

ARCBRIDGE CONSULTING & TRAINING INC.



ARCBridge Response to the County of Los Angeles CITIZENS  
REDISTRICTING COMMISSION - Demographic and Mapping Consulting  
Services for Redistricting

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4/28/2021  
5 PM PST



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6514(f) Attn: Sam Mathur, [sam@arcbridge.com](mailto:sam@arcbridge.com)

## Contents

|  |     |
|--|-----|
| List of Figures .....  | iii |
| Cover Letter .....   | 2   |
| I. EXECUTIVE OVERVIEW .....  | 4   |
| ARCBridge REDISTRICTING EXPERIENCE .....   | 5   |
| II. Objectives and Tasks to be Performed as Per SOW.....   | 6   |
| Task 1 - Redistricting Mapping Planning – June 2021.....   | 6   |
| Task 2 - Public Involvement in Redistricting Mapping – Summer and Fall 2021 .....  | 7   |
| Task 3 – Review of Public-Submitted Maps – Fall 2021.....  | 8   |
| Task 4 – Preparation of Line Drawings of LA County CRC Redistricting Map Options and Final Official Report with Redistricting Maps – Fall 2021 through December 2021 ..... | 8   |
| IV. TIMELINE.....  | 14  |
| VI. PROPOSED TEAM .....  | 15  |
| V. Project Costs and Hourly Rates.....   | 16  |
| Appendix .....   | 1   |
| A. Firm Qualifications (see RFP Section IV.A).....   | 1   |
| Firm Overview.....   | 1   |
| ARCBridge PROJECT DESCRIPTIONS.....  | 4   |
| 1. Project Details – City of New Haven Redistricting .....   | 4   |
| 2. Project Details – San Diego Unified School District Redistricting of Trustee Areas.....   | 8   |
| 3. Project Details - Stafford County Public Schools (SCPS) .....   | 12  |
| Other Projects .....   | 16  |
| City of Parkland FL (2018).....  | 16  |
| Community Engagement Experience.....   | 18  |
| B. Team Biographies or Resumes (see RFP Sections IV.A and IV.B).....   | 19  |
| Resume of Ms. Priti Mathur, ARCBridge Technical Project Manager/Demographer .....  | 19  |
| Resume of Mr. Michael Burgess, Redistricting Analyst .....   | 21  |
| C. References (see RFP Section IV.C).....  | 22  |
| 1. SCPS Redistricting 2019.....  | 22  |
| 2. City of New Haven CT Redistricting 2012.....  | 22  |
| 3. San Diego Unified School District CA (School Board Areas) Redistricting 2011.....   | 22  |

4. Metropolitan Community College Kansas City MO ..... 23  
Other References..... 23  
6. City of Parkland FL Redistricting 2019 ..... 23  
7. City of Pawtucket RI Redistricting 2012 ..... 24  
D. Compliance with Ethics Requirement (see RFP Section IV.D) ..... 25  
TECHNICAL EXPERTISE ..... 26  
Redistricting Software Experience – DISTRICTSolv and ArcGIS ..... 27  
Testimonials for DISTRICTSolv ..... 28

## List of Figures

Figure 1 - Redistricting Experience ..... 5  
Figure 2 - District Summary Report showing Ideal Population and Maximum Deviation ..... 10  
Figure 3 - Current SDs ..... 10  
Figure 4 - Compactness Report..... 11  
Figure 5 - Distribution of NH White Population by Census Blocks (2010) ..... 11  
Figure 6 - Distribution of Hispanic Population by Census Blocks (2010) ..... 11  
Figure 7 - Distribution of NH Asian Population by Census Blocks (2010) ..... 12  
Figure 8 - Distribution of NH Black Population by Census Blocks (2010) ..... 12  
Figure 9 - Comparison of District Population with Ideal Population - Red (More) and Green (Less) ..... 13  
Figure 10 - Majority Minority Districts - Red (Hispanic Majority) and Yellow (NH White Majority) ..... 13  
Figure 11 - Team Organization..... 15  
Figure 12 - City of New Haven - Draft Maps for Public Comment ..... 5  
Figure 13 - City of New Haven - Final Large-Scale Map ..... 6  
Figure 14 - Block-Equivalency File..... 6  
Figure 15 - Draft Option Plans and Data ..... 9  
Figure 16 - Draft Option Plans with Explanation of Changes..... 10  
Figure 17 - Final Plans with Total Population, Ideal Population ..... 11  
Figure 18 - Examples of Draft Map PDFs..... 13  
Figure 19 - Final Adopted Plan ..... 14  
Figure 20 - Draft Maps for City of Parkland FL..... 16

