Legislative branch of Virginia Government. He has 30+ years of experience providing GIS, technology and legislative redistricting expertise to Virginia's legislators, legislative staff, and the Division of Legislative Services (DLS). The Division of Legislative Services is a non-partisan agency supporting both the House and Senate of Virginia. He has extensive experience training and supporting superiors, legislators, legislative aides, and co-workers in the use of the statewide redistricting application. He has made presentations on "Redistricting Virginia" to Virginia legislative committees, universities and colleges.

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Kent was Project manager/Senior GIS specialist for both the 2001 and 2011 statewide redistricting cycles of Virginia. He was responsible for researching and determining the best application and GIS software for redistricting Virginia in 2001 and 2011 and provided the initial research for redistricting in 2021 prior to retirement from DLS. He worked with the chosen redistricting software developer (CityGate GIS) to assure the redistricting application (AutoBound) met all of Virginia's needs and expectations for the 2001 and 2011 redistricting cycles as well as preliminary requirements for the next generation redistricting application. Kent has drawn, imported, merged, combined, reviewed, analyzed, edited and/or published what is most likely 1,000's of Virginia House, Senate and Congressional district maps using AutoBound since 1999. He has extensive experience creating/drawing voting precincts (VTDS), current and historical, using various GIS products including AutoBound and ArcView. The base geographic polygon features used in creating districts in Virginia are census blocks, VTDS, city, town and county boundaries as provided by the Census Bureau.

Kent provided "technical expertise" to the "Special Master" (Bernard Groffman) appointed by the courts to re-draw the Virginia congressional districts in 2015 and again to re-draw the House districts in 2018. He was responsible for assuring all the necessary components of redistricting were available and current including ad hoc reports and maps as well as drawing many legislative maps for the "Special Master".

For redistricting Virginia in 1991 he was a Programmer/Analyst at the Division of Legislative Automated Systems (DLAS). DLAS was responsible for assimilating the Census Data to be used in the redistricting application running on a Wang mini-system computer as well as training and supporting Division of Legislative Services staff, legislators, and legislative aides in the use of the redistricting application.

Since 1998 he has utilized ESRI products ArcView, ArcMap and ArcGIS extensively to generate maps, ad hoc reports, and data for redistricting and other GIS applications.

Fred Hejazi

Fred Hejazi has over 17 years of redistricting experience at all levels of government. As CEO of Citygate GIS, Mr. Hejazi has provided redistricting services to cities ranging from a few thousands to some of the largest in the country including Los Angeles County CA, King County WA, the City of

Richmond, Virginia and the City of Indianapolis. Mr. Hejazi was the key designer of the Citygate's redistricting products and has been the solution manager for the firm's redistricting and reapportionment services since its inception.

Additionally, Mr. Hejazi has over 25 years of experience in Information System design, Geospatial Information Systems, Computer Aided Design, and Automated Mapping systems. 11 years of experience in Global Positioning Systems (GPS), geodetic control surveys, digital photogrammetry and aerial mapping.

His Geospatial Information Systems (GIS) experience includes over 20 years of application development, consulting, and project management, experience at all levels of government in North America. Key clients included, the US Census Bureau, Elections Canada, The US Army Corps of Engineers, NGA, 45 State Legislatures throughout the US and multiple City and County agencies, including Fairfax County, City of Richmond, Miami-Dade County, City of Houston, City of Tucson, King County WA, Montgomery County and Washington Suburban Sanitary Commission.

1.1 Key Deliverable One
(a) Software

Election Data Services proposes to use Citygate's AutoBound EDGE redistricting software for the purposes of this proposal. All mappers and subcontractors will use AutoBoundEDGE for the purposes of drawing, analyzing, reporting, and presenting plan configurations for this contract.

Citygate 2020 Redistricting Solutions and Services:

For 2020 Citygate has adopted an **enterprise approach to redistricting**. This approach means we will provide tools for every aspect of the redistricting process, from data development to final online publishing of maps. Each component of the system is designed to seamlessly work with the others. When a plan is completed, it can be sent to the online public commenting portal with a single menu click. Alternatively, plans created using the web redistricting can be directly viewed on the desktop product. The graphic on the right provides an overview of Citygate's redistricting enterprise architecture.

The Citygate system is divided in to 3 functional areas as described below:

Citygate 2020 redistricting architecture
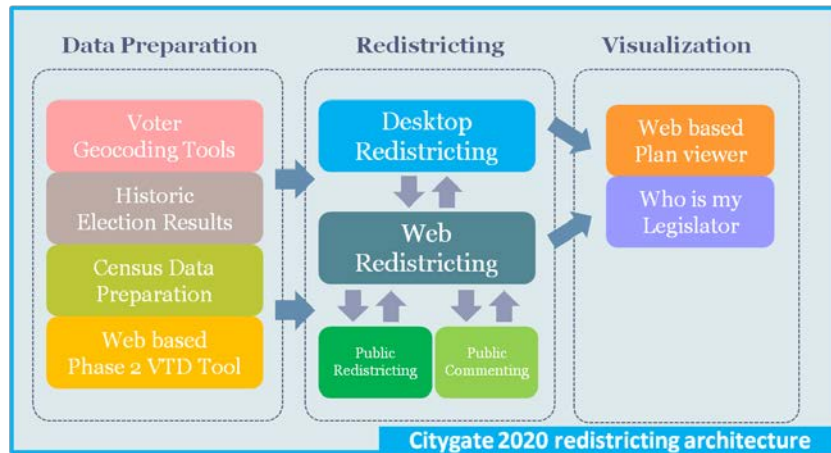
Data Preparation.

There are significant number of data perpetration tasks which may be required before redistricting can be started. These include geocoding and summarizing voter files, processing of past election results, preparation and quality control of Census Data including addressing necessary population changes as related to military and prison facilities and support of Census Bureau's effort in collection and capture of existing voting precincts.

Election Data Services will develop the database for the State of Michigan and import it into the AutoBound EDGE system. A larger discussion of the database preparation and components is contained in the answers to Schedule A (c) below.

1. **Redistricting.**

Desktop Tools. For 2020 Citygate's primary redistricting tool will be a standalone redistricting product called Autobound EDGE. EDGE is based on the ESRI ArcGIS Runtime API and is built from the ground up to focus specifically on the task of redistricting. The system is not burdened by unnecessary GIS functionality that is not related to redistricting. As a result, the system is highly responsive, extremely quick to load and provides extensive AI based semi-automated redistricting tools. Additionally, since the system is standalone, it offers advanced plan encryption which ensures plan data cannot be opened without an appropriate username and password combination.
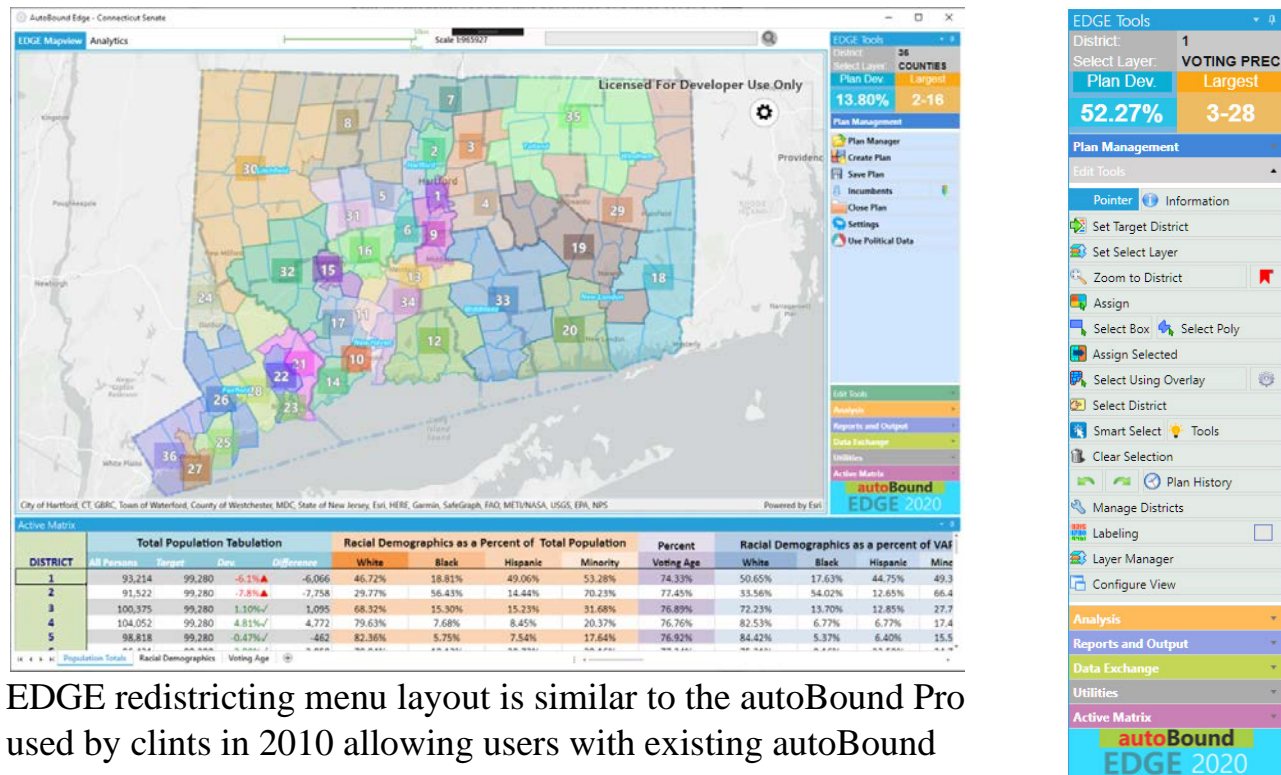
EDGE redistricting menu layout is similar to the autoBound Pro used by clints in 2010 allowing users with existing autoBound experience to quickly learn and navigate the system. The system is designed to support multiple displays. The menu, map and the spreadsheet used to display district totals can be undocked and made to float to secondary monitors. The user can also change the configuration of the software by rearranging the location of the various objects on the screen.

Tools are grouped by function. The software's primary redistricting tools are located in the Edit Tools submenu and include manual, and semi automated tools. The undo function allows the user to undo an unlimited number of commands, including ones from previous sessions. The Plan history which works in conjunction with the undo command allows the user to return the plan to any point in its history.

As edits are made to the plan, the results of the calculations are displayed in a spreadsheet which the user can customize with their own calculations. The spreadsheet is directly compatible with Microsoft Excel. The spreadsheet can be opened and customized inside Excel without the need for import or export. The following a default view of the spreadsheet with banded rows selected as an option.

The autoBound EDGE plan manager displays plans with an icon indicating the last time the plan was edited. For each plan a small thumbnail picture is also provided. Users can sort the data using any column or use the advance select option to filter plans by any of the visible columns.


Plan details can be displayed by clicking the + on the left most columns. The expanded view provides additional details about the plan which include %Complete. The plan timeline portion of the detail (shown below on the right) provides a view of plan activity over its history. The taller bars indicate more edits on the particular day.


The plan manager is designed to allow the user to quickly locate plans and easily get a perspective on how far along the plan is and how much work has been done on it.

Another key feature of autoBound EDGE is the analytics window. Analytics window allows the user to quickly view vital statistics about any existing or proposed district. Information is provided on population and racial demographics, political composition, geographic make up and compactness of each district. The system can also be configured to automatically select or add to districts based user defined criteria.
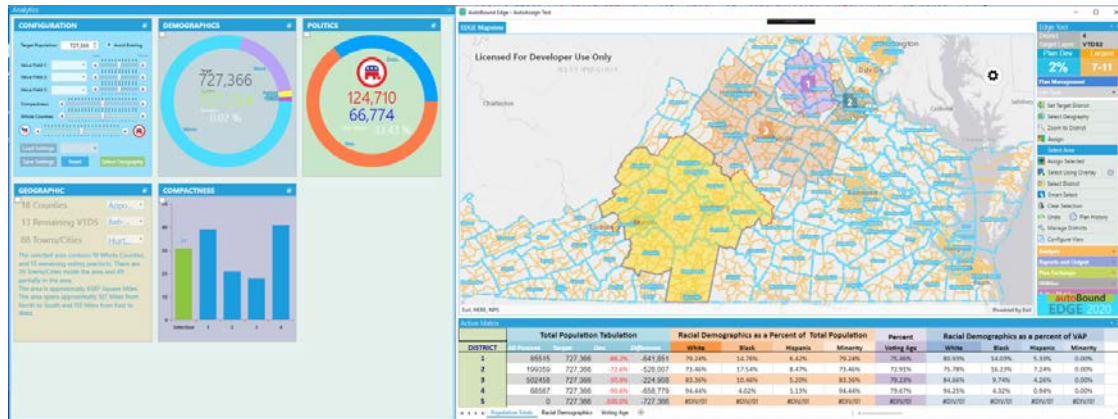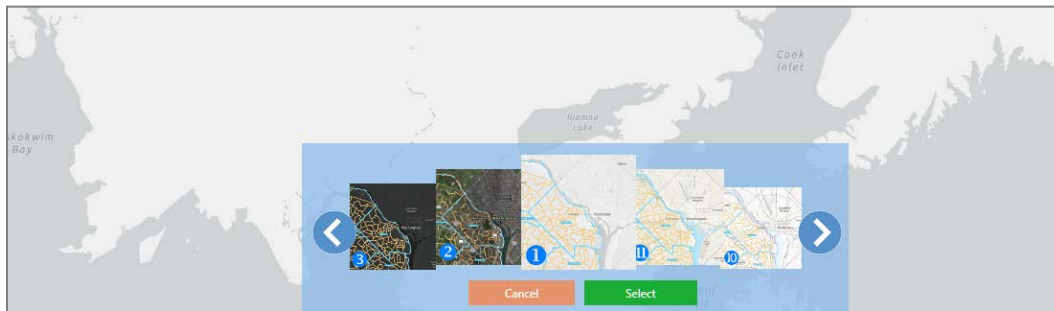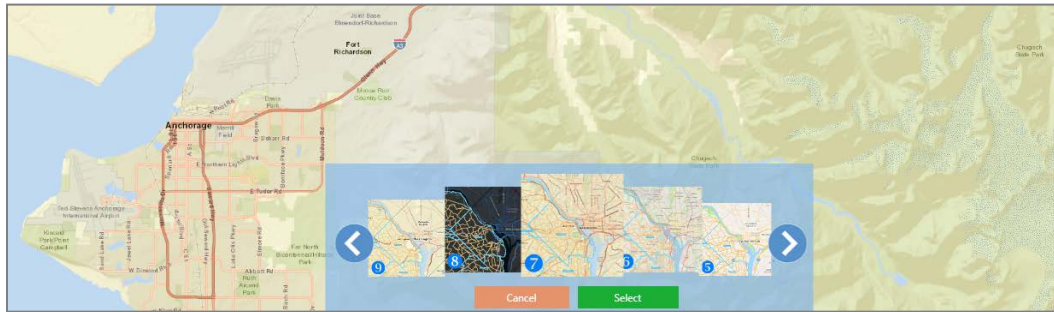

Visualization Tools

EDGE is based on the latest ESRI GIS technology and includes 11 base maps which can be used depending based on users' need and requirements. The EDGE Configure view tool provides access to the various base maps. The following are some examples of the maps available.

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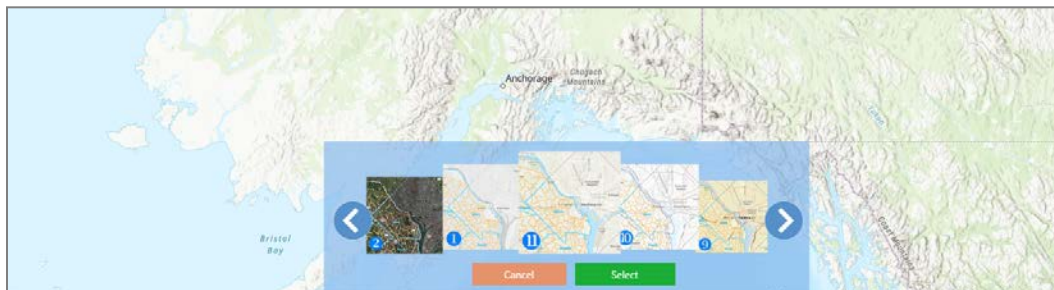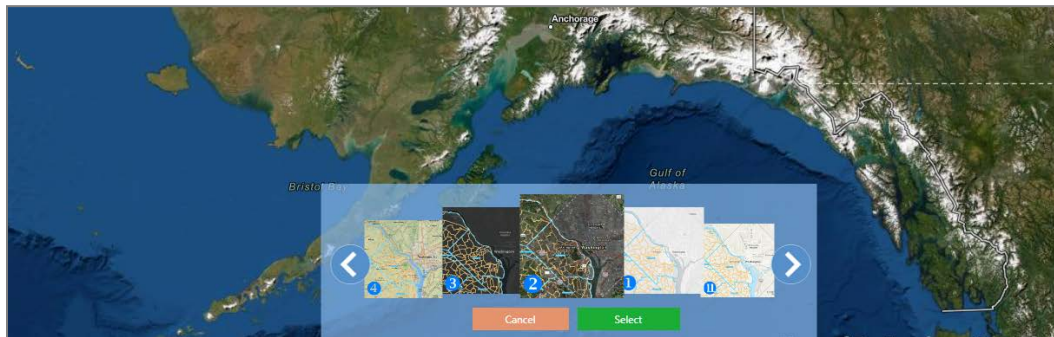
AutoBound EDGE is the only desktop redistricting product that offers a large variety of base maps and satellite imagery that can be used for redistricting and map production. The availability of these base maps is especially important in Michigan where many district boundaries follow valley and mountain ranges. These physical features may not be readily visible on Census maps but play an important role in deciding where boundaries should be drawn.
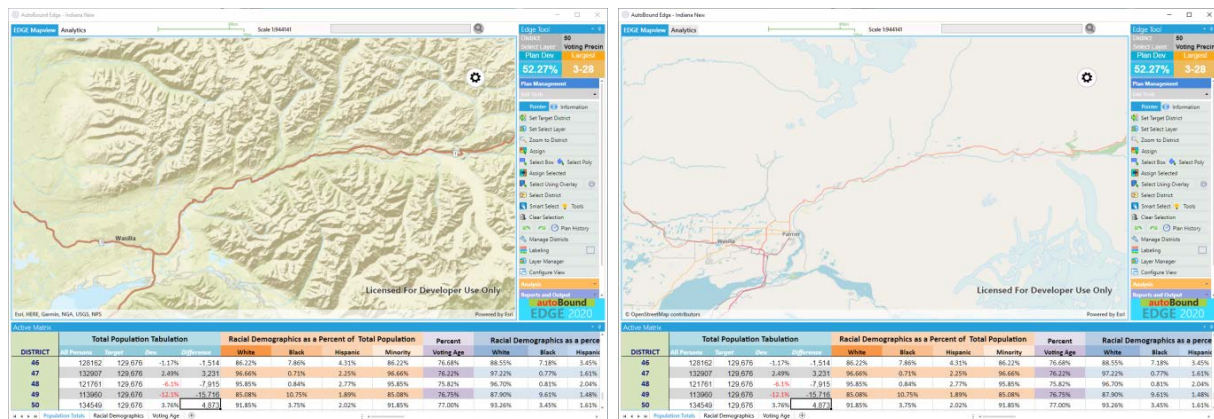
During plan editing, users can display demographic and political data on the map. Up to 3 values can be simultaneously displayed on the map. EDGE automatically manages labeling to ensure that the map is not
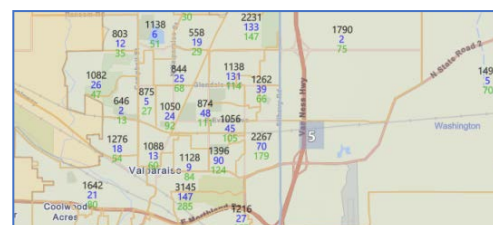
over printed with too many numbers. The example on the right shows labels for total population, African American and Hispanic population for each precinct. As the user changes redistricting layers, the software automatically switches labels so the current redistricting layer is always labeled.

Plan Editing Tools

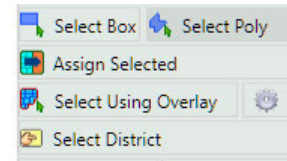Users can use the Assign Tool which assigns any selected geography to the target district. Users can also select the geographies first using either the Select Box or Select Poly Tools then assign the selected geographies to the desired district.

The results from each edit are immediately calculated and reflected in the Active Matrix spreadsheet. Active Matrix a unique feature exclusively available in EDGE which incorporates an Excel spreadsheet into the redistricting tool set.

Active Matrix allows creation of any user defined and calculated columns as well as create new tabs for specialized calculations. Additionally, spreadsheet users can take advantage of spreadsheet functions such as conditional cell formatting and multiple export formats. Election Data Services will be creating a unique active matrix that tracks the various racial and ethnic group calculations outlined below in the database potion of this proposal.
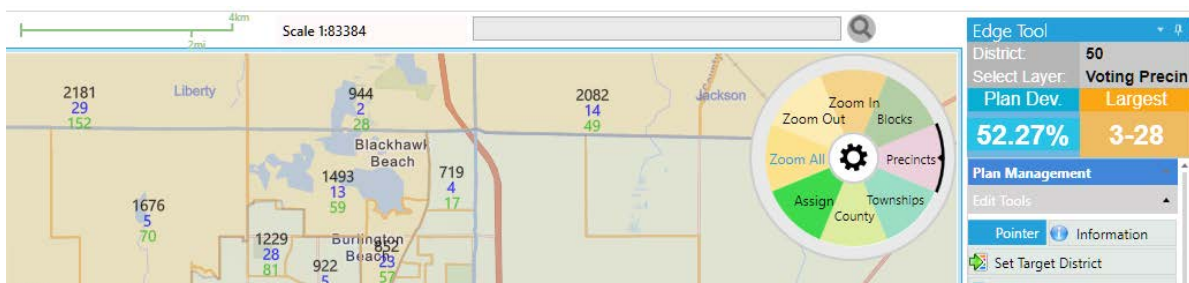
The gear tool shown above allows quick access for selection of the redistricting layer and to some of the more commonly used functions. After each edit, the overall plan deviation is shown in the upper right corner of the Edge Tool bar. The districts with the largest deviation are also shown in the same area.

EDGE provides undo, redo and plan history option. Any edits made to the plan can be undone then optionally redone. Plan history allows the user to see major changes to the plan in a calendar view. The user can select a particular date and see the edits that were made to the plan and revert the plan to that point in time.
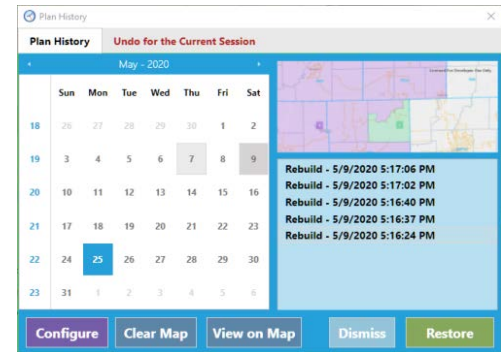
Plan Editing using Intelligent Automation
25 years ago, Citygate was the first company to develop a commercially available automated redistricting solution. In fact the "auto" in autoBound comes from the genesis of the software in automated redistricting. However, during the 25 years of continued development, automated redistricting in our software has evolved from simply creating random districts to intelligently supporting the user during the redistricting process. AutoBound can still create random districts as several of our competitors now do.

However, EDGE provides a unique set of intelligence based automated assistance tools not available in any other redistricting product on the market. The EDGE District Assist Tool is able to recommend solutions based on user define parameters, optimizing population and selected demographics.

In the following example, District 50 is the target district with a population deviation of 3.76% or 4,873 individuals as shown in the last row of the Active Matrix spreadsheet at the bottom of the screen view below. Although the district is within the 5% of the required deviation, EDGE is asked to recommend a solution to improve the deviation.

The settings on the right side of the EDGE District Assist tool allow the user to manipulate the configuration of the proposed solution. Districts can be optimized for particular demographics or political designation or simply be optimized for equal population as in this example. EDGE can also add preference for compact

districts or create ones that do not split counties. Sliders allow the user to specify the importance of each parameter.
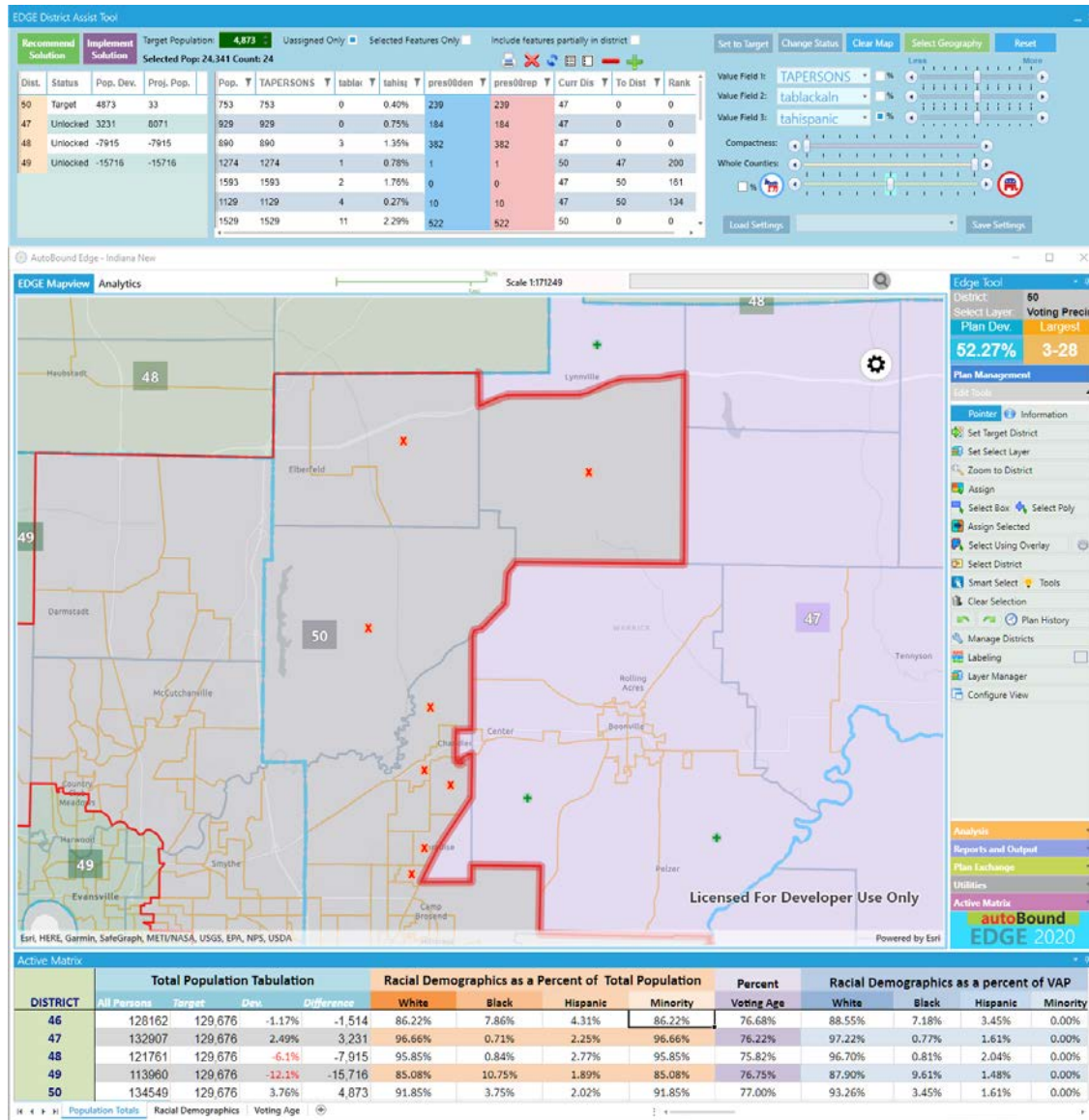
Once the user clicks the **Recommend Solution** button, the system calculates the optimal solution for modifying the boundary in order to reach the best possible population deviation. In this case the analysis is being performed at the precinct level. The recommended solution is presented graphically and in a table in the middle part of the Assist tool.

The software also calculates what the resulting population would be if the solution is implemented. As can be seen from the example. The solution would reduce the

population deviation from 4,873 to only <u>33</u>. The precincts which must be removed from district 50 are highlighted with an **X** and the ones to be added are highlighted with a green +. It is worth noting that District 50 is over populated by 4,873 persons. The software did not simply suggest removing precincts to reduce the population. Rather it intelligently suggested adding some precincts and removing others to achieve the best deviation possible.

Once the solution is calculated, the user can make modifications by adding or removing features then clicking the "Implement Solution" to apply the recommendation to the district. This unique capability allows users to quickly balance districts and achieve optimum results without spending hundreds of hours working on plans. EDGE can quickly tell the user what is and is not possible in any district configuration.

Analytics

After a plan has been developed, the user can perform various analytics such as comparing plans, checking core constituency, identify geographic splits, compactness analysis and identify unassigned, and areas of discontiguity. A key capability of EDGE is that it not only identifies plan errors, but recommends corrections. In the example on the right, District 4 was identified to have 1 area of discontiguity. The area is highlighted on the map and a recommended correction is provided in the menu. The user can simply click Assign to implement the recommendation and correct the discontiguity.
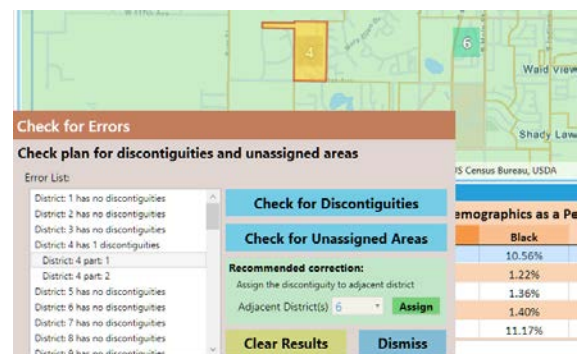
The EDGE Compactness Analysis, includes all major measurements including Polsby-Popper, Schwartzberg, Reock, Length-Width and Convex Hull. Once compactness analysis is performed, the results are displayed in the EDGE reporting tool and can be exported to any of 10 export formats including PDF, Excel, PowerPoint and MSWord.
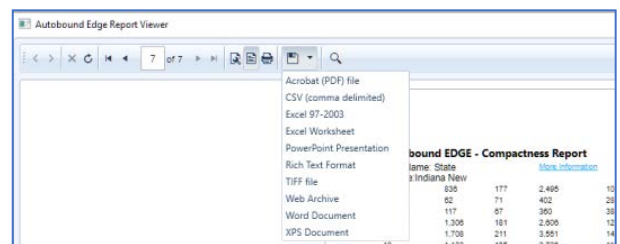
Reports and Map Output

EDGE includes a complete report and map creation sub system. Reports and maps can be customized using the EDGE report editor, which Election Data Services

will perform. The following are the menus which allow access to maps and reports in EDGE. They also list the different types of reports and maps available to the user. As can be noted, reports includes multiple Bill Language and Bill Drafting system compatible formats, as well as a variety of demographic report.

Both reports and maps include a table of content page with links to each district. The following is an example of 8X11 Landscape Map of all districts (Map for District 9 is shown). The map can be customized with the agency logo on the upper right side. For each district, the software will display the Ideal population for the district along with deviation and current population.
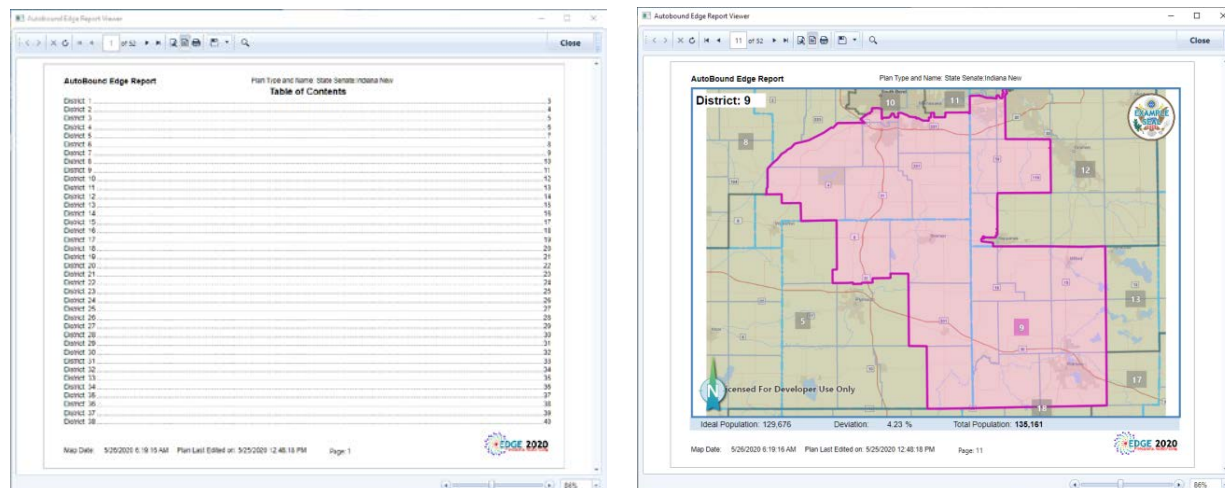
Reports and maps can be exported to 10 different formats including PDF, Excel, CSV, PowerPoint, Microsoft Word and HTML. EDGE is the first redistricting product to offer district snapshot reports. Snapshot reports provide quick overviews of districts describing population, geography and demographics in an easy to use report.
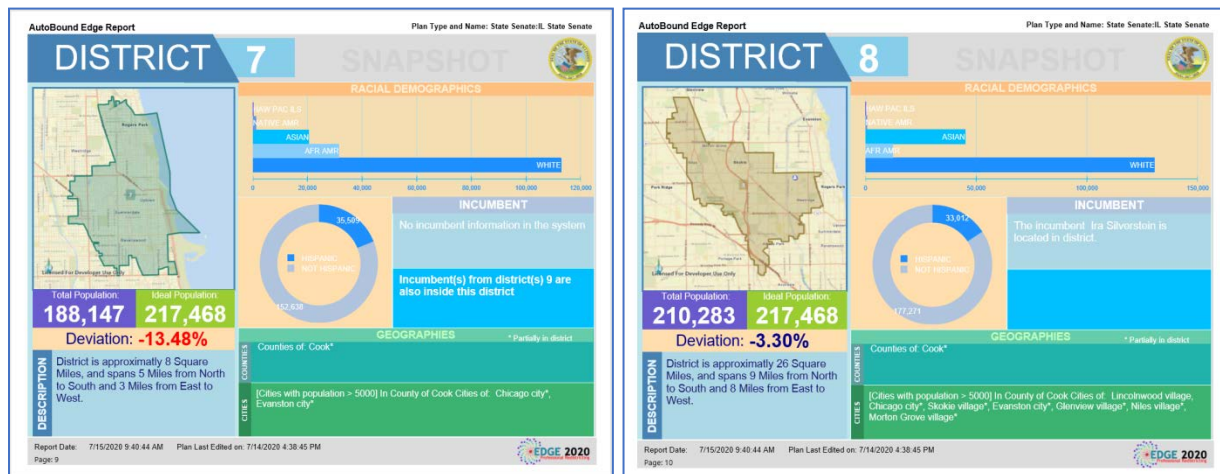
Political Data

EDGE includes the capability to import and use political data. Political data in this context refers to results of past elections captured at Voting Precinct or other geographic levels. EDGE is designed to allow the user to import multiple political data files. These files are separate from one another and can be deployed to different parts of your organization to be used in different plans. However, if your organization wishes to combine all political data into a single table and deploy that table for all users that wish access to that data, then the data can be combined before it is imported into autoBound.
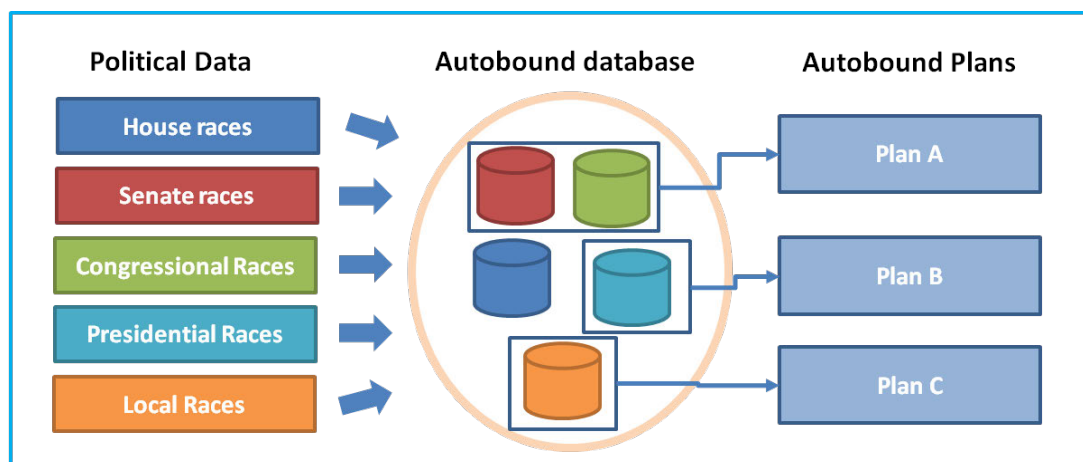
As shown in the graphic above, different political data can be imported then incorporated into plans individually. The interface for importing political data is designed to be simple to use. The software manages the internal processes of disaggregation and aggregation to all layers of geography used in redistricting.

The process is started with the Import Political Data Wizard accessed from the Utilities Menu.
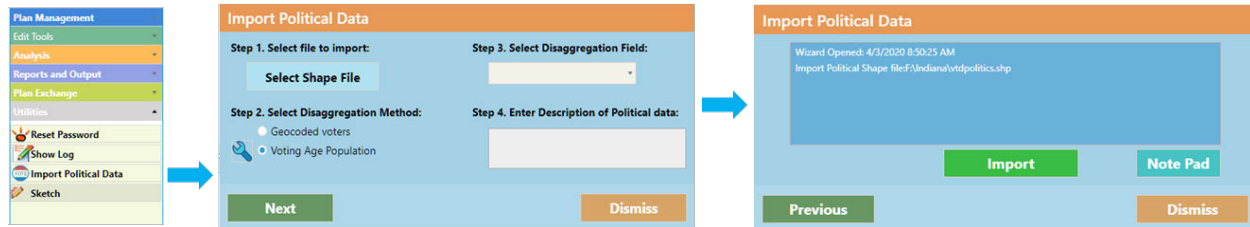
Once import is completed, the file containing the political data can be used during the redistricting process for demographic visualization, tabulation in the Active Matrix and in the EDGE District Assist Tool.

Plan Exchange
One of the key capabilities of EDGE is its ability to share data through a variety of import and export options. Redistricting plans can be exported to ESRI Shape files, KML Google Earth and, Block Equivalency files.

The Plan Import tool in EDGE provides a number of options that allow the user to import all or parts of a plan. The following is a screen view of the Plan Import tool.
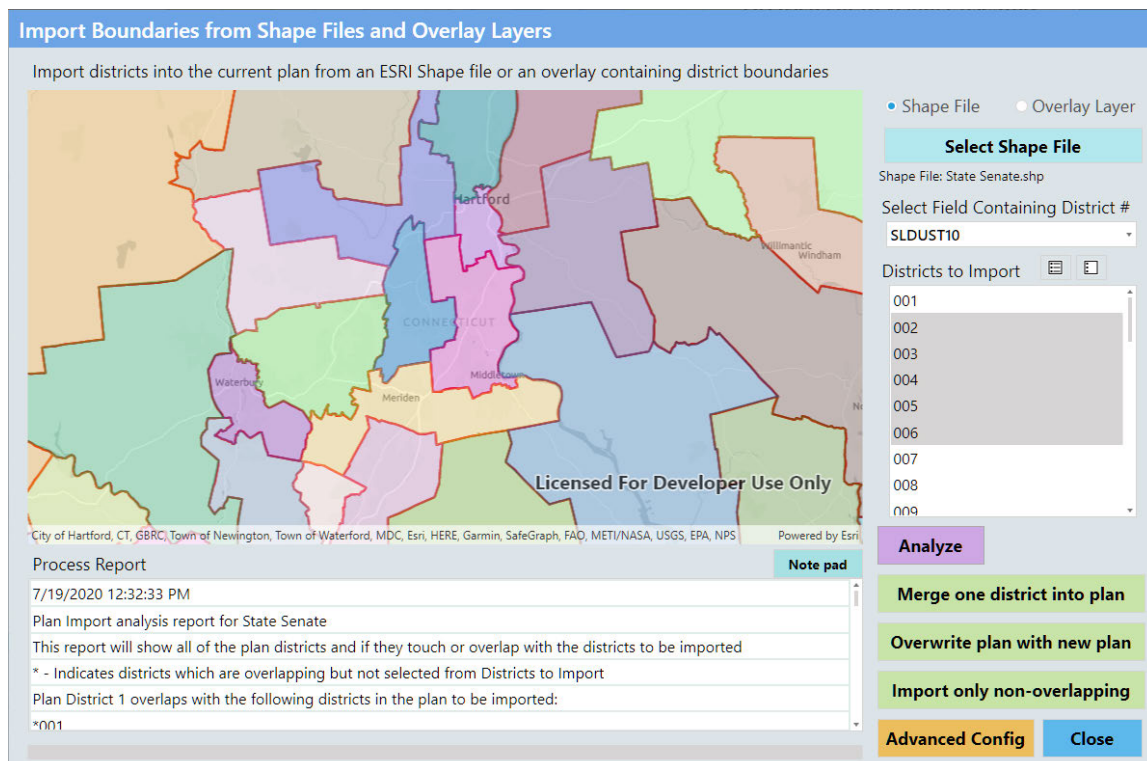
In the example above, a sub plan containing senate districts is selected for import. The Analyze button provides information to the user regarding which import districts overlap with existing boundaries. The user can the Merge a selected district into the current plan, import all districts into the plan regardless of overlap or import only non-overlapping districts. EDGE also includes the ability merge districts into plans or import only non-overlapping districts.