## Cover Letter



21515 Ridge Top Circle  
Suite 290  
Sterling VA 20166

4/28/2021

Gayla Kraetsch Hartsough, Ph.D.,  
LA County CRC Executive Director, at  
ghartsough@crc.lacounty.gov

Dear Ms. Hartsough,

ARCBridge Consulting & Training, Inc. is pleased to offer its response to the Los Angeles County RFP for Demographic and Mapping Consulting Services for Redistricting.

ARCBridge is a woman-owned small business with a California business license. Incorporated in 1994, ARCBridge Consulting & Training Inc. has been in business for over 25+ years and has extensive experience working on several redistricting projects in 2011 and now in 2021. Our team has provided redistricting services throughout the country including California. ARCBridge has a local office in Marina Del Rey CA.

We are really excited to respond to this solicitation as we have successfully provided similar redistricting services to governments across the nation from California to Rhode Island, Alaska to Florida and more. We have worked with City of San Diego (Redistricting), Santa Barbara (Redistricting) and Los Angeles (GIS Services) Counties. We have been very successful in gathering public input, communicating with client Project Managers, Redistricting Committees, working with outreach consultants and have been able to create plans with very low maximum deviations even under 1%. ARCBridge has the experience that the city is looking for and we have fully trained staff available to provide all the required services in a very timely fashion. I encourage you to call our references and talk to them about our reliability and our passion to get things done in time and with guaranteed results.

I, Sam Mathur, will be responsible for all contract negotiations. My contact information is given below. Please feel free to contact me directly with any questions. I will like to take an exception to the Professional Liability – [REDACTED]

We look forward to the possibility of working with you on this project in the near future.  
Sincerely,



Sam Mathur

[sam@arcbridge.com](mailto:sam@arcbridge.com)

ARCBridge Consulting & Training, Inc.

21515 Ridge Top Circle

Suite 290

Sterling VA 20166

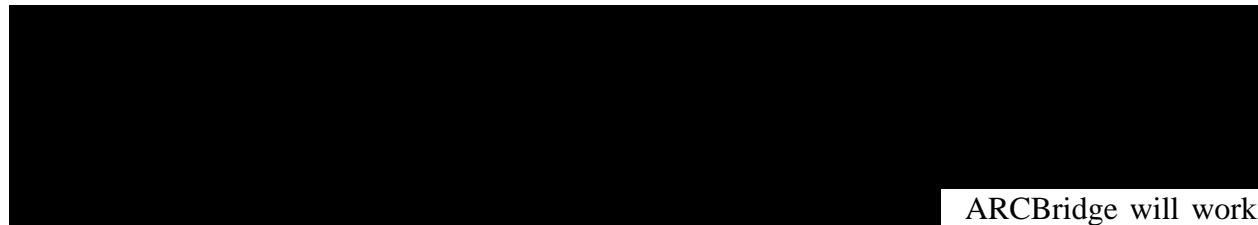
(703) 834-6511 (703) 834-6514 Fax

703-932-9749 (cell)

## I. EXECUTIVE OVERVIEW

Incorporated in 1994, ARCBridge Consulting & Training Inc. (ARCBridge/ ARCBridge Consulting), a Virginia-based woman-owned business, with its headquarters in Sterling VA. ARCBridge has been involved with legislative redistricting and Census Bureau data since the 2000 census, while our staff has worked with the 1990 Census data as well. We have provided redistricting assistance nationwide to a wide spectrum of clients to include counties, special districts, State, Cities, and Schools.

ARCBridge has been using Esri GIS mapping products since 1997 and all our staff has experience working with ArcGIS family of products. Our principal and proposed Technical Manager, Ms. Priti Mathur, has a MS in Geography (Virginia Tech) with a concentration in Geographic Information Systems. She has over 25 years of experience working with census data and redistricting and 5 years' experience working at the US Department of Justice Civil Rights Division, Voting Section where redistricting plans are evaluated.