Online Content

EDGE also includes the ability to incorporate online content into redistricting maps. Online content is available from any number of other organizations including other Michigan government agencies, ArcGIS Online as well as ESRI's ArcGIS Online Living Atlas. This capability also allows plans uploaded to ArcGIS online to be viewed inside EDGE. In the following example, the ESRI Public School locations database was added to the a Senate Plan.
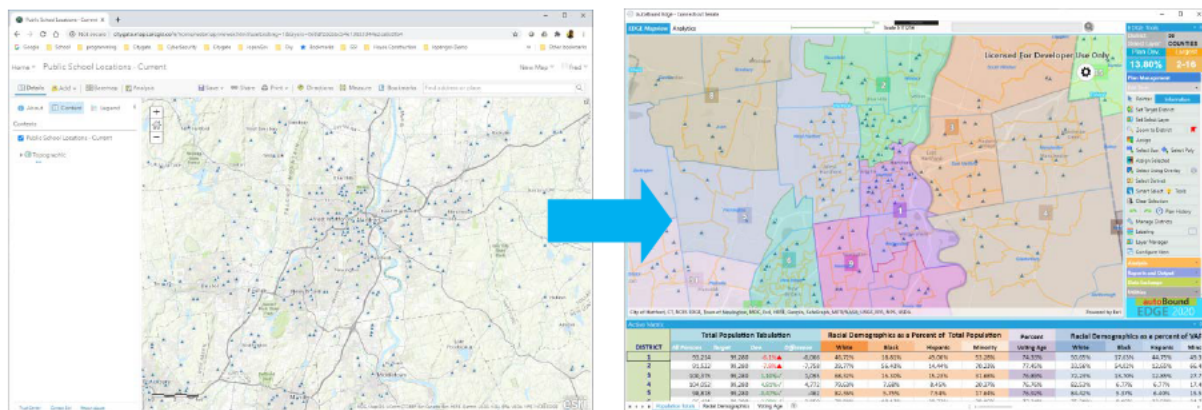
EDGE Plan Store

EDGE integrates seamlessly into the Autobound Enterprise redistricting architecture, directly accessing the autoBound centralized plan store. The Plan Store, is the database of all autoBound online and local content for a particular agency, including online editing, commenting, and viewing. Access is made using the Access Online Plan Store tool.

From the plan store, the user can open, download, share and delete online plans to which he has access to. The tool also provides search and filter capability.

EDGE makes extensive use of QR Codes when accessing online content. QR (Quick Response) Codes are bar codes which can be read quickly by a cell phone or mobile devices. EDGE makes use of QR codes to allow plans under consideration to be easily shared with members of a redistricting commission or with the public during open meetings. In the following example, a Senate plan for Virginia is shared using the QR code then displayed on a mobile device using Citygate's Plan Viewer tool.
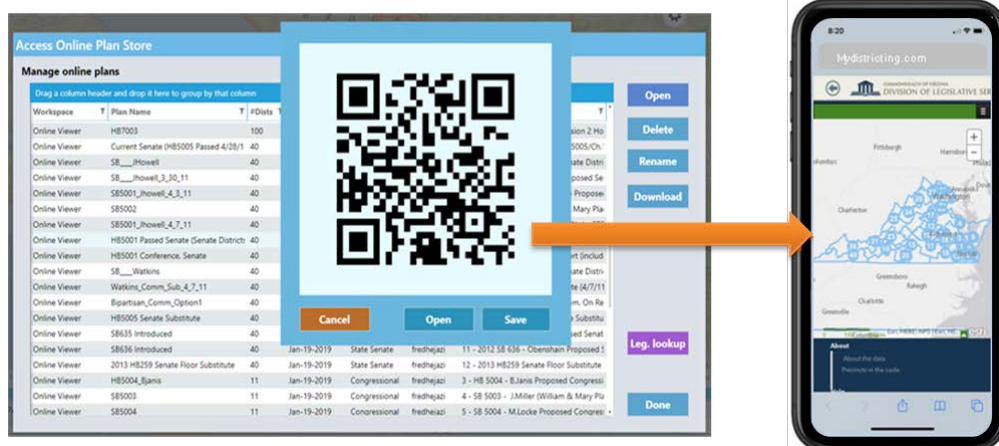
Internet Based Redistricting. Citygate's web based redistricting tools are specifically created for use by the members of the public and/or redistricting board

members. They are designed to be extremely simply to learn and provide only the necessary capability required for creating and submitting a redistricting plan.

In this area Citygate's tools are significantly different than other online redistricting tools such as ESRI and Maptitude's. In fact the autoBound online tool even uses Google maps instead of ESRI maps as it was determined that novice users are more likely to be familiar with the look and feel of Google Maps than those provided by ESRI.
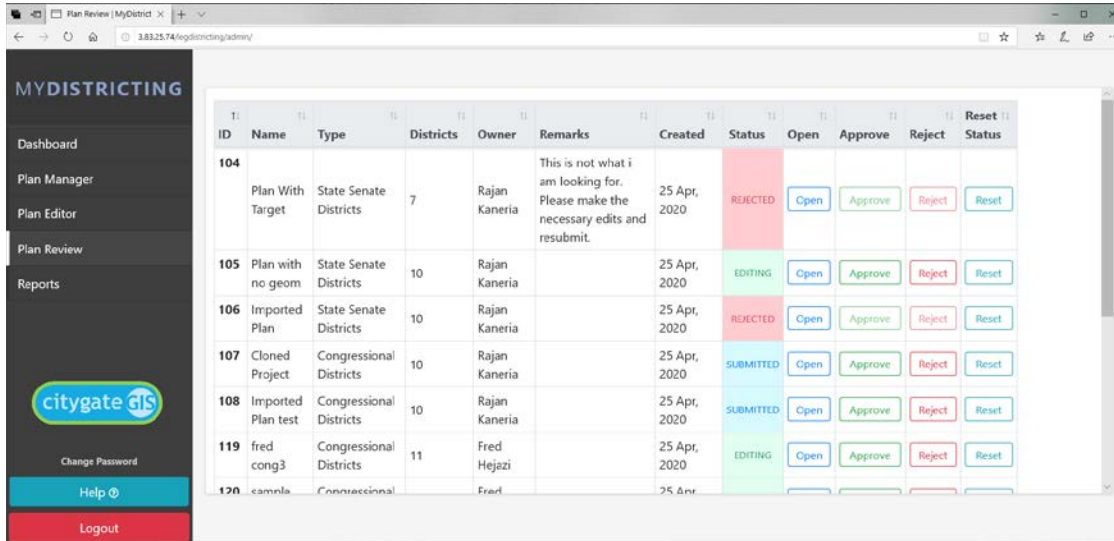
The Citygate online redistricting tools are available both as an installable software for onsite implementation and in a Software as a Service (SaaS) model hosted on Citygate's Amazon EC2 Cloud Server. In a hosted solution, the service is offered through Citygate's MYDISTRICTING.COM website.
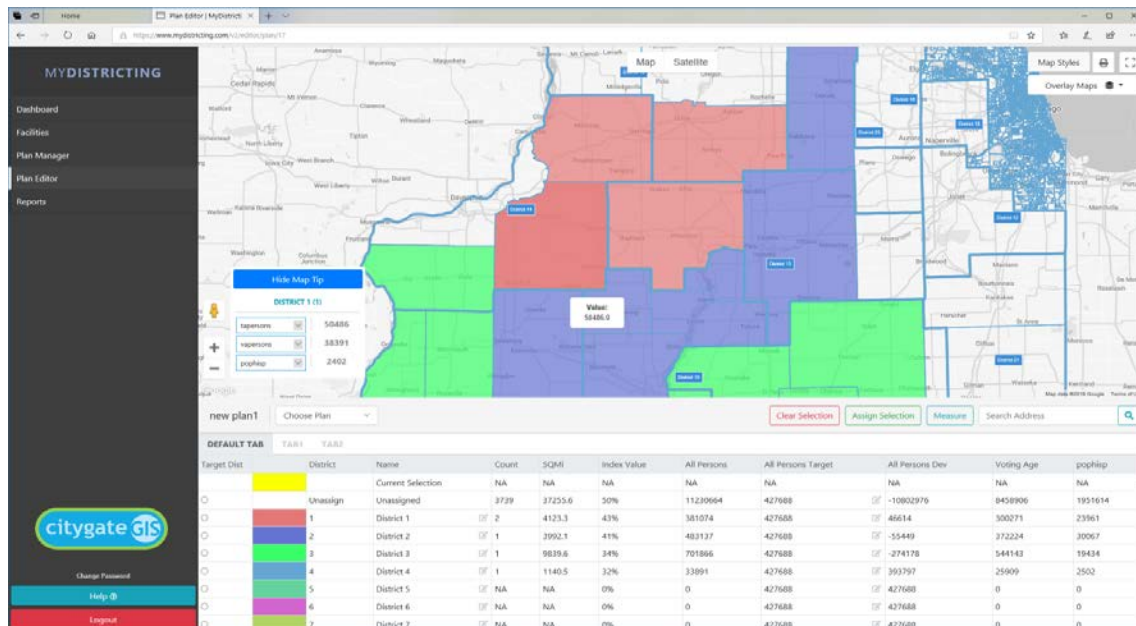
The application provides tools for creating and managing multiple plans, editing and generating reports and maps. The software provides tools to allow workgroups to be created and plans to be shared between multiple drawers. A key element of the system is its ability to manage the plan submission process. Once a plan has been completed by the user and passed the various error checks, the user can then submit the plan for evaluation by the agency. The system manages the submission process and tracks the plan through the various stages of review.

Submitted plans are displayed in the administrator's Plan Review tab where the plan name, type, owner and status are displayed. The administrator can open the

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plan for review, approve or reject the plan. The administrator can also provide comments back to the user outlining the reason for the action taken. The following is an example of the administrator's plan review screen where the status of the submitted plans are displayed.

The web redistricting system also provides access to the online commenting tool. Online commenting allows internal users or optionally members of the public to view plans and place comments on the map.
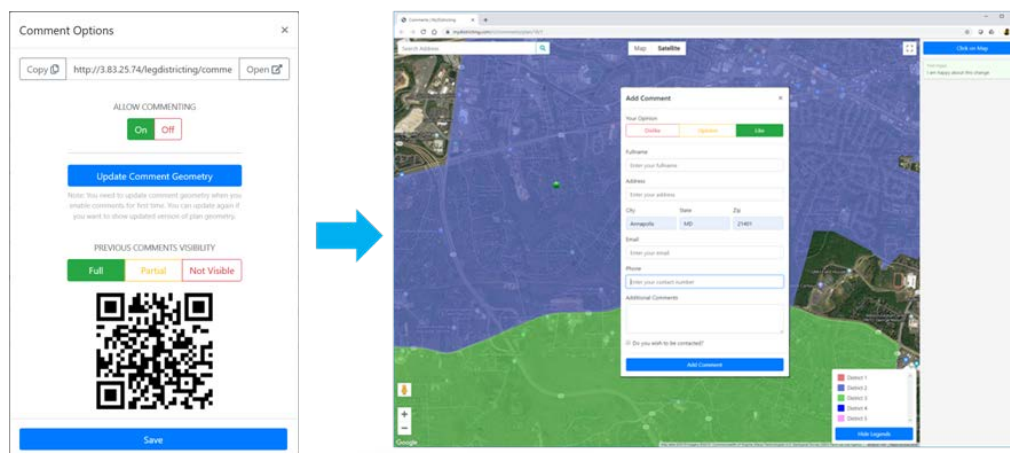
Comments appear as point on the map and depending on the type of comment, they are colored in Green, Yellow or Red.

The commenting tool can be configured to allow users to see full content from all previous comments from other users, only see that a comment has been placed or only be allowed to view their own. From the map, users can select to place a

comment and provide their contact information along with their comments. The comments are then visible as a map layer both online and on the desktop application.

Each comment is verified through email to ensure that one person does not submit an excessive number of comments and thereby distort the process.

Plan Visualization.

Once plans have been approved they can be visualized online using Citygate's online mapping tools. Maps and reports can be directly viewed using the web mapping portal. The following screen view is from an implementation for the State of Virginia. The system can be customized based on the requirements of the agency where it is being deployed.
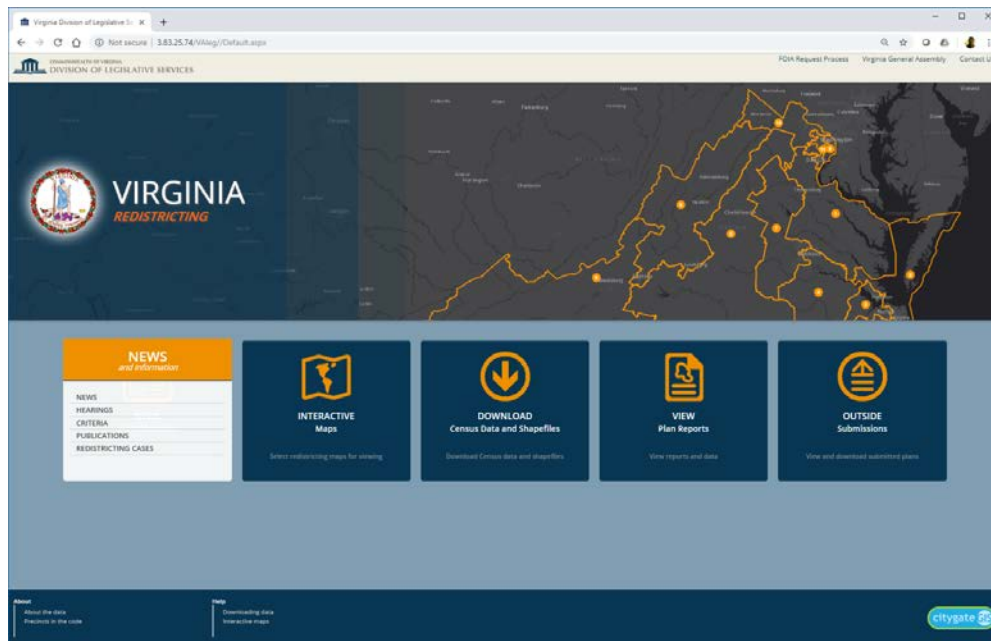
Plan viewer system provides easy to access tools which allow member of the public to search for, find, then select reports and data for download.

The system's interactive mapping tools allow users to load multiple plans and compare them with one another and make measurement or demographic queries. The following is an example for Congressional plans submitted for the State of Virginia where the system has been in use.
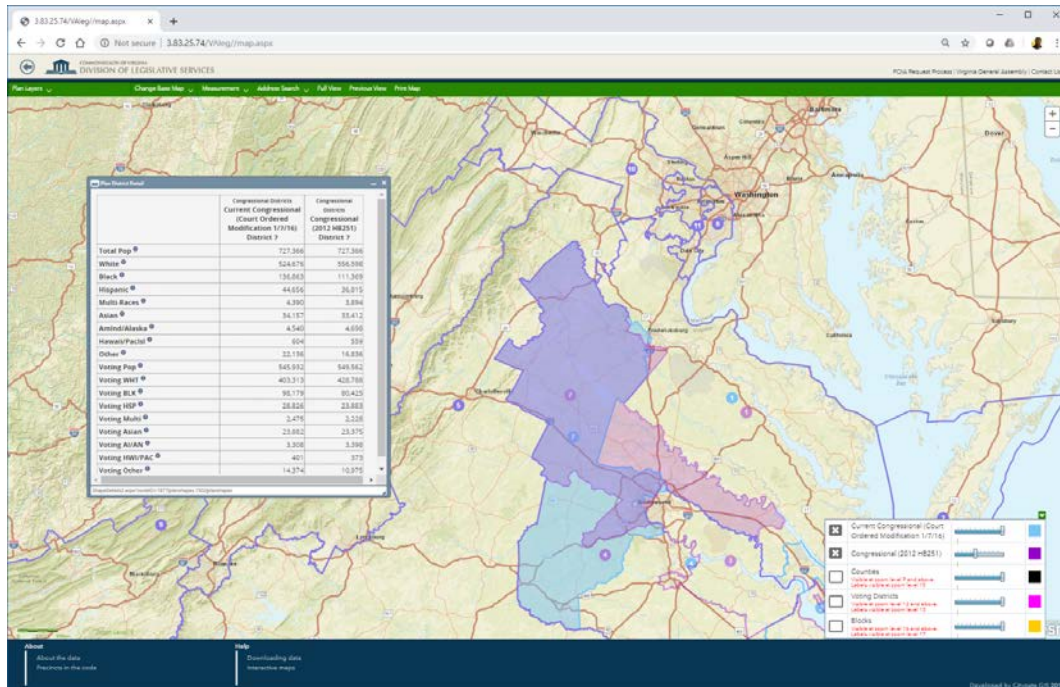
After a plan has been adopted, the Citygate Legislator look up tool can provide information about the elected officials based on address or map searches.
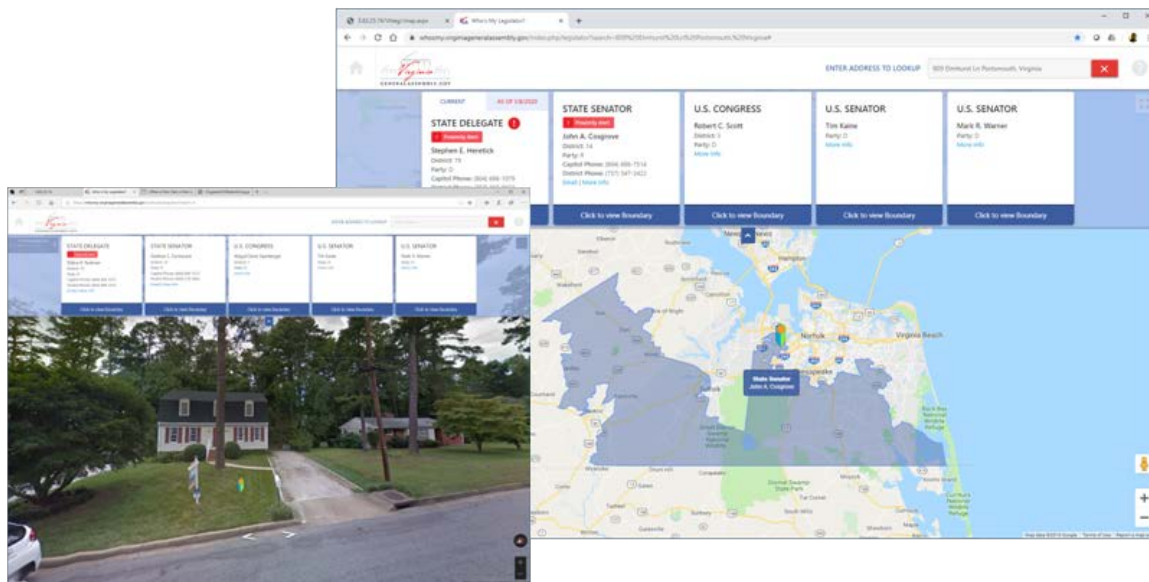
The legislator look-up provides several key capabilities beyond simply matching of locations to districts. The software includes the ability to attach timelines to districts. For example, as shown in the above screen view, the State Delegate boundary was challenged, and a new district was implemented by the court. They

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system provides a notice to the user for that particular district that the boundaries will change as of a particular date and who the new State Delegate will be.

The system also provides alerts for addresses which are too close the boundary allowing the user to use Google street views to more precisely determine their location on the map.

Licenses and Deployment Options.

Citygate provides multiple deployment options including:

➢ Professional Desktop Redistricting
➢ Web based Redistricting (Hosted or on premise)
➢ Web based Public Commenting (Hosted or on premise)
➢ Web based Plan and report visualization (Hosted or on premise)

Recommended configuration.

Citygate has been providing redistricting software solutions for over 25 years and worked with the majority of states in the US for both 2000 and 2010 cycles. Citygate would recommend a desktop solution as the primary software for redistricting with web option available should the state choose to provide redistricting editing or viewing to external users . A Desktop tool offers the following advantages over a purely web based system.

1. **Availability**. Desktop software is available regardless of location and status of an Internet connection and can be put on a laptop and taken to public hearings or conference rooms where Internet connectivity may not be easy to establish.

2. **Security.** A desktop system is not prone to online hacking. Physical access is required before any person can use the system. EDGE also includes username and password protection, so even after gaining physical access to the computer, plans can only be viewed and edited by authorized personnel.

3. **Speed.** Desktop system can display a great deal more information and are not restricted by the limited memory available in the browser. Web based systems constantly manage bandwidth and browser memory usage by limiting how much data can be displayed. This may work well for a public redistricting system, but does not function in a professional environment where data analysis and manipulation are required.

AutoBound EDGE is a self contained system and <u>does not require any additional GIS software</u>. EDGE is based on ESRI technology and uses the same data structure as the State's existing Arc/Info and Arcview software products.

Citygate would also recommend the implementation of its online redistricting and commenting system. This is an optional enhancement and not a requirement. The online tools would allow external users and members of the public to view plans, make edits or simply place comments on the plans to be addressed during redistricting meetings. Finally, Citygate would also recommend the implementation of its plan viewer and legislator look up system to allow members of the public to view the proposed plans and look up their legislator once plans have been adopted. This tool is also optional.

Hardware Requirements.

Citygate's professional desktop redistricting software EDGE runs on any windows compatible PC running Windows 10 or later. Citygate's web based redistricting, commenting, viewing and legislator lookup software are available as both Software as a Service (SaaS) and for on Premise installation. It is worth noting that unlike other web redistricting products, <u>on premise licenses are perpetual and include source code</u>. Which means the state does not have to continue to pay for the use of the software beyond the initial contract period. In a SaaS mode, Citygate typically recommends Amazon EC2 cloud hosting. Azure, Rackspace and other hosting sites are also optionally available. The software can run on any Windows or Linux Server system. The following is a recommended configuration for a laptop running EDGE.

Dell Mobile Precision 7740 CTO BASE
379-BDOE Intel (R) Core (TM) Processor i9-9980HK,(8 Core, 16MB Cache, 2.40GHz up to 5.00GHz Turbo, 45W) 619-ANUL Windows 10 Pro, 64bit English, French, Spanish 658-BCSB Microsoft(R) Office 30 Days Trial 631-ACDQ No Out-of-Band Systems Management 329-BENM Intel Core Processor i9-9980HK, 8 Core, 16MB Cache, 2.40GHz

up to 5.00GHz Turbo, 45W 490-BFEE Radeon Pro WX 3200 w/4GB GDDR5 490-BFEK Thermal Pad for AMD Graphic cards 319-BBGK 17.3" FHD/UHD IR Cam/Mic Bezel 320-BDED 17.3" UHD, No WWAN, IR Cover (Aluminium) 391-BENZ 17.3" UHD IGZO 3840x2160 AG NT, No WWAN, IR Cam/Mic, w/Prem Panel Guar 100% Adobe Color Aluminum 370-AELM 64GB, 2x32GB, DDR4 2666MHz Non-ECC Memory 400-AWYM M.2 2TB NVMe PCIe Class 40 Solid State Drive

580-AGVB Internal US English Dual Pointing Keyboard 580-AIDG Keyboard Lattice 346-BFOY 7740 Smart Card only 555-BEUK Intel Wi-Fi 6 AX200 2x2 .11ax 160MHz
451-BCFS 6-cell 97Wh Lithium Ion battery with ExpressCharge 387-BBDO Not ENERGY STAR Qualified
450-AHEP E5 240W 7.4mm Lot 6 PCR, Liteon
640-BBRC Dell Precision Optimizer 634-BTFN Foxit PhantomPDF 30 Day Trial 430-XYGV Resource Media not Included

620-AALW OS-Windows Media Not Included
340-CMIL Quick Setup Guide for Mobile Precision 7740 817-BBBB Custom Configuration 450-AHDL E5 C13 Power Cord 1M for North America
340-AGIK Safety/Environment and Regulatory Guide (English/French Multi-language) 555-BFBV Intel Wi-Fi 6 AX200 2x2 .11ax 160MHz + Bluetooth 5.1 Driver

The EDGE web based products are supported on Windows and Linux operating systems. The following is a recommended configuration for a windows based server.

PowerEdge R740XD	PowerEdge R740XD Server
Trusted Platform Module	No Trusted Platform Module
Chassis Configuration	Chassis with Up to 12 x 3.5" Hard Drives for 2CPU Configuration
Shipping	PowerEdge R740XD Shipping
Shipping Material	PowerEdge R740 Shipping Material
Regulatory	PowerEdge R740 CE, CCC, BIS Marking
Processor	Intel Xeon Silver 4208 2.1G, 8C/16T, 9.6GT/s, 11M Cache, Turbo, HT (85W) DDR4-2400
Additional Processor	Intel Xeon Silver 4208 2.1G, 8C/16T, 9.6GT/s, 11M Cache, Turbo, HT (85W) DDR4-2400
Processor Thermal Config.	2 Standard Heatsinks for 125W or less CPUs
Memory DIMM Type & Speed	2933MT/s RDIMMs
Memory Configuration Type	Performance Optimized
Memory Capacity	16GB RDIMM, 2933MT/s, Dual Rank
RAID Configuration	C6, RAID 1 + RAID 5 for HDDs or SSDs (Matching Type/Speed/Capacity Within Each RAID Container)
RAID/Internal Storage Controllers	PERC H730P RAID Controller, 2GB NV Cache, Adapter, Full Height
Hard Drives	240GB SSD SATA Mixed Use 6Gbps 512e 2.5in Hot plug, 3.5in HYB CARR S4610 Drive
Hard Drives for 2nd RAID	4TB 7.2K RPM NLSAS 12Gbps 512n 3.5in Hot-plug Hard Drive
Operating System	Windows Server® 2019 Standard,16CORE,FI,No Med,No CAL, Multi Language
OS Media Kits	Windows Server 2019 Standard,16CORE,Digitally Fulfilled Recovery Image, Multi Language
Client Access Licenses	10-pack of Windows Server 2019/2016 User CALs (Standard or Datacenter)
Embedded Systems Management	iDRAC9 Enterprise with OpenManage Enterprise Advanced
Group Manager	iDRAC Group Manager, Enabled
Password	iDRAC,Factory Generated Password
PCIe Riser	Riser Config 5, 6 x8, 2 x16 slots
Network Daughter Card	Broadcom 57412 Dual Port 10GbE SFP+ & 5720 Dual Port 1GbE BASE-T rNDC
Fans	6 Performance Fans forR740/740XD
Power Supply	Dual, Hot-plug, Redundant Power Supply (1+1), 750W
Power Cords	C13 to C14, PDU Style, 12 AMP, 6.5 Feet (2m) Power Cord, North America

Schedule A, (b) Security   A desktop system is not prone to online hacking. Physical access is required before any person can use the system. EDGE also includes username and password protection, so even after gaining physical access to the computer, plans can only be viewed and edited by authorized personnel.

Plans are stored in encrypted format on the disk and can only be opened by the EDGE software with the appropriate username and password. Communication between the desktop application and the server uses https protocol which is validated by username, password and a unique token.

The server software uses https protocol. User accounts are protected by username and password which are stored in encrypted format in the software's database. The server is hosted on Amazon's EC2 with server access restricted to IP addresses associated with Citygate.

Schedule A, (c) Geographic Database

Redistricting Databases

Over the past 44 years Election Data Services, Inc. has compiled extensive databases for use in the redistricting process and redistricting and voting rights court cases in many different states and localities. These databases form the heart of the redistricting process, but also are an essential building block for racial bloc
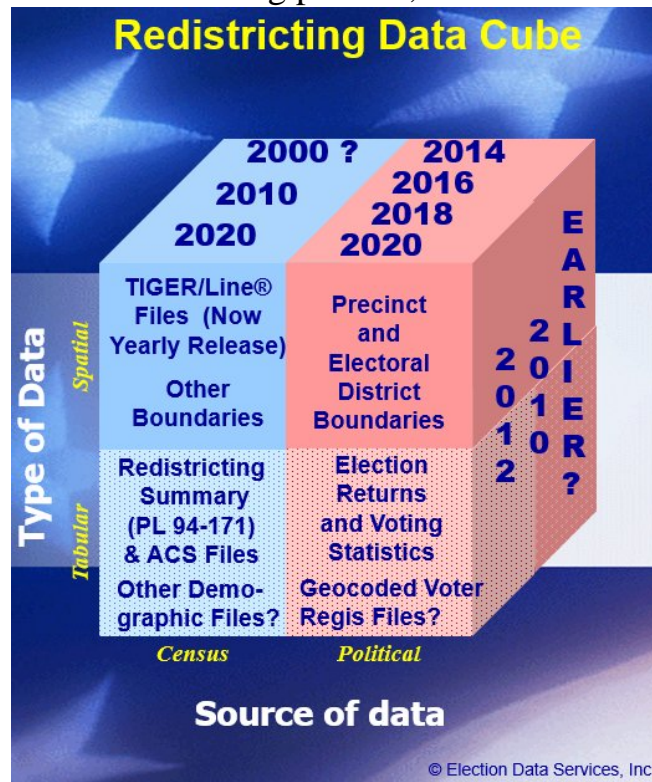
Figure 1

voting analysis. Generally, these databases merge four different elements through the use of geography. Over the past four decades Mr. Brace has spoken before many groups and courts about what he terms the "redistricting data cube". The sketch to the left depicts that cube.

Redistricting issues always deal with territory. In previous decades, the Census Bureau depicted data collection areas on paper maps. In 1990, the Bureau was able to create an electronic map of the entire country, called the Topologically Integrated Geographic Encoding and Referencing system, or TIGER. Census geography in the form of TIGER files becomes the **first**

element of the data cube, shown in the upper left side of the cube (i.e., type of data: spatial; source of data: Census).

The TIGER files are actually massive databases in themselves and encompass all the lines that one sees on a map. These lines or "segments" are depicted with a latitude and a longitude coordinate point at the beginning and end of each line segment. These line segments have no population data associated with them, but they do have an extensive set of other attribute information. For example, each line segment has information about whether it is a stream, road,

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railroad, or power line, etc. If the segment is a road or stream, there is also information about its name. If the segment is a road, there is also information in many instances about address ranges.

All line segments have geographic codes that identify the census tract and block on the left and right sides of the line. If one were to travel along a series of line segments and make a right turn at the end of each segment onto an intersecting line segment, one would eventually return to the starting point. Upon arrival at the starting point, one would be "closing" a polygon. This resulting polygon would form the basic census block. Census blocks are linked to block-level population and demographic data, but these numeric data are not in the TIGER files.

This numeric data, the **second element in the data cube** (lower left of the cube), is reported by the Census Bureau after each decennial census and consists of population and demographic counts associated with each census tract and block in each state. This data is first released for redistricting purposes in a computer file called the Census Redistricting (PL 94–171) Summary File. For each census tract and block there are both total population and voting age population (18 years old and over) counts, along with sub-counts of the different racial and Hispanic origin categories tabulated by the Census Bureau. For the first time in the 2000 Census, persons could choose multiple racial or ethnic origins, which caused the PL 94–171 population files to expand from 12 columns of data in 1990 to 291 columns of data in 2000 and 2010. Despite this seemly massive amount of data, it is generally not until the year ending in a "2" when more detailed demographic data, such as income or education information, is released by the Census Bureau.

The availability of the Census Bureau's PL94-171 population data files is still undetermined as of 2/9/2021. It is our understanding in discussions with Bureau staff that the release of the PL files will again be delayed in an announcement expected by this Friday. We understand that the PL files may not be released until August or September of 2021, which will pose major problems for being able to meet the state's redistricting deadlines.

These two Census computer files (TIGER and PL) form the heart of any redistricting effort and are absolutely necessary for drawing and analyzing districts.

If one wishes to perform an electoral analysis of voting behavior for a given area, election returns are required. This is the **third element in the data cube** (lower right of cube). In the past these returns had to be collected from each

county in a state, although more states are centralizing that collection effort. However, when redistricting deals with local contests, returns from multiple years must be collected from local election offices and, if not in electronic form, must be keypunched to perform the analysis. State of Michigan is extremely fortunate in that the County's election office makes precinct level returns available on their website for all years and all contests.

Election returns alone are not enough to do racial voting or political analysis that is required in a redistricting and/or court case setting. One must know where the election returns come from—that is, from what part of a county or city. This is where the **fourth element of the data cube** (upper right of cube) — precinct maps — comes into play. Precinct maps for each election year must be collected and analyzed to determine the extent of change since the previous year.

It is standard practice across the United States for county governments to make massive precinct changes subsequent to statewide redistricting that occur in the years ending in "1" and "2". In addition, many larger jurisdictions change precinct boundaries on a regular basis as population shifts occur or there is a need to relocate a polling place. As a result, to analyze election contests that occur over time, one must determine the makeup of each precinct in each election in which the contests were held.

Election Data Services, Inc. has been collecting precinct maps from around the nation since the early 1980s. To study racial bloc voting or perform other types of electoral analysis, the racial makeup of each precinct needs to be determined and matched up with election returns. Unfortunately, the Census Bureau reports demographic data for only those precincts that were in existence in the year ending with "8" before the decennial census is conducted. To merge racial demographic data from the Census Bureau with the configuration of the precincts used in each election over the decade, one must overlay the precinct map boundaries that existed in each election on top of the census geographic boundaries.
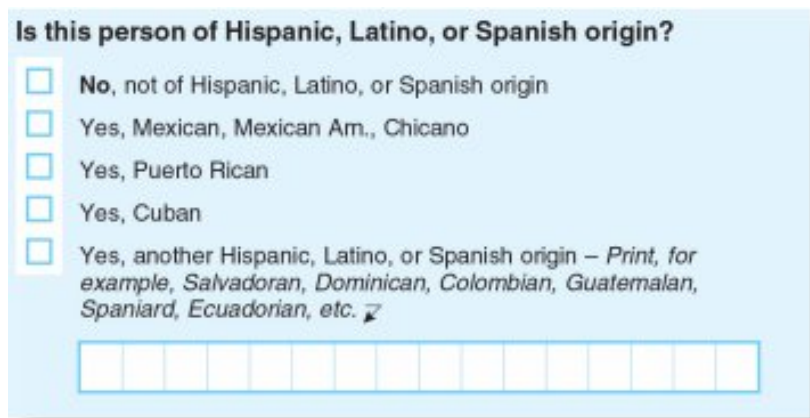
It is our understanding that the State of Michigan does have precinct boundaries in the state's Center for Shared Solutions (CSS) back to the 2014 election. EDS will need to test these boundaries and make sure they match up with the election returns from the Secretary of State's office. In addition, we will need to determine whether the precinct boundaries will match up with the final TIGER geography for the 2020 Census, files of which are only now being released by the Bureau. (Michigan files were not on the Bureau's website as of 2/9/2021.)

Election Data Services, Inc. has developed computer programs to assist with this process, whereby an operator assigns census tracts and blocks to individual precincts using GIS technology. Once this block-to-precinct equivalency has been developed, additional computer programs can tally up the census demographic and racial data from the blocks to the precinct summary level. E.D.S. Inc. has loaded these files into various computer databases compiled over the years for such analysis.

Election Data Services, Inc. has spent thousands of hours of staff time compiling extensive databases of state and local election returns and combining the geography of precincts with census geography. A database that matches precinct election returns with the demographic composition of the precincts as reported by the Census is required to conduct an analysis of voting patterns by race/ethnicity. These types of databases are the central component necessary to determine the extent to which racial groups vote differently or the same. Combining all of this information creates a massive database that is internal to Election Data Services, Inc. Additional programs have been created to extract individual election contests from the massive internal database and format them into smaller ASCII datasets that can be read by statistical software programs, such as SPSS, S-Plus, or "R" used to perform racial bloc voting analyses.

Census Data Analysis and Compilation

As noted earlier, census data is one of the major elements of the "datacube." With regard to demographic information and race, the 2010 Census asked, and the 2020 Census is asking, each individual two major questions. First, they asked whether the person was Hispanic or not (the Census Bureau has not considered Hispanic as being a race). The actual Hispanic question in the questionnaire for 2020 appeared as noted in Figure 2, to the right. Second, they asked the person's race. This is show in
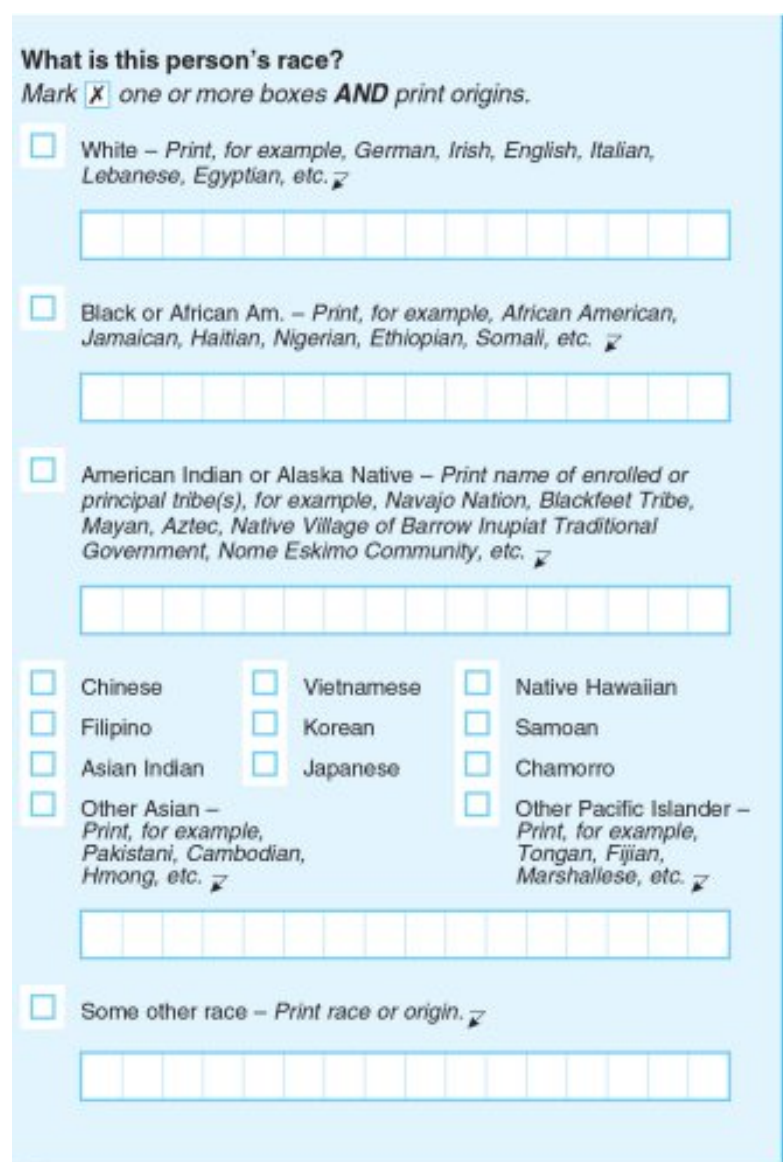
Figure 2

Figure 3, below. This two-part question format has been used since Hispanic origin was first asked of every individual in 1980.

Since 1980 the Census Bureau has taken the results of the race question and created counts of five major racial groups along with a catch-all of "some other race". The five major racial groups were "*white*", "*black or African-American*", "*American American Indian or Alaska Native*", "*Asian*" (which combined the answers of Asian American Indian, Chinese, Filipino, Korean, Japanese, Vietnamese, and Other Asian), and "*Native Hawaiian or Other Pacific Islander*" (which combined the answers of Pacific Islander, Native Hawaiian, Guamanian or Chamorro, Samoan, and Other Pacific Islander). Traditionally, these five major racial groups, along with "some other race" would add to 100% or the total population reported by the census. The 2020 Census allowed more space for individuals to

Figure 3

include ancestry answers as write-ins as a way of clarifying their race, but the data on ancestry will not be released until later in the decade, long after redistricting.

The Census Bureau also asked individuals whether they were of Hispanic origin. Because the Census Bureau and the federal government for each of the last four censuses have concluded that "Hispanic Origin" is not a racial category (anyone of any race can also be Hispanic), the Census Bureau provides cross-tabulations in its PL 94-171 data tables. Utilizing these cross-tabulations, Election Data Services, Inc. has traditionally developed its datasets by showing Hispanic Origin as if it were a race, and then removing Hispanics from the individual racial data. As such, we report Non-Hispanic White, instead of White; Non-Hispanic Black, instead of Blacks; Non-Hispanic Asian; instead of Asians; and so-forth. When the racial data and Hispanic Origin are reported in this manner, the groups add to 100 percent of the population.

Post census studies have shown that Hispanics have tended to divide their racial designation mainly between "Some other race" and "white" in roughly equal proportions. As a result, when we take out Hispanics from their relative racial groups in order to treat Hispanic as if it was a race, then the largest decreases occur in both the "White" and the "Some Other Race" categories.

The 2000 and 2010 censuses were a marked departure from earlier censuses on the reporting of racial data. In previous decades, individuals answering the Census were supposed to mark only one racial category. However, beginning with the 2000 Census, individuals could mark any number of racial categories (as many as all six), mainly due to the growth of multi-racial families in American society. This produced unique data issues concerning racial breakdowns and how they were reported. As one of the very few organizations involved in redistricting around the nation, Election Data Services, Inc. was closely involved with census personnel in researching and understanding the ramifications of the new data structures.

There are three basic ways to calculate the racial breakdowns for the 2000 and 2010 census. The first is to exclude any individuals who have marked more than one racial category from the basic racial definitions and put these individuals into a separate "multiple-race" category. This tends to create a bottom level of racial categorization for individual race groups, but one that is more compatible with the numbers that were reported in previous censuses. Election Data Services, Inc. designated these categories as ***"Race-Alone"*** and they occupy tab or table 1 in many of our reports.

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The second method of calculation is to include in the individual race groups any individual who marked that race group alone, plus any individual who marked that race group in combination with any other racial group(s). This produces the maximum number of individuals in each racial group, but it also means that the totals of all racial groups added together will result in more than 100 percent of the population being reported. Election Data Services designated these categories as ***"Combo"*** or ***"Max"*** and they occupy tab or table 2 in many of our reports

The third method of calculation was recommended by the Federal Office of Management and Budget (OMB). In a Federal Register notice published in March 2000 (at the tail end of the Clinton administration), OMB laid out how federal agencies should use racial data from the 2000 Census (no fundamental change was made in this directive for the 2010 Census). In essence, the OMB recommended that any individuals who marked themselves as both "White" and some other minority race, should be counted as part of that other minority race. This increased the numbers reported for the racial groups above the "race-alone" categories, but actually excluded individuals who marked themselves as being in two different minority groups. We have found in our research that this method of calculation tends to fall in between the other two methods. Election Data Services, Inc. designates these categories as ***"OMB"*** and they occupy tab or table 3 in many of our data reports.

Election Data Services's standard dataset incorporates all three methods of calculating racial data from the 2000 and 2010 censuses. This will continue for the 2020 Census, as the Census Bureau announced two years ago that the same basic data will be used when they published the PL file for 2020. Producing and reporting population counts based on all three calculation methods allows us to compare the different methods and how district configurations are affected over three decades.

Project scope and effort on database development

While the Census Bureau has announced their release of the 2020 Census data will be delayed until the fall time period of 2021, there are a number of activities that should commence as soon as the selection of redistricting consultant is made by State of Michigan.

The first step is to begin the building of the redistricting database outlined above. Before adding the 2020 census data, the 2010 Census TIGER file and 2010 PL files should be incorporated into the database, as well as the precinct level election results for all relevant election contests. Relevant contests would include any statewide elections held from 2014 to 2020, including any contests that includes an African American or Hispanic candidate. This data is important for any racial bloc voting analysis that needs to be performed by the voting rights expert. This information might also prove important for analyzing the current and any proposed commission districts. While the final geography for the 2020 Census will not be released until later this month, there are the 2019 TIGER files that contain updates to base geography (new streets, etc.), and include rough 2018 precinct configurations. Precinct overlays for all elections since 2014 would also be compiled and/or digitized, based upon what has already been compiled in the state.