ARCBridge will work with the web-based Esri Enterprise Redistricting solution, already acquired by the County, to provide redistricting services. ARCBridge has developed its own desktop redistricting tools which work within the Esri ArcGIS framework. Our team will have access to DISTRICTSolv for providing additional analysis and maps and reports. DISTRICTSolv is a redistricting tool

In 2011, ARCBridge provided redistricting services to many jurisdictions across the nation, including, the San Diego Unified School District (SDUSD) the County of Santa Barbara CA, City of New Haven CT, City of Parkland FL, Orange County FL, City of East Providence RI and more. This year, ARCBridge will be working on Redistricting Projects for 2021 to include, the County of Miami-Dade, FL and more.

In 2017, ARCBridge was hired by the County of Los Angeles Fire Department to align their battalion service areas and street centerlines with attributes from other sources. The data is used by the e-911 system. ARCBridge used ArcGIS to edit and update the data. We used extensive QA/QC procedures.

ARCBridge team is very excited about this opportunity as we have been very successful in completing these projects in record time, attending on-site/virtual community meetings/public hearings and producing and evaluating several plans for the redistricting committee/task force to review. We were not local to any of these jurisdictions but with our experience with the census data and redistricting process in general, we were able to achieve less than 1% deviation between districts. We worked very closely with the client personnel to accomplish their local redistricting goals and fulfill the Federal and state requirements by law while addressing the local community needs as brought forth in the community meetings.

All work will be performed at our Sterling Offices. We will attend on-site meetings as well as zoom meetings to complete the project in time. ARCBridge does not propose to use any subcontractors. ARCBridge will use the Esri Redistricting Application, desktop ArcGIS and our DISTRICTSolv extension to ArcGIS to perform all the tasks as listed in the RFP.

### ARCBridge REDISTRICTING EXPERIENCE

ARCBridge Employees have been working with Census data and redistricting since 1990. This is their 4<sup>th</sup> cycle of redistricting –

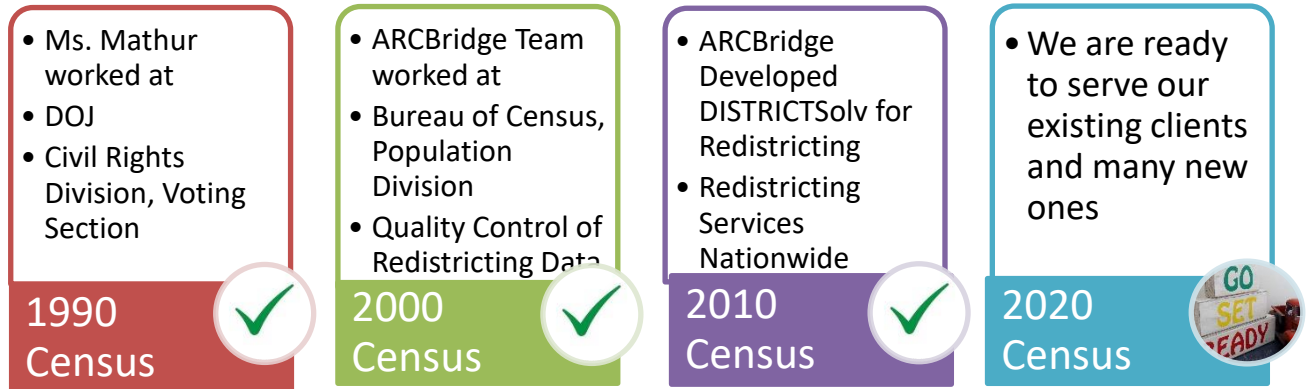


Figure 1 - Redistricting Experience

After 1990 Census, our proposed technical manager worked on-site at the Department of Justice, Civil Rights Division, Voting Section where she assisted attorneys in using GIS, Esri tools, PL94-171 data to evaluate the plans for Voting Rights Act compliance.

After 2000 Census, the ARCBridge team was processing Census pre-release data and creating applications at the Bureau of census, population Division for state representatives to review the data for their states.