To help with the disaggregation process needed to break apart the block-group level population estimates from ESRI, as well as to break apart the precinct level election return data, down to the census block level utilized by AutoBoundEDGE redistricting software, a now acceptable methodology is to geocode a statewide voter registration file. The results of placing those voters within the geography of every census block in the state, will allow the GIS system to aggregate counts of registered voters for each census block. This numeric count will be used to disaggregate higher geographic level data. The success of this process is partly dependent upon the addresses maintained in the voter registration system, something the state has worked upon for several decades.

Election Data Services, Inc. is a multi-decade user of GIS software, including all versions of ArcGIS and ArcView from ESRI. In addition, we have used AutoBound from CityGate GIS for the previous two decades in our redistricting work. In fact, we have been beta testers for CityGate GIS and have contributed concepts and ideas for the development of AutoBound over the years. We have also been a Business Partner of ESRI for three decades and have been testing their versions of redistricting software for 2020.

The issue with the 2020 population data will be its availability and a major question still exists on whether the Census Bureau will be releasing the final, official PL 94-171 data in time to meet Michigan's timetable. To help handle this

issue, we are proposing to temporarily use 2020 population estimates that have been generated by ESRI as part of their normal demographic databases that is utilized by commercial clients. We are implementing this process in the other states we are under contract. While these population estimates have been generated by ESRI at the block group level, we will utilize geocoded voter registration files from the state to help define a disaggregation methodology to be able to ultimately generate block level data from the ESRI estimates. This will give the state the capability to share with the public what are the population trends in the state and temporality design district possibilities. This estimated data will also be useful to design Communities of Interest territories as required by state statute. When the final PL file is released by the Bureau, this will be incorporated into the database and allow the map drawers and the Commission to finalize the district configurations.

Citizenship Issue

The new twist this upcoming found of redistricting is the issue of citizenship. This was the subject of nationwide discussion in 2018 when the Trump administration proposed that a question on citizenship would be added to the census questionnaire at the last minute. This plan was eventually overturned by several Federal District Courts (Election Data Services, Inc.'s President Kimball Brace was one of the expert witnesses for the plaintiffs in one of the cases) so the question will not be directly asked. The new Biden administration has stated they will not be compiling, nor releasing any of the citizenship data that had been compiled during the Trump administration.

While the question on citizenship has not been included as part of the decennial census for over 50 years, the Census Bureau has reported citizenship for various levels of census geography. This data is not based on the decennial census enumeration, but rather on the Bureau's American Community Survey (ACS). While the survey is taken every year, the limited number of respondents means the Bureau has to add the results over a rolling five year period to gather enough information to release data down to the level of the census block group (an area similar to a neighborhood and averaging about 1,000 people). These areas do not match up with precincts, so additional work must be performed to disaggregate the citizenship data down to the census block level and then reaggregated to the precinct level. If precincts change over the decade, this reaggregation process

must take place for each configuration of the precincts in order to match up with the election returns. This citizenship data can be useful for both the racial bloc voting analysis and analyzing the existing and proposed districts at all geographic levels and we will seek to include this sample data in the database.

Once the database has been developed, we will produce a series of reports on each of the districting bodies (congressional, State Senate and State House) that the Commission is responsible to draw boundaries. This will report each district's deviation from the ideal population, indicating how much change is required in each district. The demographic makeup by race and ethnicity of each district will also be generated. Maps of this information will also be generated. We envision that this information will be available on the Commission's website.

Schedule A, section 1.1.(d) Training and Education

The Election Data Services, Inc. team will provide on-going training of both the Commission members and the public through both webinars and public hearings during the life of the project. The multitude of staff and subcontractors will allow us to meet the extensive calendar of meetings and hearings, most of which will now be done virtually. This will also help cut down on any extensive travel requirements.

We will be prepared to provide: 1) technical education and consultation; 2) public education tutorials and explanations; 3) census and district information upon request; and 4) produce maps or visualizations.

Schedule A, section 1.1.(e) Support for litigation.

For four decades, Election Data Services has provided support services for court cases, particularly those dealing with redistricting issues. We expect to enter into a separate statement of work and contract for services with a change notice to our existing agreement.

1.2 Key Deliverable Two

(a) Public meeting participation

As we have in other redistricting consulting arrangements, we envision bringing members of the E.D.S. team together to brief the members of the Michigan Independent Citizens Redistricting Commission within the first month of selection as the redistricting consultant team. We would describe the various steps of the Census process, including their anticipated timetable. Members of the team would brief the Commission on the legal requirements of the process, from the federal, state, and local level. Overall redistricting principles, as well as practices around the nation would be discussed. Community outreach options would also be discussed and an anticipated timetable for the project would be discussed and agreed upon.

Putting together a multi-member team of map drawers will allow some of the consultants to attend all the public meets of the Commission. We are assuming this will mainly be virtual, but we are also budgeting for some in-person meetings. In the software description above there is a large section on how the system can keep track of various plans for different areas of the state, along with public input that can be specifically geocoded to a set location on the map.

(b) Communication skills and strategies

Each member of the Election Data Services' map drawing team has been selected because of their already existing skill of meeting with and speaking before commission and legislative bodies, as well as members of the public. Clearly education efforts will be important to teach and advise all Commissioners and the public on all aspects of the Census and redistricting. Election Data Services staff will handle much of the initial training and speaking roles for education purposes, supplemented by the expertise of other team members.

(c) Public meeting schedule and setting.

We are cognizant that the Commission has establish their initial schedule of public meetings and hearings. Because of Election Data Services' multi-member team of map drawers, we stand ready to provide the appropriate team member, usually remotely, to provide the services required of the Commission.

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1.3 Key Deliverable Three

    (a)   **Professionalism and support.** Throughout Election Data Services'
43-year history we have always conducted ourselves with professionalism in mind
and providing accurate and reliable information. Our voting equipment studies and
apportionment yearly studies have been relied upon by the press over the decades
for information and have been a constant source for their stories. For this
Michigan proposal, we have consciously brought together expert map drawers
from both political parties and non-partisan former state employees to provide a bi-
partisan/non-partisan team to assist the State of Michigan.

Technical Support Options for AutoBoundEDGE.

Citygate is the only redistricting software company that also provides redistricting
services. This means when technical support issues arises, your team is not
communicating with a GIS analyst or a software specialist. They are talking to an
experienced redistricting professional that understands the underlying Census data,
merging of political data and fully understands the nature of the redistricting
process and can answer questions across the entire project.

Citygate provides the following technical support services options.

1. **No Cost Option.** Email support is available at no cost. Many users switch to this option
after the redistricting process has been completed and plans have been adopted. This
option allows the redistricting staff to maintain the redistricting systems in case of future
court challenges.

2. **Standard Support.** Standard support includes access to Citygate's redistricting support
phone line between 7AM and 6PM EDT/EST. Standard support includes online support
where a Citygate technician can connect to the end user's system and correct the issue.

   Standard support can be purchased annually and is based on the number of individual
points of contact at the agency rather than the number of installed systems. Typically,
Citygate requires a maximum of 5 installations per point of contact. So, for example, if
an agency installs 4 EDGE licenses with a single administrator that provides internal
support and contacts Citygate in case of questions. Then the agency would only need
one support contract.

3. **24-7 Support.** This option is the same as Standard support except that support is
available 24 hours a day, 7 days a week. This type of support can be purchased on a

monthly basis. Typically agencies will purchase this type of support for the peak months of redistricting.

Support escalation process. Technical support for redistricting software is unique. Citygate has been providing redistricting support services for over 25 years. The entire redistricting process is done under a time crunch and as such Citygate treats every technical support call as critical. Citygate's escalation process is as follows:

1. **Initial Call.** All calls placed to Citygate's technical support line are answered by an experienced redistricting professional. If support staff are on other calls, the call is returned within 20 minutes where the support staff attempts to address the issue.

2. **First Escalation.** If the support staff is not able to address the issue, it will be escalated to the software development team. Here the issue maybe a problem with the system or an enhancement which is needed by the end user. In either case the urgency of the request is determined and the end use is provided with an estimate on when the issue will be resolved.

3. **Status Updates.** If the development team is not able to meet the timeline, updates are provided to the end user explaining the issues encountered with new delivery timelines.

4. **Second Escalation.** If the proposed timeline is not satisfactory, the end user may request the issue to be escalated to a manager where additional resources maybe allocated to resolving the issue.

      (b)   **Reporting.** We plan to work with the ICRC staff to develop appropriate work plans and progress reports to keep track of work done in the project with bi-weekly reports being filed and monthly invoices being submitted to the commission.

      (c)   **Final redistricting Plan Reports.** We will work with Commission staff to determine the best way of documenting, showing, and being able to share the Commission's final plan reports for the public. In the past, final plans have been documented by a block equivalency file (a record for every block in the state, with their appropriate district assignment for the plan), as well as a shape file (less preferred method because of generalization). Metes and bounds reports are available within AutoboundEDGE, but some editing may be necessary. We have found that maps are most useful to show the plans and they can be designed from full statewide depictions of the districts, down to individual county insets and even individual township maps when a township has been split in the plan. These type

of maps are most useful to communicate the plan with local election administrators who need to modify their street files in the statewide voter registration system.

1.4 Training

Training Options with Autobound EDGE suite.

One of the key advantages of the Citygate redistricting solution is that it is designed specifically to support redistricting functions. Autobound EDGE is a standalone application focused on the task of redistricting. Unlike other products, it is not an add-on to a GIS software. As a result, the software is much easier to learn without unnecessary capabilities that can clutter the application and make the learning curve more steep. The following are the training options offered by Citygate.

1. **No Cost Option.** All Citygate products, including EDGE come with online video based training at no cost. These training videos which are voice narrated, walk the user through the use of the software and provide examples of how the software can be used to create different types of redistricting plans.

2. **Online training.** Citygate can provide customized online training using Gotomeeting. Classes are designed around each client's specific needs. For example, if the agency's database includes past election results and voter files, the training would cover how to use this data, create democratic and republican indices and generate maps and reports. Citygate would work with the designated project manager to create an online course which would be appropriate for each client. Online training sessions are recorded and made available online for future review.

3. **Onsite training.** Onsite training is provided by an experienced redistricting professional. The process is similar to the online training option where Citygate works with the agency project manager to create the content of the training session. Citygate provided onsite training in Michigan during the 2010 redistricting cycle.

The video training for AutoBound EDGE and all online tools is approximately 2 Hours in long.

☐ I have reviewed the above requirement and agree with no exception.

2.0 Service Requirements

2.1 Timeframes

The key timeframe of this contract may be totally outside of control of the contractor, that of when the Census data will be provided by the Census Bureau. As of Tuesday night, 2/10/2021, we understand the Bureau may be releasing a new timetable for when the PL 94-171 data is released this coming Friday and it may push the release date further into the fall. We have sought to work around this delay for including in our proposal the acquisition of population estimates data for initial line drawing creation, with subsequent replacement by the official data when it is finally released. This may cause problems with Michigan's proscribed timetable.

☐ I have reviewed the above requirement and have noted all exception(s) below. List all exception(s): See above concerning availability of official Census population data.

3 Acceptance

3.1 Final Acceptance

I have reviewed the above requirement and have noted all exception(s) below.

List all exception(s): While every effort will be made to meet the State's deadlines, it will be totally dependent upon when the Census Bureau releases the final, official census results

4 Staffing

4.10 Contractor Representative

Kimball Brace, President of Election Data Services will serve as the contract administrator for this project, and will be available to answer questions related to ordering and deliver, etc.

☐ I have reviewed the above requirement and agree with no exception.

4.11 Work Hours

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As in all redistricting work, it is expected that possible night and weekends may be required in this project.

☐ I have reviewed the above requirement and agree with no exception.

4.12 Key Personnel

Election Data Services, Inc. has identified a number of Key Personnel in this proposal, including overall project coordinator and President Kimball Brace. EDS employee Ryan Taylor will be heavily involved in the creation of the database to be used in the project, as well as subcontractor Fred Hejazi. Map drawers will include these three individuals as well as subcontractors John Morgan and Kent Stigall. Each of these individuals will have the AutoboundEDGE software and Michigan database on their respective computer systems and can therefore share responsibilities when ever a map drawer is needed by the commission. Each of these individuals will be able to testify at the Commission's public hearings and help the public in creating their plan alternatives if needed.

Most of these individuals live in the Washington DC extended area, with Mr Brace in Manassas, VA, John Morgan in Springfield, VA, Fred Hejazi in Annapolis, MD and Kent Stigall in Richmond, VA. Ryan Taylor resides outside Nashville, TN. Resumes of each individual are attached as an appendix to this proposal.

1. Name	2. Years of Experience in Current Classification	3. Role(s) / Responsibilities	4. Direct / Subcontract/ Contract	5. % of Work Time	6. Physical Location
Kimball Brace	43 Years	Overall Contract administration	Direct	40%, as needed	Manassas, VA

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		and coordination. Some Map drawing & analysis			
Ryan Taylor	11 Years	Database creation, Map drawer	Direct	35%, as needed	Outside Nashville, TN
John Morgan	33 Years	Database creation, Map drawer	Sub-contractor	30%, as needed	Springfield, VA
Kent Stigall	37 Years	Database creation, Map drawer	Sub-contractor	60%, as needed	Richmond, VA
Fred Hejazi	17 Years	System Support, Training, Database coordination, Map Drawer	Sub-contractor	35%, as needed	Annapolis, MD

4.13 Organization Chart

Kimball Brace is the lead for this project, and as such all staff and subcontractors will report to him in most cases. Contacts with Commissioners and Commission staff are freely accepted by all members of the consulting team, just cc Mr. Brace on any e-mail or correspondence.

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4.14 Disclosure of Subcontractors

John Morgan

Bidder must provide detailed information as requested in the above requirement(s).	
The legal business name, address, telephone number of the subcontractor(s).	Applied Research Coordinates, Ltd. (ARC) 7323 Inzer Street Springfield, VA 22151 202-557-8016
A description of subcontractor's organization and the services it will provide and information concerning subcontractor's ability to provide the Contract Activities.	Applied Research Coordinates is consulting firm specializing in political and demographic analysis and its application to elections and redistricting. President and principal John B. Morgan has over 25 years of experience in map-drawing for redistricting. He is going into his fourth redistricting cycle and has done redistricting work in 19 states over the 1991, 2001 and 2011 cycles. He has worked with hundreds of public officials in his career, including legislators, congresspersons, elected and appointed statewide officials, attorneys, state government professionals and staff. He has worked for redistricting commissions in Connecticut, New Jersey, Pennsylvania and Ohio. He has also worked for commissions and boards in Atlantic and Essex counties in New Jersey, Wake, Sampson and Craven counties in North Carolina; Fayette and Gwinnett counties in Georgia and Delaware county in Indiana.
The relationship of the subcontractor to the Bidder.	Professional acquaintance / colleague in redistricting field
Whether the Bidder has a previous working experience with the subcontractor. **If yes, provide the details of that previous relationship.**	Panel discussions and interactions at National Conference of State Legislature (NSCL) redistricting meetings.
A complete description of the Contract Activities that will be performed or provided by the subcontractor.	Applied Research Coordinates and John Morgan will provide map-drawing services, redistricting advice, direct interaction with commission members, public officials and the public; review and analysis of commission plans as well as other plan submissions (as directed).
Of the total bid, the price of the subcontractor's work.	$45,000 to $95,000

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The subcontractor must provide detailed, chronological resumes of all proposed Key Personnel, including a description of their work experience relevant to their purposed role as it relates to the RFP utilizing the provided template	See attached subcontractor resume

Kent Stigall

Bidder must provide detailed information as requested in the above requirement(s).	
The legal business name, address, telephone number of the subcontractor(s).	W. Kent Stigall 2698 Huguenot Springs Rd Midlothian, VA 23113 804-356-3386
A description of subcontractor's organization and the services it will provide and information concerning subcontractor's ability to provide the Contract Activities.	Independent contractor
The relationship of the subcontractor to the Bidder.	None
Whether the Bidder has a previous working experience with the subcontractor. If yes, provide the details of that previous relationship.	In the late 1990's EDS had a contract with the Division of Legislative Services to provide Phase I support at the time that Kent Stigall first began working for the Division of Legislative Services.
A complete description of the Contract Activities that will be performed or provided by the subcontractor.	Primarily drawing district maps and assisting the commission in drawing maps. Provide technical expertise to EDS as needed. Other specific functions to be determined by EDS.
Of the total bid, the price of the subcontractor's work.	$55,000 +/-
The subcontractor must provide detailed, chronological resumes of all proposed Key	Subcontractor must provide the resumes and information as required above –as an

Personnel, including a description of their work experience relevant to their purposed role as it relates to the RFP utilizing the provided template labeled as Appendix A. **Qualifications will be measured by education and experience with particular reference to experience on projects similar to that described in the RFP.**	attachment to this RFP labelled as: Subcontractor Resume.

Fred Hejazi

Bidder must provide detailed information as requested in the above requirement(s).	
The legal business name; address; telephone number of the subcontractor(s).	Citygate GIS LLC. 857 Childs Point Road, Annapolis, Maryland 21401. (410) 295-3333 ext 111
A description of subcontractor's organization and the services it will provide; and information concerning subcontractor's ability to provide the Contract Activities.	Citygate GIS is a nonpartisan redistricting and mapping software development company. Citygate has been providing redistricting software for more than 25 years and supported more than 35 state legislatures. State of Michigan used Citygate redistricting software in 2000 and 2010 for drawing State House, Senate and Congressional districts.
The relationship of the subcontractor to the Contractor.	Citygate has no financial or ownership ties with EDS. Citygate is an independent subcontractor to EDS
Whether the Contractor has a previous working experience with the subcontractor. If yes, provide the details of that previous relationship.	EDS has worked with Citygate on redistricting projects for nearly 20 years. Work has included redistricting software for the Illinois and Rhode Island Legislatures.
A complete description of the Contract Activities that will be performed or provided by the subcontractor.	Citygate will provide the online redistricting software technology, web hosting and professional desktop redistricting tools proposed for use in this project.
Of the total bid, the price of the subcontractor's work	$105,000
The subcontractor must provide	Provided

detailed, chronological resumes of all proposed Key Personnel, including a description of their work experience relevant to their purposed role as it relates to the RFP utilizing the provided template labeled as Appendix A. Qualifications will be measured by education and experience with particular reference to experience on projects similar to that described in the RFP	

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Additional Option available:

While not called for in this proposal, Election Data Services, Inc. has been involved with Racial Bloc Voting analysis over the decades. While the Commission has placed this under your Attorney RFP, because the analysis is so dependent upon appropriate data, it is frequently the case that this task is included in our work effort. As a result, below is a short summary of what's is required, as well as information about an individual we have worked with for the past three decades (she started out as an employee of Election Data Services, Inc. in the 1990s). We are not providing any cost component for this option, which would need to be negotiated and added to our contract, if desired.

Racial Bloc Voting Analysis

A racial bloc voting analysis is necessary to determine whether voting in State of Michigan County is polarized by race/ethnicity. This analysis is important because, if voting is racially polarized, the County could be subject to a successful Section 2 legal challenge unless districts have been created that offer minority voters an equal opportunity to elect candidates of choice.

Voting is considered to be racially polarized if a minority group votes cohesively in support of minority-preferred candidates and whites vote as a bloc to usually defeat these minority-preferred candidates. A statistical analysis must be performed to estimate the percentage of whites and minorities supporting minority-preferred candidates. The results of this analysis can also be used to calculate the percentage minority population necessary in a district to ensure that the minority community has an opportunity to elect candidates of choice in that district.

Conducting an analysis of voting patterns by race is particularly relevant in areas of the state where there are a sufficient number of minority voters to meet the first prong of *Gingles* (*Thornburg v. Gingles*, a 1986 Supreme Court decision interpreting Section 2 of the Voting Rights Act): a minority group must be sufficiently large and geographically compact to constitute a majority of a single member district. Moreover, only in areas with a significant minority population are there likely to be enough minority voters (and minority candidates) to conduct an analysis of voting patterns.

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To conduct a racial bloc voting analysis, a precinct level database containing population statistics and election returns for each election of interest must be constructed. Once this database has been compiled, it is possible to statistically analyze this data to produce estimates of voting patterns by race/ethnicity.

The three standard analytic procedures for estimating the extent to which minorities and whites have voted differently are homogeneous precinct analysis, ecological regression and ecological inference. Homogeneous precinct analysis and ecological regression analysis have the benefit of the Supreme Court's stamp of approval in *Thornburg v. Gingles*. The more recently developed third technique, ecological inference, is widely regarded as an improvement over traditional bivariate ecological regression analysis. Dr. Handley will employ all these three analytic methods to produce estimates of the voting patterns by race/ethnicity.

If the analysis indicates the existence of legally significant racial bloc voting, Dr. Handley and the Election Data Services team will provide advice with respect to drawing districts that comply with all applicable legal requirements, including the U.S. Constitution and the federal Voting Rights Act. In addition, should the redistricting plan be challenged, Dr. Lisa Handley and other members of the team will be available to provide expert witness testimony on these subjects.

Dr. Lisa Handley

Dr. Handley has over 30 years of experience as a practitioner and an academic in the areas of redistricting and voting rights. She is recognized both nationally and internationally as an expert on these subjects. In the U.S., Dr. Handley's clients have included the U.S. Department of Justice, civil rights organizations (American Civil Liberties Union, Lawyers' Committee for Civil Rights Under Law), state redistricting commissions, and scores of state and local jurisdictions. In addition, she has served as an expert in dozens of redistricting and voting rights court cases.

Dr. Handley has been actively involved in research, writing and teaching on the subjects of redistricting, electoral system design and voting rights. She has co-written a book, Minority Representation and the Quest for Voting Equality (Cambridge University Press, 1992) and co-edited a volume (Redistricting in Comparative Perspective, Oxford University Press, 2008) on these subjects. Her research has also appeared in peer-reviewed journals such as *Journal of Politics*, *Legislative Studies Quarterly*, *American Politics Quarterly*, *Journal of Law and*

Politics, and *Law and Policy,* as well as law reviews and a number of edited books. She has taught political science graduate courses related to these subjects at the University of Virginia and George Washington University, as well as guest lecturing on these topics at universities such as Harvard, Princeton, and Georgetown. Dr. Handley is currently a Visiting Research Academic at Oxford Brookes University in the United Kingdom.

Dr. Handley has conducted hundreds of racial bloc voting analyses across the country, including analyses of voting patterns by race and ethnicity in the State of Florida in general and in State of Michigan more specifically. She has performed these analyses both in conjunction with redistricting efforts and in the context of voting rights litigation. In addition, she has testified in dozens of court cases on the existence (or nonexistence) of racially polarized voting.

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CONFIDENTIAL TREATMENT FORM

INSTRUCTIONS. Complete either Section 1 or Section 2 of this CT Form and sign where indicated. This CT Form must be signed by the individual who signed the bidder's proposal. A completed CT Form must be submitted with your proposal, regardless of whether your proposal contains confidential information.

Failure to submit a completed CT Form with your bid is grounds for rejecting the proposal as non-responsive. See the Confidential Treatment Form and The Freedom of Information Act (FOIA) sections of the Proposal Instructions for additional information.

Section 1. CONFIDENTIAL TREATMENT IS NOT REQUESTED

This section must be completed, signed, and submitted with the proposal if the bidder does not request confidential treatment of any material contained in the proposal.

By signing below, the bidder affirms that confidential treatment of material contained in their proposal is not requested.

RFP Number No.: 920, 210000000714

 RFP Title: Line Drawing and Redistricting Technical Services

Signature *Kimball W. Brace*

Date: February 10, 2021

Printed Name: Kimball W. Brace,

Title: President,

Company: Election Data Services, Inc.

Appendix

Letters of Commitment

John Morgan

Kent Stigall

Fred Hejazi

Vitas

Kimball Brace vita

Ryan Taylor vita

John Morgan vita

Kent Stigall vita

Fred Hejazi vita

EDS standard hourly rate chart

Separate document: Price proposal

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VENDOR QUESTIONS WORKSHEET

Information Sought	Bidder Response
1. Contact Information	
Bidder's sole contact person during the RFP process. Include name, title, address, email, and phone number.	Mr. Kimball Brace President, Election Data Services, Inc. 6171 Emerywood Court Manassas, VA 20112 KBrace@electiondataservices.com or ███████████ 703-580-7267 – Office landline ██████████ – Cell number
Person authorized to receive and sign a resulting contract. Include name, title, address, email, phone number. The awarded vendor will be required to establish an account in SIGMA Vendor Self-Service	Same Account established. Vendor # VS0189703
2. Company Background Information	
Legal business name and address. Include business entity designation, e.g., sole proprietor, Inc., LLC, or LLP.	Election Data Services, Inc. 6171 Emerywood Court Manassas, VA 20112 Full corporation
What State was the company formed in?	Initially incorporated in Washington DC in 1977. Moved full corporate structure and offices to Virginia in 2008
Phone Number	703-580-7267 – Office landline
Website address.	www.electiondataservices.com
Number of years in business and number of employees	43 years, Started in May, 1977. Currently 4 employees, but had 29 in 1990 round of redistricting

Election Data Services

Legal business name and address of parent company, if any.	None
Has there been a recent change in organizational structure (e.g., management team) or control (e.g., merger or acquisition) of your company? If the answer is yes: (a) explain why the change occurred and (b) how this change has affected your company.	Vice President and wife of President passed away in October, 2020. She managed company books. New accountant was hired last month.
Discuss your company's history. Has growth been organic, through mergers and acquisitions, or both?	Company started in 1977 to study and analyze voting statistics for corporations and unions. Expanded focus to include development of hugh nationwide database of voting equipment usage. Lead to involvement in redistricting field in 1980 (including Michigan) which migrated to assisting in court cases as expert witness. During mid part of decades business tends to focus on election administration field and then moves back to redistricting preparation in later part of decade. Has always been a small business, adding employees as needed to handle workload.
Has bidder ever been debarred, suspended, or disqualified from bidding or contracting with any entity, including the State of Michigan? If yes, provide the date, the entity, and details about the situation.	No
Has your company been a party to litigation against the State of Michigan? If the answer is yes, then state the date of initial filing, case name and court number, and jurisdiction.	No
Within the last 5 years, has your company or any of its related business entities defaulted on a contract or had a contract terminated for cause? If yes, provide the date, contracting entity, type of contract, and details about the termination or default.	No

Election Data Services

State your gross annual sales for each of the last 5 years. If receiving a contract under this RFP will increase your gross revenue by more than 25% from last year's sales, explain how the company will scale-up to manage this increase	July 2008 - June 2009 - $302,521.34 July 2009 - June 2010 - $382,258.37 July 2010 - June 2011 - $281,022.68 July 2011 - June 2012 - $1,729,915.77 July 2012 - June 2013 - $1,474,038.07 July 2013 - June 2014 - $598,175.52 July 2014 - June 2015 - $371,249.87 July 2015 - June 2016 - $389,092.47 July 2016 - June 2017 - $364,434.98 July 2017 - June 2018 - $288,754.25 July 2018 - June 2019 - $525,988.79 July 2019 - June 2020 - $510,117.26 This pattern of income fluctuation has been constant over four decades.
Describe partnerships and strategic relationships you think will bring significant value to the Commission.	The joining together of the leading Democratic and Republican map drawers in the nation will provide true bi-partisan assistance to the Commission. Working together with one of the leading redistricting software providers will also enhance the assistance to the Commission
For the bidder, primary contractor, principal(s) of the primary contractor, key personnel, any subcontractors, or employees provide disclosures regarding the following relative to their redistricting work with individuals, groups or any public or private entities for the same or substantially similar work described in this RFP: (1) list of past relationships and (2) identify any current relationships and (3) identify any anticipated or future relationships that will be sought by the bidder. For each of the 3 categories of relationships, please identify which could give rise to a potential, actual or apparent conflict of interest and provide measures that would be taken to avoid or address a conflict, should one currently exist or is likely to arise in the future. These disclosures and conflict requirements are ongoing and will be the responsibility of the successful bidder for the full contract term.	Election Data Services, Inc. – worked with Democratic State Party and Democratic Caucuses of legislature on redistricting in 1981-1982. Michigan legislature in 1990-1992 for geographic, demographic and election databases. Testified in Congressional and state legislature court cases in 1991-1992, and congressional case in 1982. No other work in State of Michigan by Election Data Services, but subcontractor John Morgan worked with the Michigan GOP in 1991, primarily on congressional district plans. If hired by Commission, we would not seek any other state level

	redistricting work in Michigan until at least after the 2022 election.
State the physical address of the place of business that would have primary responsibility for this account if bidder is awarded a contract under this RFP.	Election Data Services, Inc. 6171 Emerywood Court Manassas, VA 20112
3. Participation in RFP Development or Evaluation	
Did your company, an employee, agent, or representative of your company, or any affiliated entity participate in developing any component of this solicitation? For purposes of this question, business concerns, organizations, or individuals are affiliates of each other if, directly or indirectly: (1) either one controls or has power to control the other or (2) a third-party control or has the power to control both. Indicia of control include, but are not limited to, interlocking management or ownership, identity of interests among family members, shared facilities or equipment, and common use of employees.	No
If you are awarded a contract under this solicitation, in order to provide the goods or services required under a resulting contract, do you intend to partner or subcontract with a person or entity that assisted in the development of this solicitation?	No
Will your company, or an employee, agent, or representative of your company, participate in the evaluation of the proposals received in response to this RFP?	No
4. State of Michigan Experience and Prior Experience	
Does your company have experience working with the State of Michigan? If so, please provide a list (including the contract number) of the contracts you hold or have held with the State for the last 10 years.	Nothing in last 10 years.
Describe all relevant experiences from the last 20 years supporting your ability to successfully manage a contract of similar size and scope for	To numerous to list in this space. See vita of Kimball Brace (attached) for

the work described in this RFP. These experiences should include: • Drawing district lines for state legislative, congressional, county commission, city council or other electoral districts • Drawing district lines during public, open meetings, taking direction from public officials, and responding to public testimony or other questions in public meetings. • Expert testimony related to districting or redistricting provided in the last 20 years.	complete listing over past 43 years. Summary of information at the beginning of our response. Kim Brace and Election Data Services has drawn district boundaries for all levels of government, has conducted public and open meetings, worked with public officials on plan drafting, regularly appeared at hearings and other public sessions, and testified as an expert. witness in over 75 court cases over the past 43 years.
Describe your company's experience and knowledge with Geographic Information Systems redistricting solutions and the associated boundary, demographic and other data sources used for redistricting mapping.	Election Data Services and its President Kim Brace and staff have been at the forefront of GIS technology usage in redistricting for over 40 years. This has also included experience with GIS technology for many general mapping projects. We have been a Business Partner with ESRI since the 1990s. We started working with GIS in the 1980s, producing rudimentary maps for court cases. We then helped develop a redistricting package (called *ReMap*) that linked a spreadsheet with an electronic map and was used in a number of states and local governments for the 1990 redistricting season. We then turned the system into *PRECIS*, a system for election administrators to craft precinct boundaries and update street files for voter registration systems. We also created a package for states to use to submit precincts to the Census Bureau for the PL program and turned that into

	a similar system for county governments to submit Traffic Analysis Zones (TAZs) to the Bureau. For 2000 we created *ReMap 2000* and used it for redistricting for all our clients. For 2010 we joined forces with CityGate GIS to help their development of AutoBound and then used that package to draw districts in all states and local governments where we were hired. This history has led NCSL to ask us to coordinate and teach redistricting software for their Redistricting Workshops this decade.
Describe your company's experience working with commissions, public officials, and the general public in similar projects.	We have 30 years of experience in working with commissions. Beginning in 1990, the State of Rhode Island adopted a commission to do redistricting for the state legislature. The legislature has the capability to approve or change the final commission plan. Each decade the Commission plan has been passed into law. We have basically provided the staff for the ½ legislative, ½ public commission, coordinated and run all their public hearings, testified at each hearing about all realms of the redistricting process, worked with all legislators and commission members to draft plans and alternative plans, taken those plans on the road to explain them at public hearings and worked with legislative staff to draft the final plan into bill form for passage by the legislature. We have even gone further to working with town and city governments to help them implement

	the plan into new precincts and needed adjustments of their street files that are incorporated into the statewide voter registration system.
Describe your company's knowledge and experience with the necessary validation checks that need to be part of a redistricting plan (for example, checking population totals, contiguity, compactness, etc).	Election Data Services has been at the forefront of understanding and developing different software reports and studies on all aspects of the redistricting process. Back in the 1990s we create and generated the very first nationwide study of compactness and compactness scores for all congressional and legislative plans in the nation following the 1990 redistricting. We were instrumenting in getting the Department of Justice and NCSL to adopt their policy that plan exchanges should be based on a statewide listing of all census blocks and their assignments, and not on the basis of things like shape files that can under generalization of the boundaries and, as a result, lead to mis-assignment of geography. The complete listing of blocks will ensure that the ultimate plan will sum to the statewide population.
Experience 1	
Company name. Contact name. Contact role at time of project. Contact phone. Contact email.	Rhode Island State Legislature Frank Anzeveno, Chief of Staff, State House, now retired. Worked closely with him in devising the legislative plan. ██████████████
City. State. Zip.	Providence, RI 02903 Now lives in Florida

Election Data Services

1. Project name and description of the scope of the project. Did the project include redistricting for electoral districts? Did it include drawing or presenting map lines in public meetings? 2. What role did your company play? Who was doing the line drawing, and who was giving direction to line drawers? If expert testimony only, what was the testimony about? 3. Whether any of the redistricting plans produced were subject to legal challenge based on Voting Rights Act compliance or other state law. If subject to legal challenge, did bidder's staff provide testimony or expertise in defense of a challenge?	1 – Full redistricting support for state legislature, including line drawing, testimony, running redistricting office in State House. 2 – Handling all aspects of redistricting for state legislature, including line drawing and developing compromises to plan. Public testimony before Commission & legislature, as well as press. 3 – Plan challenged but upheld by court. Kim Brace testified and work with attorneys on case.
Dollar value.	Initial contract was approximately $650,000, expanded with court case
Status (completed, live, other – specify phase)	Redistricting phase – 2010-2012 Court case – 2012 Continued contract with state to handle preparation for 2020 and completing various phases and submissions to Census Bureau.
Results obtained.	Plan upheld and continued in existence for rest of decade
Experience 2	
Company name. Contact name. Contact role at time of project. Contact phone. Contact email.	Illinois State Legislature Tim Mapes, Chief of Staff, House Overall control of process, now retired ████████████████
City. State. Zip	Springfield, IL 62711
1. Project name and description of the scope of the project. Did the project include redistricting for electoral districts? Did it include drawing or presenting map lines in public meetings? 2. What role did your company play? Who was doing the line drawing, and who was giving	Overall redistricting for state legislature & Congressional Districts in Illinois. EDS built the redistricting hardware and software system, and database used in the process by state

Proposal to State of Michigan
June 8, 2020
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direction to line drawers? If expert testimony only, what was the testimony about? 3. Whether any of the redistricting plans produced were subject to legal challenge based on Voting Rights Act compliance or other state law. If subject to legal challenge, did bidder's staff provide testimony or expertise in defense of a challenge?	employees who were the line drawers. We did not provide court testimony in the 2010 decade, but did in previous decades back to 1980s.
Dollar value.	Approximately $750,000 spread between two legislative caucuses.
Status (completed, live, other – specify phase	Completed
Results obtained.		Plan upheld and continued in existence for rest of decade

Experience 3	
Company name. Contact name. Contact role at time of project. Contact phone. Contact email	City of Chicago City Council Michelle Murphy, Finance Committee Project manager, main plan developer, now retired from city government ██████████
City. State. Zip	Chicago, IL
1. Project name and description of the scope of the project. Did the project include redistricting for electoral districts? Did it include drawing or presenting map lines in public meetings? 2. What role did your company play? Who was doing the line drawing, and who was giving direction to line drawers? If expert testimony only, what was the testimony about? 3. Whether any of the redistricting plans produced were subject to legal challenge based on Voting Rights Act compliance or other state law. If subject to legal challenge, did bidder's staff provide testimony or expertise in defense of a challenge?	Redistricting for Chicago City Council's 50 wards. EDS's role was to provide hardware, software, database preparation and on-going support, including some map drawing and negotiations. No court case as a result.
Dollar value.	$516,970.00

Status (completed, live, other – specify phase	Completed
Results obtained.	Plan upheld and continued in existence for rest of decade
5. Standard Contract Terms	
Bidder must affirm agreement with the attached Contract Terms. If not in agreement, written exceptions in accordance with the Evaluation Process section of the Proposal Instructions must be provided with Bidder's proposal.	General agreement with state's contract provisions. Exceptions related to timetable have been noted elsewhere in this document, due to the uncertainty of the available of final 2020 Census data.
6. Michigan Economic Impact	
Number of employees currently employed at locations within the State of Michigan.	None
Number of additional employees to be employed at locations within the State of Michigan if awarded this Contract (if any)	None, but contractor & subcontractors are available for extended state in state.
Minimum wage paid to employees employed at locations within the State of Michigan.	N/A
Average wage paid to employees employed at locations within the State of Michigan.	N/A
Percentage of employees employed at locations within the State of Michigan that are covered by employer-provided health insurance.	N/A
7. Other	
Abusive Labor Practices. The Contractor certifies that it will not furnish any Deliverable that was produced fully or partially by forced labor, forced or indentured child labor, or indentured servitude.	Yes, not furnished any deliverable
Certification of Michigan Business- Public Act 431 of 1984, Sec. 268. I certify that the company has, pursuant to the provisions of Sec 268 of Public Act 431 of 1984, filed a Michigan Business Tax Corporate Income Tax Return. I certify that the company has, pursuant to the provisions of Sec 268 of Public Act 431 of 1984, filed a Michigan Income Tax return showing income generated in, or attributed to the State of Michigan. I certify	Not filed anything yet, because as a VA corporation we're not covered by this requirement.

that the company has, pursuant to the provisions of Sec 268 of Public Act 431 of 1984, withheld Michigan Income Tax from compensation paid to the company's owners and remitted the tax to the Michigan Department of Treasury.	
Iran Linked Business- Public Act 517 of 2012. I certify that the Company is not an Iran-Linked business as defined by Public Act 517 of 2012.	Yes, so certified.
Clean Corporate Citizen. I certify that the Company is a Clean Corporate Citizen as defined by the Environmental Protection Act, 1994 PA 451.	Yes, so certified.
Convict Labor. The Contractor certifies that if using convict labor, it is complying with all applicable state and federal laws and policies.	N/A
SOM Debt/Tax Payment. I certify that all applicable State of Michigan taxes are paid, and that no outstanding debt is owed to the State of Michigan.	N/A
Authorization to Verify Information Provided by Vendor. I authorize the Commission to verify that all information provided in this registration, in bidding and contracting documents, and any attachments or supplement documents and processes are accurate	Yes

APPLIED RESEARCH
CODODINATES
LTD

Kimball Brace
Election Data Services, Inc.
6171 Emerywood Ct
Manassas, VA 20112-3078

Kim:

Thank you for reaching out to me to seek my involvement with a proposal to the Michigan Independent Citizens Redistricting Commission and the potential to work with the ICRC. As you know, I have many years of experience using GIS software and drawing redistricting maps for several states. I think that this is a good fit and I will be happy to work with you on this endeavor.

This letter will serve as a notice of commitment to work for you and EDS for this project, contingent on the award of the bid. I am available, willing, and I have the time needed to work on this project. As the President of my company, Applied Research Coordinates, I control my working time and am not assigned to other projects that would preclude me working on this project with you.

In support of the bid for the work for ICRC, I have sent you the information you have requested and that is required for the proposal. I look forward to working with you in this capacity, should the bid for work be awarded.

Please contact me, as needed, at the phone number or email below.

Thanks,

John

John B. Morgan
President, Applied Research Coordinates

February 9, 2021

Kimball Brace
Election Data Services, Inc.
6171 Emerywood Ct
Manassas, VA 20112-3078

Kim:
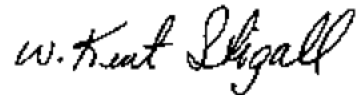
Thank you for seeking my involvement with a proposal to the Michigan Independent Citizens Redistricting Commission and the potential to work with the ICRC.

Contingent on the award of the bid this letter will serve as a notice of commitment to work for you and EDS on this project. I am willing and have the time available to work on this project. I control my working time and am not assigned to any other project that would preclude me from working on this project with you.

In support of the bid for the work for ICRC, I have sent you the information you have requested and that is required for the proposal. I look forward to working with you should the bid for work be awarded to EDS.

Thanks,

Kent

W. Kent Stigall

citygate GIS

February 10, 2021

Kimball Brace
Election Data Services, Inc.
6171 Emerywood Ct.
Manassas, VA 20112-3078

Dear Mr. Brace,

I am pleased to offer our technology and services as a subcontractor to your firm in support of the Michigan Independent Citizens Redistricting Commission and the potential to work with the ICRC.   Our firm has been providing redistricting technology for over 25 years. Our redistricting software was used in the State of Michigan for State Legislature and Congressional redistricting in 2000 and 2010. Additionally, we have supported county level redistricting throughout the State including Wayne County.

I look forward to working with you on this project. Please contact me if you have any additional questions.

Sincerely
Citygate GIS LLC.

Fred Hejazi - CEO

VITA

KIMBALL WILLIAM BRACE

Election Data Services, Inc.
6171 Emerywood Court
Manassas, VA 20112-3078

703 580-7267 or ███████████
703 580-6258 fax
kbrace@electiondataservices.com or ██████████

Kimball Brace is the president of Election Data Services Inc., a consulting firm that specializes in redistricting, election administration, and the analysis and presentation of census and political data. Mr. Brace graduated from the American University in Washington, D.C., (B.A., Political Science) in 1974 and founded Election Data Services in 1977.

Redistricting Consulting

Activities include software development; construction of geographic, demographic, or election databases; development and analysis of alternative redistricting plans; general consulting, and onsite technical assistance with redistricting operations.

Congressional and Legislative Redistricting

Arizona Independent Redistricting Commission: Election database, 2001

Arizona Legislature, Legislative Council: Election database, 2001

Colorado General Assembly, Legislative Council: Geographic, demographic, and election databases, 1990–91

Connecticut General Assembly
- Joint Committee on Legislative Management: Election database, 2001; and software, databases, general consulting, and onsite technical assistance, 1990–91
- Senate and House Democratic Caucuses: Demographic database and consulting, 2001

Florida Legislature, House of Rep.: Geographic, demographic, and election databases, 1989–92

Illinois General Assembly
- Speaker of House and Senate Minority Leader: Software, databases, general consulting, and onsite technical assistance, 2000–02,
- Speaker of House and President of Senate: Software, databases, general consulting, and onsite technical assistance, 2018-current, 2009-2012, 1990–92, and 1981-82

Iowa General Assembly, Legislative Service Bureau and Legislative Council: Software, databases, general consulting, and onsite technical assistance, 2000–01 and 1990–91

Kansas Legislature: Databases and plan development (state senate and house districts), 1989

Massachusetts General Court
- Senate Democratic caucus: Election database and general consulting, 2001–02
- Joint Reapportionment Committees: Databases and plan development (cong,, state senate, and state house districts), 1991–93, 2010-2012

(Redistricting Consulting, cont.)