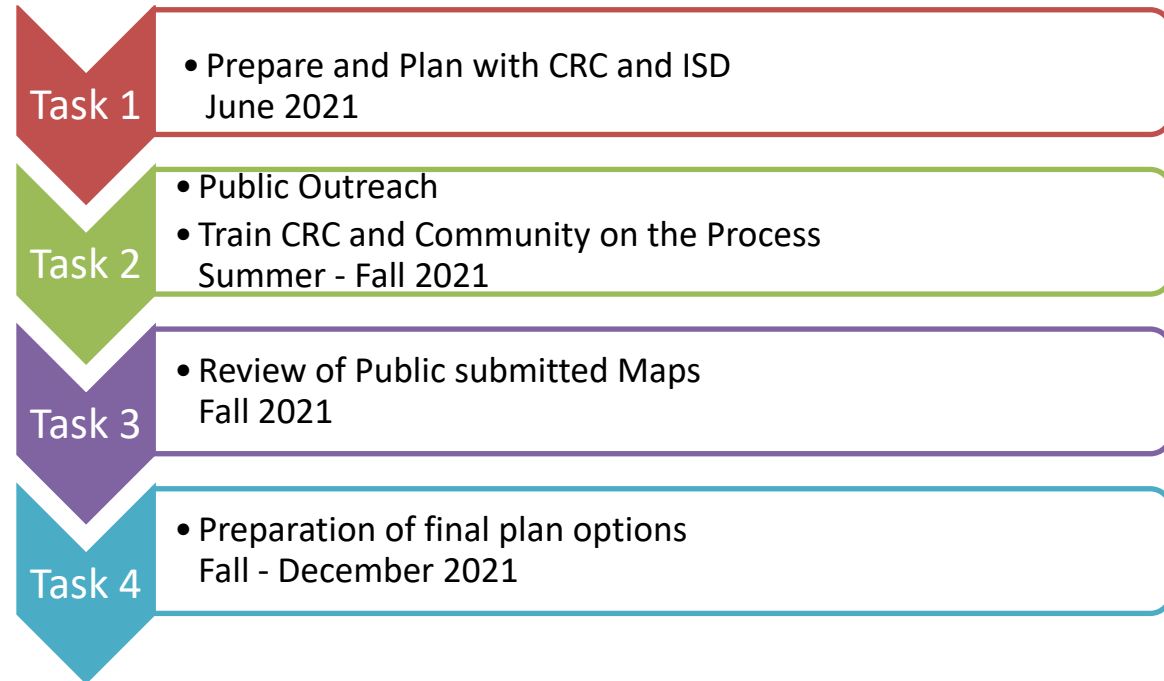
For 2010 Census, our team developed DISTRICTSolv, our very own redistricting toolset within the ArcGIS framework. DISTRICTSolv was used by ARCBridge and several jurisdictions for redistricting. ARCBridge provided redistricting services to several jurisdictions as described below.

For 2020 Census redistricting, ARCBridge is ready with its hardware, software and spatial data from the Bureau of Census. The spatial data was released in February while the PL94-171 data release has been delayed due to the pandemic. This redistricting data, usually released in April, will now be released in August and September 2021.

ARCBridge has worked with several counties, cities and towns and have drawn their council districts. Listed below are jurisdictions where we have drawn council districts, worked with the public, commission and city departments. We have provided training on redistricting requirements and collected community feedback on creating alternate redistricting plans. We have worked with diverse stakeholders and assisted them in coming to terms with the inevitable changes in supervisory districts.

## II. Objectives and Tasks to be Performed as Per SOW

As per the RFP, following tasks need to be completed by Dec 2021.



### Task 1 - Redistricting Mapping Planning – June 2021

ARCBridge team will work with Los Angeles Citizens Redistricting Commission (LA County CRC), consisting of 14 member commission; LA CRC's Ad Hoc Working Group – Demography and periodically with the Ad Hoc Working Groups on Outreach, Education, and Legislation; LA County CRC's independent legal counsel; and the LA County CRC's Executive Director to develop redistricting procedures and a schedule on how the supervisory district boundaries will be evaluated using Census 2020 PL 94-171 demographic data and the corresponding 2020 geography data files as available from the Census Bureau website.

The schedule will depend on the delayed release of Census PL94-171 data in mid-August/ September 30<sup>th</sup> of 2021. This delayed release due to the COVID-19 makes planning the process even more important. Our planning process will include completing the preparatory tasks before the release of Census data. The preparatory tasks will be to define a timeline to complete the project by December 2021. The timeline will include timelines for -

- Defining the redistricting criteria as per the federal Voting Rights Act, California Voting Rights Act and local county requirements
- Performing Racial polarized voting analysis using election data
- CRC website to be the main communication tool for the community/public
- Coordinating with Esri for Training the CRC on the Esri Redistricting platform using Census 2010 PL94-171 data
- Identifying any other data sources that might be helpful in the redistricting process
- Identifying training material to be posted on the CRC website
- Determining community feedback gathering process



- Developing processes for community to develop and submit plans for CRC to consider
- Work with the CRC, ISD and the community to identify communities of interest.
- Develop communities of interests (COI) layer and determine how we will work with the COI while creating new supervisory district boundaries.

The redistricting criteria typically used will be discussed so that CRC, ISD, Legal Counsel and the Public is aware of the rules required to evaluate the current and the new plans.

- Population Equality: All districts will be drawn such that they are as equal in population as possible. The maximum deviation will not be more than 10%.
- The districts shall be compact and contiguous. Use Census blocks as building blocks
- As per Voting Rights Act, Minority vote will not be diluted. Minority populations will be fairly represented such that the minorities will not be ‘packed’ into a district or ‘cracked’ into more than one district to dilute the minority voting power.
- Communities of Interest will be identified and all attempts will be made to keep them in one district as long as the population and other criteria are met.
- attempts will be made to avoid splitting neighborhoods, where possible, without violating the other requirements.
- And conform to the federal Voting Rights Act, and other applicable laws

ARCBridge proposes to attend a kick-off meeting and other virtual meetings in June to prepare the redistricting plan and timeline.

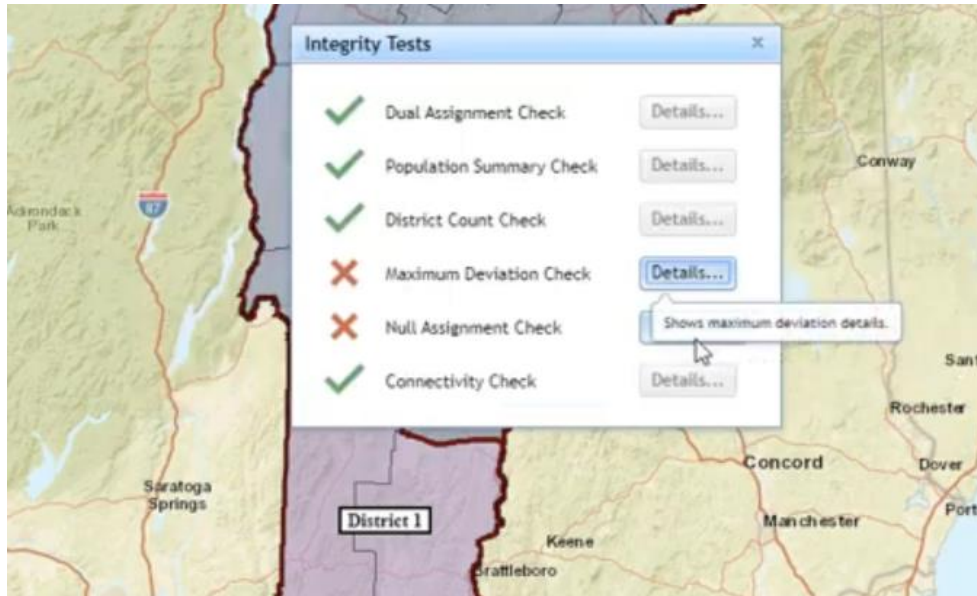
## **Task 2 - Public Involvement in Redistricting Mapping – Summer and Fall 2021**