Michigan Legislature: Geographic, demographic, and election databases, 1990–92; databases and plan development (cong., state senate, and state house districts), 1981-82

Missouri Redistricting Commission: General consulting, 1991–92

Commonwealth of Pennsylvania: General consulting, 1992

Rhode Island General Assembly and Reapportionment Commissions
- Software, databases, plan development, and onsite assistance (cong., state senate, and state house districts), 2016- current, 2010-2012, 2001–02 and 1991–92
- Databases and plan development (state senate districts), 1982-83

State of South Carolina: Plan development and analysis (senate), U.S. Dept. of Justice, 1983–84

Local Government Redistricting

Orange County, Calif.: Plan development (county board), 1991–92

City of Bridgeport, Conn.: Databases and plan development (city council), 2011-2012 and 2002–03

Cook County, Ill.: Software, databases, and general consulting (county board), 2010-2012, 2001–02, 1992–1993, and 1989

Lake County, Ill.: Databases and plan development (county board), 2011 and 1981

City of Chicago, Ill.: Software, databases, general consulting, and onsite technical assistance (city wards), 2010-2012, 2001–02 and 1991–92

City of North Chicago, Ill.: Databases and plan development (city council), 1991 and 1983

City of Annapolis, Md.: Databases and plan development (city council), 1984

City of Boston, Mass.: Databases and plan development (city council), 2011-2012, 2001-2002, and 1993

City of New Rochelle, N.Y.: Databases and plan development (city council), 1991–92

City of New York, N.Y.: Databases and plan development (city council), 1990–91

Cities of Pawtucket, Providence, East Providence, and Warwick, and town of North Providence, R.I.: Databases and plan development (city wards and voting districts), 2011-2012, 2002

City of Woonsocket and towns of Charlestown, Johnston, Lincoln, Scituate and Westerly, R.I.: Databases and plan development (voting districts), 2011-2012, 2002; also Westerly 1993

City of Houston, Tex.: Databases and plan development (city council), 1979 — recommended by U.S. Department of Justice

City of Norfolk, Va.: Databases and plan development (city council), 1983–84 — for Lawyers' Committee for Civil Rights

Virginia Beach, Va.: Databases and plan development (city council), 2011-2012, 2001–02, 1995, and 1993

Other Activities

International Foundation for Electoral Systems (IFES) and U.S. Department of State: redistricting seminar, Almaty, Kazakhstan, 1995

Library of Congress, Congressional Research Service: Consulting on reapportionment, redistricting, voting behavior and election administration

National Conference of State Legislatures (NCSL): Numerous presentations on variety of redistricting and election administration topics, 1980 - current

Election Administration Consulting

Activities include seminars on election administration topics and studies on voting behavior, voting equipment, and voter registration systems.

Prince William County, VA:
2013 – Appointed by Board of County Supervisors to 15 member Task Force on Long Lines following 2012 election. Asked and appointed by County's Electoral Board to be Acting General Registrar for 5-month period between full-time Registrars.
2008 - current – poll worker and now chief judge for various precincts in county

U.S. Election Assistance Commission (EAC): Served as subcontractor to prime contractors who compiled survey results from 2008 and 2010 Election Administration and Voting Survey.

U.S. Election Assistance Commission (EAC): Compile, analyze, and report the results of a survey distributed to state election directors during FY–2007. Survey results were presented in the following reports of the EAC: *The Impact of the National Voter Registration Act of 1993 on the Administration of Elections for Federal Office, 2005–2006, A Report to the 110th Congress,* June 30, 2007; *Uniformed and Overseas Citizens Absentee Voting Act (UOCAVA), Survey Report Findings,* September, 2007; and *The 2006 Election Administration and Voting Survey, A Summary of Key Findings,* December, 2007.

U.S. Election Assistance Commission (EAC): Compile, analyze, and report the results of three surveys distributed to state election directors during FY–2005: Election Day, Military and Overseas Absentee Ballot (UOCAVA), and Voter Registration (NVRA) Surveys. Survey results were presented in the following reports: *Final Report of the 2004 Election Day Survey,* by Kimball W. Brace and Dr. Michael P. McDonald, September 27, 2005; and *Impact of the National Voter Registration Act of 1993 on the Administration of Elections for Federal Office, 2003–2004, A Report to the 109th Congress,* June 30, 2005.

Rhode Island Secretary of State: Verification of precinct and district assignment codes in municipal registered voter files and production of street files for a statewide voter registration database, on-going maintenance of street file, 2004-2006, 2008-2014, 2016-2017.

Rhode Island Secretary of State, State Board of Elections & all cities & towns: production of precinct maps statewide, 2012, 2002, 1992

District of Columbia, Board of Elections and Ethics (DCBOEE): Verification of election ward, Advisory Neighborhood Commission (ANC), and Single-Member District (SMD) boundaries and production of a new street locator, 2003. Similar project, 1993.

Harris County, Tex.: Analysis of census demographics to identify precincts with language minority populations requiring bilingual assistance, 2002–03

(Election Administration Consulting, cont.)

Cook County, Ill., Election Department and Chicago Board of Election Commissioners:
- Analysis of census demographics to identify precincts with language minority populations requiring bilingual assistance, 2019, 2010-2013, 2002–03
- Study on voting equipment usage and evaluation of punch card voting system, 1997

Chicago Board of Election Commissioners: Worked with Executive Director & staff in Mapping Dept. to redraw citywide precincts, eliminate over 600 to save costs, 2011-12

Library of Congress, Congressional Research Service: Nationwide, biannual studies on voter registration and turnout rates, 1978–2002

U.S. General Accounting Office (GAO), U.S. Dept. of Justice, and numerous voting equipment vendors and media: Data on voting equipment usage throughout the United States, 1980–present

Needs assessments and systems requirement analyses for the development of statewide voter registration systems:
- Illinois State Board of Elections: 1997
- North Carolina State Board of Elections, 1995
- Secretary of Commonwealth of Pennsylvania, 1996

Federal Election Commission, Office of Election Administration:
- Study on integrating local voter registration databases into statewide systems, 1995
- Nationwide workshops on election administration topics, 1979–80
- Study on use of statistics by local election offices, 1978–79

Cuyahoga County, Ohio, Board of Elections: Feasibility study on voting equipment, 1979

Winograd Commission, Democratic National Committee: Analysis of voting patterns, voter registration and turnout rates, and campaign expenditures from 1976 primary elections

Mapping and GIS

Activities include mapping and GIS software development (geographic information systems) for election administration and updating TIGER/Line files for the decennial census.

2000 Census Transportation Planning Package (CTPP), 1998–99: GIS software for the U.S. Department of Transportation to distribute to 400 metropolitan planning organizations (MPOs) and state transportation departments for mapping traffic analysis zones (TAZs) for the 2000 census; provided technical software support to MPOs

Census 2000, 2010 and 2020 Redistricting Data Program, Block Boundary Suggestion Project (Phase 1) and Voting District Project (Phase 2), 1995–99: GIS software and provided software, databases, and technical software support to the following program participants:
- Alaska Department of Labor
- Connecticut Joint Committee on Legislative Management
- Illinois State Board of Elections
- Indiana Legislative Services Agency
- Iowa Legislative Service Bureau

(Mapping & GIS Support, cont.)
- New Mexico Legislative Council Service
- Rhode Island General Assembly
- Virginia Division of Legislative Services

Developed PRECIS® Precinct Information System—GIS software to delineate voting precinct boundaries—and delivered software, databases, and technical software support to the following state and local election organizations (with date of installation):
- Cook County, Ill., Department of Elections (1993)
- Marion County, Fla., Supervisor of Elections (1995)
- Berks County Clerk, Penn. (1995)
- Hamilton County, Ohio, Board of Elections (1997)
- Brevard County, Fla., Supervisor of Elections (1999)
- Osceola County, Fla., Supervisor of Elections (1999)
- Multnomah County, Ore, Elections Division (1999)
- Chatham County, Ga., Board of Elections (2000)
- City of Chicago, Ill., Board of Election Commissioners (2000)
- Mahoning County, Ohio, Board of Elections (2000)
- Iowa Secretary of State, Election and Voter Registrations Divisions (2001)
- Woodbury County, Iowa, Elections Department (2001)
- Franklin County, Ohio, Board of Elections (2001)
- Cobb County, Ga., Board of Elections and Voter Registration (2002)

Illinois State Board of Elections, Chicago Board of Election Commissioners, and Cook County Election Department: Detailed maps of congressional, legislative, judicial districts, 1992

Associated Press: Development of election night mapping system, 1994

Litigation Support

Activities include data analysis, preparation of court documents and expert witness testimony. Areas of expertise include the census, demographic databases, district compactness and contiguity, racial bloc voting, communities of interest, and voting systems. Redistricting litigation activities also include database construction and the preparation of substitute plans.

State of Alabama vs. US Department of Commerce, et al (2019-2020) apportionment & citizenship data

NAACP vs. Denise Merrill, CT Secretary of State, et al (2019-2020) state legislative redistricting and prisoner populations

Latasha Holloway, et al. v. City of Virginia Beach, VA (2019) city council redistricting

Joseph V. Aguirre vs. City of Placentia, CA (2018-2019), city council redistricting

Davidson, et al & ACLU of Rhode Island vs. City of Cranston, RI (2014-16), city council & school committee redistricting with prisoner populations.

Navaho Nation v. San Juan County, UT (2014-17) county commissioner & school board districts.

Michael Puyana vs. State of Rhode Island (2012) state legislature redistricting

(Litigation Support, cont.)

United States of America v. Osceola County, Florida, (2006)*,* county commissioner districts.

Deeds vs McDonnell (2005), Va. Attorney General Recount

Indiana Democratic Party, et al., v. Todd Rokita, et al. (2005)*,* voter identification.

Linda Shade v. Maryland State Board of Elections (2004), electronic voting systems

Gongaley v. City of Aurora, Ill. (2003), city council districts

State of Indiana v. Sadler (2003), ballot design (city of Indianapolis-Marion County, Ind.)

Peterson v. Borst (2002–03), city-council districts (city of Indianapolis-Marion County, Ind.)

New Rochelle Voter Defense Fund v. City of New Rochelle, City Council of New Rochelle, and Westchester County Board Of Elections (2003), city council districts (New York)

Charles Daniels and Eric Torres v. City of Milwaukee Common Council (2003), council districts (Wisconsin)

The Louisiana House of Representatives v. Ashcroft (2002–03), state house districts

Camacho v. Galvin and *Black Political Caucus v. Galvin* (2002–03), state house districts (Massachusetts)

Latino Voting Rights Committee of Rhode Island, et al., v. Edward S. Inman, III, et al. (2002–03), state senate districts

Metts, v. Harmon, Almond, and Harwood, et al. (2002–03), state senate districts (Rhode Island)

Joseph F. Parella, et al. v. William Irons, et al. (2002–03), state senate districts (Rhode Island)

Jackson v. County of Kankakee (2001–02), county commissioner districts (Illinois)

Corbett, et al., v. Sullivan, et al. (2002), commissioner districts (St Louis County, Missouri)

Harold Frank, et al., v. Forest County, et al. (2001–02), county commissioner districts (Wisc.)

Albert Gore, Jr., et al., v. Katherine Harris as Secretary of State, State of Florida, et al., and The Miami Dade County Canvassing Board, et al., and The Nassau County Canvassing Board, et al., and The Palm Beach County Canvassing Board, et al., and George W. Bush, et al (2000), voting equipment design — Leon County, Fla., Circuit Court hearing, December 2, 2000, on disputed ballots in Broward, Volusia, Miami-Dade, and Palm Beach counties from the November 7, 2000, presidential election.

Barnett v. Daley/PACI v. Daley/Bonilla v. Chicago City Council (1992–98), city wards

Donald Moon, et al. v. M. Bruce Meadows, etc and Curtis W. Harris, et al. (1996–98), congressional districts (Virginia)

Melvin R. Simpson, et al. v. City of Hampton, et al. (1996–97), city council districts (Va.)

Vera vs. Bush (1996), Texas redistricting

In the Matter of the Redistricting of Shawnee County Kansas and Kingman, et al. v. Board of County Commissioners of Shawnee County, Kansas (1996), commissioner districts

Vecinos de Barrio Uno v. City of Holyoke (1992–96), city council districts (Massachusetts)

(Litigation Support, cont.)

Torres v. Cuomo (1992–95), congressional districts (New York)

DeGrandy v. Wetherell (1992–94), congressional, senate, and house districts (Florida)

Johnson v. Miller (1994), congressional districts (Georgia)

Jackson, et al v Nassau County Board of Supervisors (1993), form of government (N.Y.)

Gonzalez v. Monterey County, California (1992), county board districts

LaPaille v. Illinois Legislative Redistricting Commission (1992), senate and house districts

Black Political Task Force v. Connolly (1992), senate and house districts (Massachusetts)

Nash v. Blunt (1992), house districts (Missouri)

Fund for Accurate and Informed Representation v. Weprin (1992), assembly districts (N.Y.)

Mellow v. Mitchell (1992), congressional districts (Pennsylvania)

Phillip Langsdon v. Milsaps (1992), house districts (Tennessee)

Smith v. Board of Supervisors of Brunswick County (1992), supervisor districts (Virginia)

People of the State of Illinois ex. rel. Burris v. Ryan (1991–92), senate and house districts

Good v. Austin (1991–92), congressional districts (Michigan)

Neff v. Austin (1991–92), senate and house districts (Michigan)

Hastert v. Illinois State Board of Elections (1991), congressional districts

Republican Party of Virginia et al. v. Wilder (1991), senate and house districts

Jamerson et al. v. Anderson (1991), senate districts (Virginia)

Ralph Brown v. Iowa Legislative Services Bureau (1991), redistricting database access

Williams, et al. v. State Board of Election (1989), judicial districts (Cook County, Ill.)

Fifth Ward Precinct 1A Coalition and Progressive Association v. Jefferson Parish School Board (1988–89), school board districts (Louisiana)

Michael V. Roberts v. Jerry Wamser (1987–89), St. Louis, Mo., voting equipment

Brown v. Board of Commissioners of the City of Chattanooga, Tenn. (1988), county commissioner districts

Business Records Corporation v. Ransom F. Shoup & Co., Inc. (1988), voting equip. patent

East Jefferson Coalition for Leadership v. The Parish of Jefferson (1987–88), parish council districts (Louisiana)

Buckanaga v. Sisseton School District (1987–88), school board districts (South Dakota)

Griffin v. City of Providence (1986–87), city council districts (Rhode Island)

United States of America v. City of Los Angeles (1986), city council districts

Latino Political Action Committee v. City of Boston (1984–85), city council districts

Ketchum v. Byrne (1982–85), city council districts (Chicago, Ill.)

(Litigation Support, cont.)

State of South Carolina v. United States (1983–84), senate districts — U.S. Dept. of Justice

Collins v. City of Norfolk (1983–84), city council districts (Virginia) — for Lawyers' Committee for Civil Rights

Rybicki v. State Board of Elections (1981–83), senate and house districts (Illinois)

Licht v. State of Rhode Island (1982–83), senate districts (Rhode Island)

Agerstrand v. Austin (1982), congressional districts (Michigan)

Farnum v. State of Rhode Island (1982), senate districts (Rhode Island)

In Re Illinois Congressional District Reapportionment Cases (1981), congressional districts

Publications

"EAC Survey Sheds Light on Election Administration", *Roll Call*, October 27, 2005 (with Michael McDonald)

Developing a Statewide Voter Registration Database: Procedures, Alternatives, and General Models, by Kimball W. Brace and M. Glenn Newkirk, edited by William Kimberling, (Washington, D.C.: Federal Election Commission, Office of Election Administration, Autumn 1997).

The Election Data Book: A Statistical Portrait of Voting in America, 1992, Kimball W. Brace, ed., (Bernan Press, 1993)

"Geographic Compactness and Redistricting: Have We Gone Too Far?", presented to Midwestern Political Science Association, April 1993 (with D. Chapin and R. Niemi)

"Whose Data is it Anyway: Conflicts between Freedom of Information and Trade Secret Protection in Redistricting", *Stetson University Law Review*, Spring 1992 (with D. Chapin and W. Arden)

"Numbers, Colors, and Shapes in Redistricting," *State Government News*, December 1991 (with D. Chapin)

"Redistricting Roulette," *Campaigns and Elections*, March 1991 (with D. Chapin)

"Redistricting Guidelines: A Summary", presented to the Reapportionment Task Force, National Conference on State Legislatures, November 9, 1990 (with D. Chapin and J. Waliszewski)

"The 65 Percent Rule in Legislative Districting for Racial Minorities: The Mathematics of Minority Voting Equality," *Law and Policy*, January 1988 (with B. Grofman, L. Handley, and R. Niemi)

"Does Redistricting Aimed to Help Blacks Necessarily Help Republicans?" *Journal of Politics*, February 1987 (with B. Grofman and L. Handley)

"New Census Tools," *American Demographics*, July/August 1980

Professional Activities

Member, Task Force on Long Lines in 2012 Election, Prince William County, VA

Member, 2010 Census Advisory Committee, a 20-member panel advising the Director of the Census on the planning and administration of the 2010 census.

Delegate, Second Trilateral Conference on Electoral Systems (Canada, Mexico, and United States), Ontario, Canada, 1995; and Third Trilateral Conference on Electoral Systems, Washington, D.C., 1996

Member, American Association of Political Consultants

Member, American Association for Public Opinion Research

Member, American Political Science Association

Member, Association of American Geographers, Census Advisory Committee

Member Board of Directors, Association of Public Data Users

Member, National Center for Policy Alternatives, Voter Participation Advisory Committee

Member, Urban and Regional Information Systems Association

Historical Activities

Member, Manassas Battlefield Trust Board Member, 2018 -- current

Member, Historical Commission, Prince William County, VA., 2015 – current. Elected Chairman in 2017, re-elected 2018

Member of Executive Committee & head of GIS Committee, Bull Run Civil War Round Table, Centerville, VA. 2015 – current

Member, Washington Capitals Fan Club, Executive Board 2017 -- current

February, 2020

APPENDIX A
PERSONNEL RESUME TEMPLATE

Proposed Resource Name:	Ryan Taylor
Proposed Classification:	Data and GIS Analyst
Key Personnel:	Yes ⊗ *or* No ▢
If resource is associated with a subcontractor provide name of company:	N/A
Percentage of time resource will be allocated to project:	30%

Agency: List the required skill sets, education, certifications, and training requirements for each key personnel role. Below are examples of required skills, education and certifications and examples of vendor responses.

Bidder: List the skills and experience that qualify the individual for the duties and responsibilities on this project for the proposed role. Provide the name of the project(s) and the year(s) the experience was obtained.
The experience requirements detailed in the RFP are restated as follows:

Required Skills	Bidder's Response
Describe your experience and knowledge with Geographic Information Systems redistricting solutions and the associated boundary, demographic and other data sources used for redistricting mapping.	**Does resource have this required skill: Yes X or No ▢** **Description of skills and experience:** *12 years' experience with ESRI and QGIS products preparing boundary files for Census Bureau implementation, Citygate GIS products for creating and analyzing district plans, and proprietary PRECIS software for the creation, analysis, and implementation of precinct plans and street file updates needed post-redistricting.* **Name of project(s) and year(s) experience was obtained:** University of Oregon RARE program– 2009 to 2010 Illinois General Assembly redistricting – 2010 to 2011 Rhode Island state and local redistricting – 2011 to 2012 City of Chicago redistricting – 2012 Rhode Island Voter-Precinct Verification – 2016 Rhode Island Census Boundaries Phase 1&2 – 2015 to 2020 Illinois Census Boundaries Phase 2 – 2017 to 2020 Redistricting legal assistance: County of San Juan, Utah – 2015 to 2018 City of Cranston, RI – 2015 City of Virginia Beach, VA – 2019 to 2020 State of Connecticut - 2020
Describe your experience working with commissions, public officials, and the general public in similar projects.	**Does resource have this required skill: Yes X or No ▢** **Description of skills and experience:** Conducted hearings for redistricting commissions and members of the public, gathering and implementing recommendations and responses to redistricting drafts. **Name of project(s) and year(s) experience was obtained:** Rhode Island state and local redistricting – 2011 to 2012

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Describe your knowledge and experience with the necessary validation checks that need to be part of a redistricting plan (for example, checking population totals, continuity, compactness, etc).	Does resource have this required skill: Yes X or No ☐ **Description of skills and experience:** Validation checks are a standard feature of Citygate GIS redistricting software, and all statistics are analyzed and reported to stakeholders. **Name of project(s) and year(s) experience was obtained:** Illinois General Assembly redistricting – 2010 to 2011 Rhode Island state and local redistricting – 2011 to 2012 City of Chicago redistricting – 2012 Rhode Island Voter-Precinct verification - 2016

List client references for work performed to meet the requirements stated above, and all projects the proposed resource has worked on in the last three (3) years. A minimum of three (3) references are required. By submission of this information, the bidder and identified key person authorize the State of Michigan to contact references and previous em   ployers provided to verify the accuracy of the information. Provide the identified information for each:

Start Date: August 2011	End Date: ongoing
Client/Project: **Rhode Island State and Local Redistricting** - *State of Rhode Island -* ▮▮▮▮▮*., Providence, RI 02904 -* ▮▮▮▮▮▮ *elections@sos.ri.gov – Director of Elections: Rob Rock -* ▮▮	
Employer: Election Data Services	
Title/Percentage of time: *Redistricting Consultant - 80%*	
Description: Consultant for all aspects of redistricting management and process for the drawing of US Congressional, State Legislative, and City Ward Districts, as well as City/Town voting precincts; public outreach and information; operating the redistricting office open to all interested parties; and developing all the necessary street file updates for the Secretary of State Precinct Management system - *ESRI ArcGIS 10.0 and Citygate GIS Autobound 10*	

Start Date: December 2010	End Date: July 2011
Client/Project: **Illinois State House Redistricting** – *401-S Stratton Building, Springfield, IL 62706 - Redistricting Team Lead: Jon Maxson -* ▮▮▮▮▮	
Employer: State of Illinois House	
Title/Percentage of time: *GIS Specialist – 100%*	
Description: Technical specialist to aid in redistricting management and process for the drawing of Illinois's House districts for the General Assembly. Instructed Redistricting Staff how to query, analyze, symbolize, and produce maps/data files necessary for them to achieve their goals and ensure the work was proper and legal through validation checks. *ESRI ArcGIS 10.0 and Citygate GIS Autobound 10*	

Start Date: November 2012	End Date: ongoing
Client/Project: **Election Data Services** – *US Election Result Poster – 6171 Emerywood Court, Manassas VA 20112 – Kim Brace –* ▮▮▮▮ *–* ▮▮▮▮	
Employer: Election Data Services	
Title/Percentage of time: *GIS Designer / Data Manager – 70%*	
Description: I use GIS to format and design a two-sided poster template that will symbolize the results of the US General Election every two years. After the November election I collect all the AP official election results data and import into a database that symbolizes the poster. The Election Data Services election poster is a commercial product that is sold to many news and political organizations. *ESRI ArcGIS 10.8*	

APPENDIX A
PERSONNEL RESUME TEMPLATE

EDUCATION

Education		
Degree (i.e. PhD, Master's, Bachelors)	Masters in Urban Planning	Year Completed: *2009*
Program	GIS	
University	University of California, Los Angeles	

Additional Education		
Degree (i.e. PhD, Master's, Bachelors)	Bachelors' in Urban Studies and Planning	Year Completed: *2003*
Program	Major(s) area of study: Regional Planning	Minor area of study: History
University	University of California, San Diego	

TRAINING – Provide any relevant technical or professional training related to the role resource will be providing on this project.