Soon after Task 1 in June 2021, our team will begin on Task 2 –

- preparing draft presentations in PowerPoint to define the mapping process. After receiving CRC comments, updating the presentations
- The presentations will include description of census geography and census hierarchies
- Our team will work in close association with Esri and obtain training materials, tutorials that will be provided to CRC for posting on the CRC website.
- Coordinate with Esri to provide training to the CRC and others on –
  - How to draw new plans
  - How to review and evaluate plans
- The training can be completed using 2010 PL94-171 data. The CRC staff will be notified when the 2020 PL94-171 data will be available.
- ARCBridge will work with the CRC Ad Hoc working group on scheduling community outreach meetings.
- ARCBridge will work with the Esri Redistricting application and Esri to resolve any technical problems the CRC or the Public may encounter.
- The Redistricting Application tool has online help, blogs and Esri support
- Our team will answer any questions about the redistricting mapping process.

### Task 3 – Review of Public-Submitted Maps – Fall 2021

The Esri online redistricting application requires users to create a user name and password before drawing a plan. The plans can then be submitted to a curator. Before submitting a plan, the application runs integrity tests. The users can add their comments. Any plan submitted can be imported and overlaid with existing plan or other submitted plans.



Citizens can not only map out their own redistricting solutions, but they can also create groups and share and modify their plans before submitting and discussing them with the committee. The Esri application will track all submitted plans which would then have to be evaluated.

ARCBridge has worked with voting data and has performed racial polarized voting analysis at the precinct level. This data can be added as a layer in the redistricting application to determine if minority vote is being diluted. [REDACTED]

During the training, the CRC and the public will create alternate plans. They will submit plans and we will determine the best process for tracking and reviewing the plans submitted for review. The submitted plans may be posted as pdf maps and reports on the CRC website.

### Task 4 – Preparation of Line Drawings of LA County CRC Redistricting Map Options and Final Official Report with Redistricting Maps – Fall 2021 through December 2021

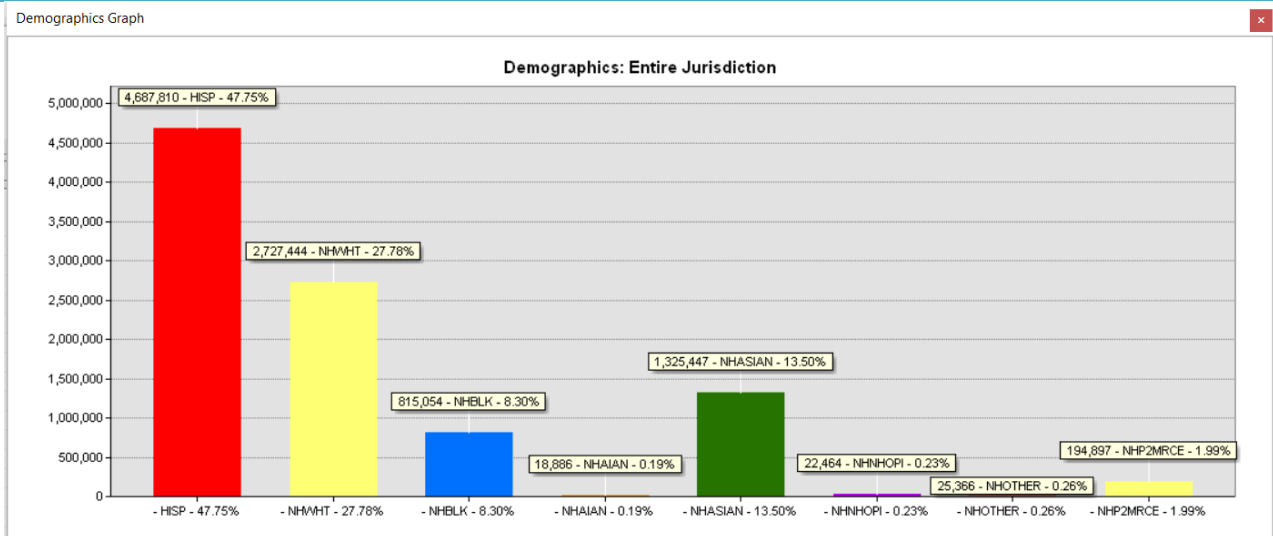
ARCBridge will use the Esri Redistricting Application to identify differences in the submitted plans and the current districts. ARCBridge will use the ArcGIS desktop tools as well to add on to what the web application offers. Our team will prepare maps and reports highlighting the differences between the plans and how they meet the redistricting criteria as set forth in Tasks 1 and 2. IN the appendix, we present several examples of how we have created sample differences maps as pdfs and as PowerPoint presentations.