Technical or Professional Training	
Course Name	Computer Information Systems @ Portland City College
Topic	Database Management and Python
Date taken	2013 - 2015

Certifications/Affiliations	
Name	
Topic/Description	
Date completed	

The Bidder must submit a letter of commitment for Key Personnel, signed by the identified resource, stating their commitment to work for the bidder/subcontractor on this project contingent on award of the bid. If the identified personnel are currently assigned to another project the bidder <u>must </u>provide a letter signed by the that Project Manager releasing the individual from the project.

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APPENDIX A
PERSONNEL RESUME TEMPLATE

Proposed Resource Name:	**John B. Morgan** President - Applied Research Coordinates
Proposed Classification:	*Redistricting expert and map drawer*
Key Personnel:	**Yes x** *or* **No** ☐
If resource is associated with a subcontractor provide name of company:	Applied Research Coordinates, Ltd. (ARC) ██████████ Springfield, VA 22151 ██████████
Percentage of time resource will be allocated to project:	15-25%

Agency: *List the required skill sets, education, certifications, and training requirements for each key personnel role. Below are examples of required skills, education and certifications and examples of vendor responses.*

Bidder: List the skills and experience that qualify the individual for the duties and responsibilities on this project for the proposed role. Provide the name of the project(s) and the year(s) the experience was obtained.

The experience requirements detailed in the RFP are restated as follows:

Required Skills	Bidder's Response
Describe your experience and knowledge with Geographic Information Systems redistricting solutions and the associated boundary, demographic and other data sources used for redistricting mapping.	**Does resource have this required skill: Yes x or No** ☐ **Description of skills and experience:** over *25 years of experience with GIS systems. Maptitude for Redistricting AutoBound. ArcGIS, AtlasGIS, and custom legislative redistricting GIS systems in Pennsylvania and North Carolina.* *I identified a significant error in the initial 2010 census data release for Virginia – I worked with legislative staff and the Census Bureau to correct the error and continue with the redistricting process.* *I helped broker a compromise between the Indiana Senate and House leaders for the 2012 congressional district plan.* *In 2012, I worked with attorneys and election officials in Craven County, North Carolina to adjudicate the boundary and data between two districts which had split a census block.* *I have worked on redistricting projects in 19 states over three redistricting cycles – 1991, 2001 and 2011.* **Name of project(s) and year(s) experience was obtained:** Redistricting 1991-1992: Indiana House legislators; New Jersey legislators and commission members; Wisconsin Senate and Assembly legislators; Michigan GOP; New York Assembly legislators; Illinois Senate legislators; Pennsylvania Senate legislators; Florida House legislators Redistricting 2001-2002: Virginia House and Senate legislators; North Carolina House and Senate legislators; Georgia Senate and House legislators; Rhode Island Senate legislators; Pennsylvania Senate legislators; Indiana House legislators;

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	Redistricting 2011-2012: Virginia House legislators; North Carolina Senate legislators; South Carolina Senate and House legislators; Pennsylvania Senate legislators; Kansas congressperson; New Mexico Senate and House legislators; Missouri GOP; Tennessee redistricting attorneys; Indiana Senate and House legislators
Describe you experience working with commissions, public officials, and the general public in similar projects.	**Does resource have this required skill: Yes x or No ☐** **Description of skills and experience:** More than 25 years of experience working with public officials. Worked directly with commission members, public officials and commission attorneys on redistricting, map drawing and litigation support. Direct participation and support in public redistricting meetings in North Carolina, Missouri, Virginia, Indiana and New Jersey. Provided expert testimony in redistricting court cases. Instructor for campaign training seminars Consultant to campaigns **Name of project(s) and year(s) experience was obtained:** 2011-2018: Expert testimony in redistricting court cases 2011-2012: Ohio reapportionment board, Connecticut redistricting commission, New Jersey legislative redistricting commission, New Jersey congressional redistricting commission, Pennsylvania legislative reapportionment commission 2011-2012: Public redistricting meetings 2004-2007: National political organization executive director 1995-1999: Instructor and public speaker to candidates 1991 to present: Consultant to campaigns and businesses
Describe your knowledge and experience with the necessary validation checks that need to be part of a redistricting plan (for example, checking population totals, continuity, compactness, etc).	**Does resource have this required skill: Yes x or No ☐** **Description of skills and experience:** Prepared the final congressional plan submission for the New Jersey congressional redistricting commission. Provided the map-drawing to facilitate a bi-partisan compromise settlement in the 2012 litigation for the New Mexico Senate. Provided the final map-drawing to comply with the judge's orders in the New Mexico House litigation. Testified in 2017 Virginia House litigation regarding district compactness, which was found to be sufficient by the court. Provided support for DOJ submissions Prepared maps and exhibits for redistricting litigation. Provided numerous validation reports, analyses and exhibits to state legislators, staff and attorneys in many states. **Name of project(s) and year(s) experience was obtained:** 2011-2012: New Jersey congressional redistricting commission; redistricting litigation for New Mexico House and Senate districts 2002 to present: Maps and exhibits for litigation 1991 to present: Work with validation reports, etc.

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APPENDIX A
PERSONNEL RESUME TEMPLATE

List client references for work performed to meet the requirements stated above, and all projects the proposed resource has worked on in the last three (3) years. A minimum of three (3) references are required. By submission of this information, the bidder and identified key person authorize the State of Michigan to contact references and previous employers provided to verify the accuracy of the information. Provide the identified information for each:

Start Date: September 2019	End Date: *December 2019*
Client/Project: *Center for Austin's Future Demographic and election analysis* Reference contact: *West McKee* ███████████ *Austin, TX 78756* ███████████	
Employer: Applied Research Coordinates	
Title/Percentage of time: consultant / 15% of time	
Description: *conduct demographic and election analysis for city council districts. Presentation to stakeholders* Software utilized: *Maptitude for Redistricting v6.0, AtlasGIS, PowerPoint, Excel, GoTo Meeting*	

Start Date: August 2017	End Date: *December 2018*
Client/Project: *Baker Hostetler, Consulting expert for redistricting* Reference contact: *E. Mark Braden* ███████████ *Washington, DC 20036-5403* ███████████	
Employer: Applied Research Coordinates	
Title/Percentage of time: non-testifying consulting expert / 15-25% of time	
Description: *Provide non-testifying expert analysis for litigation in Virginia, Ohio* Software utilized: *Maptitude for Redistricting v6.0, AtlasGIS, Excel*	

Start Date: January 2018	End Date: March 2018
Client/Project: Blank Rome LLP *Consulting expert for redistricting* Reference contact: *Brian Paszamant* ███████████ *Philadelphia, PA 19103-6998* ███████████	
Employer: Applied Research Coordinates	
Title/Percentage of time: non-testifying consulting expert / 15-35% of time	
Description: *Provide map-drawing for Pennsylvania to PA Senate President Scarnati and staff* Software utilized: *Maptitude for Redistricting v6.0, AutoBound, Excel, MS Access database*	

Start Date: January 2011	End Date: March 2020
Client/Project: Friends of Chris Jones (Delegate) *Consulting expert for redistricting* Reference contact: *Hon. S. Chris Jones* ███████████ *Suffolk, VA 23433* ███████████	
Employer: Applied Research Coordinates	
Title/Percentage of time: *Redistricting consultant, election analyst / 15-20% of time*	
Description: *Provide map-drawing for Virginia House of Delegates members, staff and attorneys. conduct demographic and election analysis for Virginia House of Delegate districts. Presentation to stakeholders* Software utilized: *Maptitude for Redistricting v6.0, AtlasGIS, PowerPoint, Excel, GoTo Meeting*	

APPENDIX A
PERSONNEL RESUME TEMPLATE

Start Date: January 2015	End Date: October 2020
Client/Project: U.S. Chamber of Commerce *Demographic and election analysis* *Reference contact: Jim Martin* ████ *Washington, DC 20062* ████████	
Employer: Applied Research Coordinates	
Title/Percentage of time: Analyst, consultant / 20-25% of time	
Description: *Conduct demographic research and election analysis for political affairs department.* *Presentation to stakeholders* *Software utilized: Maptitude for Redistricting v6.0, AtlasGIS, PowerPoint, Excel, GoTo Meeting*	

EDUCATION

Education		
Degree	*B.A. with honors*	Year Completed: *1991*
Program	*US History – major concentration* *Classical History – minor concentration*	
University	*University of Chicago, 5801 S Ellis Ave Chicago, Illinois 60637*	

Additional Education		
Degree (i.e. PhD, Master's, Bachelors)		
Program		
University		

TRAINING – Provide any relevant technical or professional training related to the role resource will be providing on this project.

Technical or Professional Training	
Course Name	
Topic	
Date taken	

Certifications/Affiliations	
Name	
Topic/Description	
Date completed	

The Bidder must submit a letter of commitment for Key Personnel, signed by the identified resource, stating their commitment to work for the bidder/subcontractor on this project contingent on award of the bid. If the identified personnel are currently assigned to another project the bidder <u>must</u> provide a letter signed by the that Project Manager releasing the individual from the project.

W. Kent Stigall, Sr.

Kent has over 35 years of experience working in the Legislative branch of Virginia Government. He has 30+ years of experience providing GIS, technology and legislative redistricting expertise to Virginia's legislators, legislative staff and the Division of Legislative Services (DLS). The Division of Legislative Services is a non-partisan agency supporting both the House and Senate of Virginia. He has extensive experience training and supporting superiors, legislators, legislative aides and co-workers in the use of the state wide redistricting application. He has made presentations on "Redistricting Virginia" to Virginia legislative committees, universities and colleges.

Kent was Project manager/Senior GIS specialist for both the 2001 and 2011 statewide redistricting cycles of Virginia. He was responsible for researching and determining the best application and GIS software for redistricting Virginia in 2001 and 2011 and provided the initial research for redistricting in 2021 prior to retirement from DLS. He worked with the chosen redistricting software developer (CityGate GIS) to assure the redistricting application (AutoBound) met all of Virginia's needs and expectations for the 2001 and 2011 redistricting cycles as well as preliminary requirements for the next generation redistricting application. Kent has drawn, imported, merged, combined, reviewed, analyzed, edited and/or published what is most likely 1,000's of Virginia House, Senate and Congressional district maps using AutoBound since 1999. He has extensive experience creating/drawing voting precincts (VTDS), current and historical, using various GIS products including AutoBound and ArcView. The base geographic polygon features used in creating districts in Virginia are census blocks, VTDS, city, town and county boundaries as provided by the Census Bureau.

Kent provided "technical expertise" to the "Special Master" (Bernard Groffman) appointed by the courts to re-draw the Virginia congressional districts in 2015 and again to re-draw the House districts in 2018. He was responsible for assuring all the necessary components of redistricting were available and current including ad hoc reports and maps as well as drawing many legislative maps for the "Special Master".

For redistricting Virginia in 1991 he was a Programmer/Analyst at the Division of Legislative Automated Systems (DLAS). DLAS was responsible for assimilating the Census Data to be used in the redistricting application running on a Wang mini-system computer as well as training and supporting Division of Legislative Services staff, legislators and legislative aides in the use of the redistricting application.

Since 1998 he has utilized ESRI products ArcView, ArcMap and ArcGIS extensively to generate maps, ad hoc reports and data for redistricting and other GIS applications.

Employment History
January 1998 to February 1, 2020 (retired) – Virginia Division of Legislative
September 1984 to January 1998 – Virginia Division of Legislative Automated Systems
June 1982 to September 1984 – Richmond Times Dispatch Newspaper

W. Kent Stigall, Sr.
████████████████
Midlothian, VA 23113
████████████████

July 20, 2020

References

R. Jay Landis
Director of the Division of Legislative Automated Systems (retired)
King Richard Ct.
Mechanicsville, VA 23116
█████████████

Mark Rush
Waxberg Professor of Politics and Law
Director, Center for International Education
Washington and Lee University
Lexington, VA 24450
█████████████

Office: 1 (540) 458 - 8904
Mobile: ████████████

Julie Smith
█████████████
Henrico, va 23233
█████████████
█████████████

FRED HEJAZI, PLS

Education:

BSCE/1984/Civil Engineering
Professional Land Surveyor, (Maryland 10947)
ESRI ArcStorm design and implementation
ESRI Spatial Data Engine (SDE) Management and Programming
ESRI Arc/Info 8.0 Training
ORACLE Database Administration
SUN Systems Administration
Data General Systems Administration
Census Phase 2 Training

Computer System Proficiencies:

Proficient in Programming in .Net development, VB, VC++, C# and ARCObjects, Javascript, Php, CSS
Systems Administration for SUN and Linux (Redhat, Ubuntu)
Oracle Database Management, MySQL, PostGRE/PostGIS
ESRI Arcview GIS, ARC/Info, ArcGIS Server, and ArcEngine
Google Maps API, Nokia Maps API, ArcGIS Online, Cloudmade API, GISCloud API
Corel Draw, Photoshop, Camtasia studio, FrontPage, Flash

Introduction:

17 years of redistricting experience at all levels of government. Mr. Hejazi has provided redistricting services to cities ranging from a few thousands to some of the largest in the country including Los Angeles County CA, King County WA, the City of Richmond, Virginia and the City of Indianapolis. Mr. Hejazi was the key designer of the Citygate's redistricting products and has been the solution manager for the firm's redistricting and reapportionment services since its inception.

Additionally, Mr. Hejazi has over 25 years of experience in Information System design, Geospatial Information Systems, Computer Aided Design, and Automated Mapping systems. 11 years of experience in Global Positioning Systems (GPS), geodetic control surveys, digital photogrammetry and aerial mapping.

His Geospatial Information Systems (GIS) experience includes over 20 years of application development, consulting, and project management, experience at all levels of government in North America. Key clients included, the US Census Bureau, Elections Canada, The US Army Corps of Engineers, NGA, 45 State Legislatures throughout the US and multiple City and County agencies, including Fairfax County, City of Richmond, Miami-Dade County, City of Houston, City of Tucson, King County WA, Montgomery County and Washington Suburban Sanitary Commission.

Project Experience:

DEMOGRAPHIC AND GIS CONSULTING SUPPORT FOR THE CITY OF AUSTIN'S FIRST CITIZEN REDISTRICTING COMMISSION. The Boundary of the City of Austin is a complex polygon which straddles 4 Counties. Citygate GIS was tasked with development of 10 nearly equal population districts which adequately addressed the City's diverse minority demographics. Mr. Fred Hejazi

was the project manager on the project and provided onsite support to the Austin redistricting commission. Citygate's autoBound software was used to extract required demographic data from GIS files provided by the US Census Bureau, and Travis, Bastrop, Williamson and Hays Counties. The aggregated data included more than 260 columns of data, including population, housing counts and racial and voting age demographics. This data was presented to the City's redistricting commission and was subsequently used to create 10 Commission districts for the City.

CENSUS 2000/2010 TECHNICAL MANAGER AND SUPPORT COORDINATOR. Trained state users of autoBound redistricting to prepare them for the Phase 2 submissions to the Census Bureau and performing redistricting. Additionally, provided support for a variety of Phase 2 and year 2000/2010 redistricting issues. Some of the State and National agencies for which support was provided include:

State of Connecticut	**State of Virginia** 2000/2010	**State of Pennsylvania**
State of Alaska 2000/2010	**State of Indiana** 2000/2010	**State of Nevada** 2000/2010
State of Washington	**State of South Dakota**	**State of Wisconsin**
State of Nebraska	**State of Illinois** 2000/2010	**State of Colorado** 2010
State of South Carolina	**State of Michigan** 2000/2010	**State of Oregon** 2000/2010
State of Utah 2000/2010	**State of Idaho** 2000	**Country of Canada**
State of Hawaii 2000	**State of Arkansas** 2000/2010	**State of New Mexico**

DEVELOPMENT OF COMMISSION REDISTRICTING TOOL FOR ELECTIONS CANADA. AutoBound is a redistricting package developed by Citygate GIS. Mr. Hejazi was the project manager for a project performed for Elections Canada, where the software was adopted to use the Canadian data model and work flow. Some additional functionality included on-the-fly block splitting and handling of additional data layers. Citygate was used the 2000 and the 2010 redistricting cycles in Canada.

REDISTRICTING SUPPORT SERVICES FOR THE IOWA ASSOCIATION OF COMMUNITY COLLEGES AND SCHOOL BOARDS. Provided technical services in the development and implementation of a GIS application for school boundary redistricting. Iowa's 375 school community districts are being aggregated into fifteen Director Districts and Area Educational Associations (AEA), which serve as Iowa's managerial and community college districts.

TURN-KEY REDISTRICTING SERVICES FOR LOCAL GOVERNMENTS. Provided Census data development, redistricting, public presentations, map production, and legal descriptions for redistricting projects throughout the US, including: King County WA, Haverford Township PA, City of Newport RI, Adams County CO and Black Squirrel Creek Water district.

EXPERT WITNESS AND LEGAL SUPPORT IN REDISTRICTING CASES. Provided support to redistricting court cases, including map development, data analysis and in court testimony . Project included: Redistricting of City of Indianapolis IN for the Indiana Supreme Court.

Redrawing the State of Indiana fair redistricting plan for the Indiana Secretary of State. Antony vs. Validoid, Redistricting plan for the County of San Diego before the California superior court.

ONSITE SUPPORT AT THE US CENSUS BUREAU. Worked onsite at the Census Bureau, providing support for the initial design, development and field testing of FDCA (Field Data Collection Automation) project.

DEVELOPMENT OF THE ARCGIS BASED CENSUS VTD TOOL. Mr. Hejazi was the lead designer and developer of the ARCGIS Based tool for performing the Census VTD/BBSP program. The tool automatically identifies differences between State and Census VTD files and allows the user to update the files quickly and efficiently. The tools was used to perform Phase 2 for the states of Pennsylvania, Indiana and Utah.

DEVELOPMENT OF THE ARCGIS BASED CENSUS LUCA AND BAS TOOLS. Mr. Hejazi was the lead designer on the Citygate developed tool which allows Counties to participate in the LUCA and BAS Census programs electronically. Citygate was contracted with ESRI to develop these tools as extension to the Arcview GIS software.

ONSITE REDISTRICTING SUPPORT SERVICES FOR THE COUNTRY OF BERMUDA. Worked with the Ministry of Works and Engineering to develop the FED Election map for Bermuda. Project included development of tools for automated calculation of redistricting plans and presentation of plans to the Redistricting Commission and the President.

Election Data Services

HOURLY RATES FOR
Election Data Services, Inc.
PERSONNEL

Project Coordinator/Expert Witness (Kimball Brace) $275

Deputy Coordinator (Patricia Cummings Fetter)...$175

Political Scientist/Expert Witness $225

Statistician $195

GIS Programmer $185

Senior Programmer $175

Programmer...$150

Research Associate $120

Database Specialist $120

Computer Support Staff...$95

Support Staff $75

Depositions, court testimony and employee hours in excess of eight (8) hours per day or forty (40) hours per week, including, but not limited to holidays and weekends, shall be billed at 150 percent of the above rates when such hours are the result of deadlines imposed by or authorized by the client.

(1/2018)