ARCBridge will work with CRC and draw alternate maps as requested. Our team can use the web application or desktop ArcGIS and our DISTRICTSolv application.

We will prepare maps and reports for the CRC website. The community will post their comments for different plans under consideration.

ARCBridge has processed 2010 PL94-171 data at the block level and has performed some initial analysis for Los Angeles County. Some maps and charts are presented below. The PL demographic variables used are listed below –

| Total Population                        | Voting Age Population                              |
|---|--|
| Total Population                        | Total Voting Age Population                        |
| Hispanic                                | Voting Age Hispanic                                |
| Non Hispanic White                      | Voting Age White                                   |
| Non Hispanic Black                      | Voting Age Non Hispanic Black                      |
| Non Hispanic Asian                      | Voting Age Non Hispanic Asian                      |
| Non Hispanic Hawaiian/Pacific Islander  | Voting Age Non Hispanic Hawaiian/Pacific Islander  |
| Non Hispanic Native Americans           | Voting Age Non Hispanic Native Americans           |
| Non Hispanic Other                      | Voting Age Non Hispanic Other                      |
| Non Hispanic Persons of 2 or more Races | Voting Age Non Hispanic Persons of 2 or more Races |



The County has 48% Hispanic, 28% NH White, 8% NH Black, and 14% NH Asian Population. In 2019 the population was estimated at 10.04 M.

The tables and reports are based on the current supervisory districts and are included here to display our knowledge of the 2010 data and current supervisory districts.

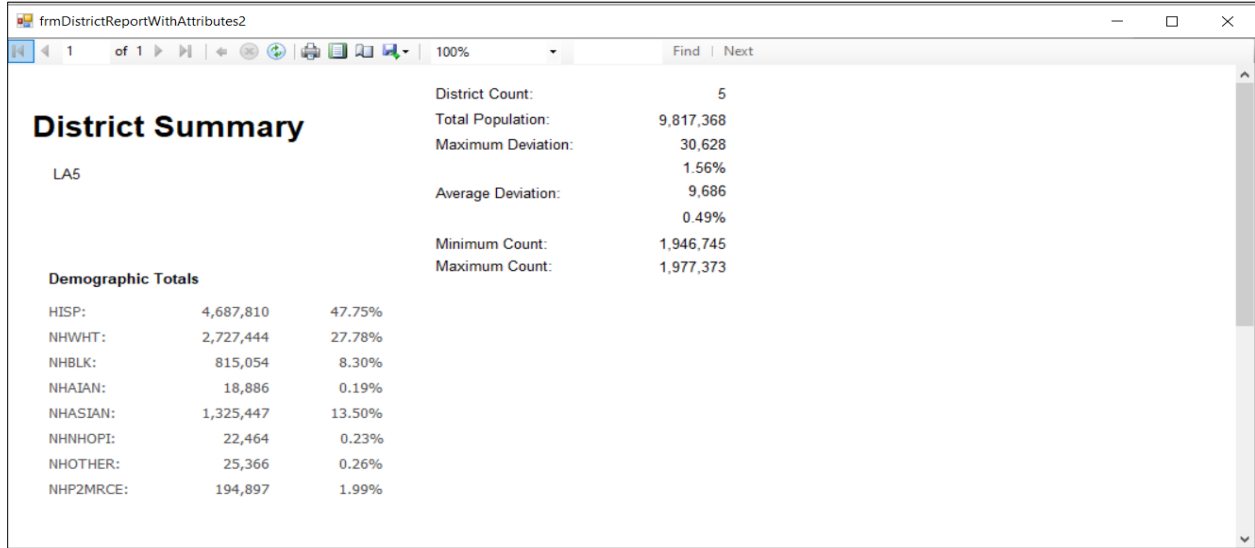


Figure 2 - District Summary Report showing Ideal Population and Maximum Deviation

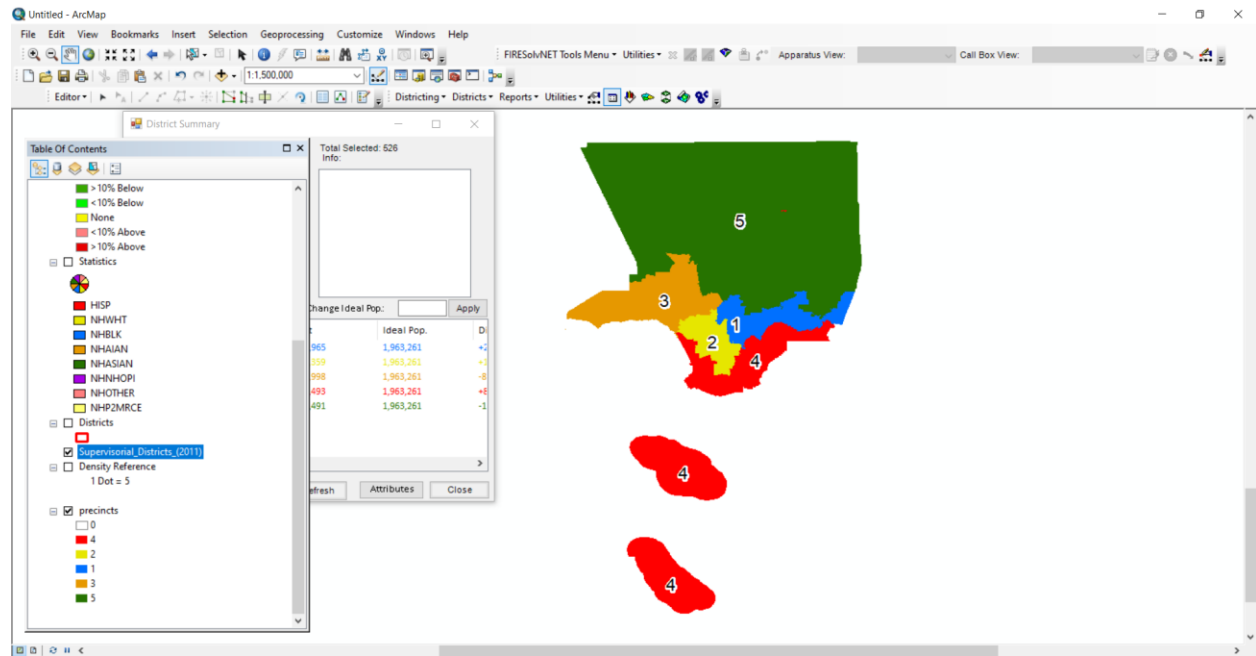


Figure 3 - Current SDs

| Compactness Tests          | District 1 | District 2 | District 3 | District 4 | District 5 |
|----------------------------|------------|------------|------------|------------|------------|
| <b>Area:</b>               | 297.17     | 195.16     | 521.69     | 864.24     | 3406.87    |
| <b>Perimeter:</b>          | 200.90     | 99.64      | 165.25     | 391.68     | 354.10     |
| <b>Width/Length Ratio:</b> | 0.42       | 0.96       | 0.55       | 0.66       | 0.63       |
| <b>Population Density:</b> | 6615.68    | 10131.89   | 3749.32    | 2280.93    | 571.42     |
| <b>Reock Test:</b>         | 0.18       | 0.30       | 0.23       | 0.10       | 0.42       |
| <b>Polsby-Popper Test:</b> | 0.09       | 0.25       | 0.24       | 0.07       | 0.34       |
| <b>Convex Hull Ratio:</b>  | 0.55       | 0.76       | 0.70       | 0.27       | 0.90       |
| <b>Schwartzberg Test:</b>  | 3.29       | 2.01       | 2.04       | 3.76       | 1.71       |

|                      |       |      |      |       |      |
|----------------------|-------|------|------|-------|------|
| <b>Grofman Test:</b> | 11.65 | 7.13 | 7.24 | 13.32 | 6.07 |
|----------------------|-------|------|------|-------|------|

Figure 4 - Compactness Report

The following maps show thematic maps by major race and ethnicity. This analysis is very helpful in identifying concentrations of minorities and identification of Communities of Interest.

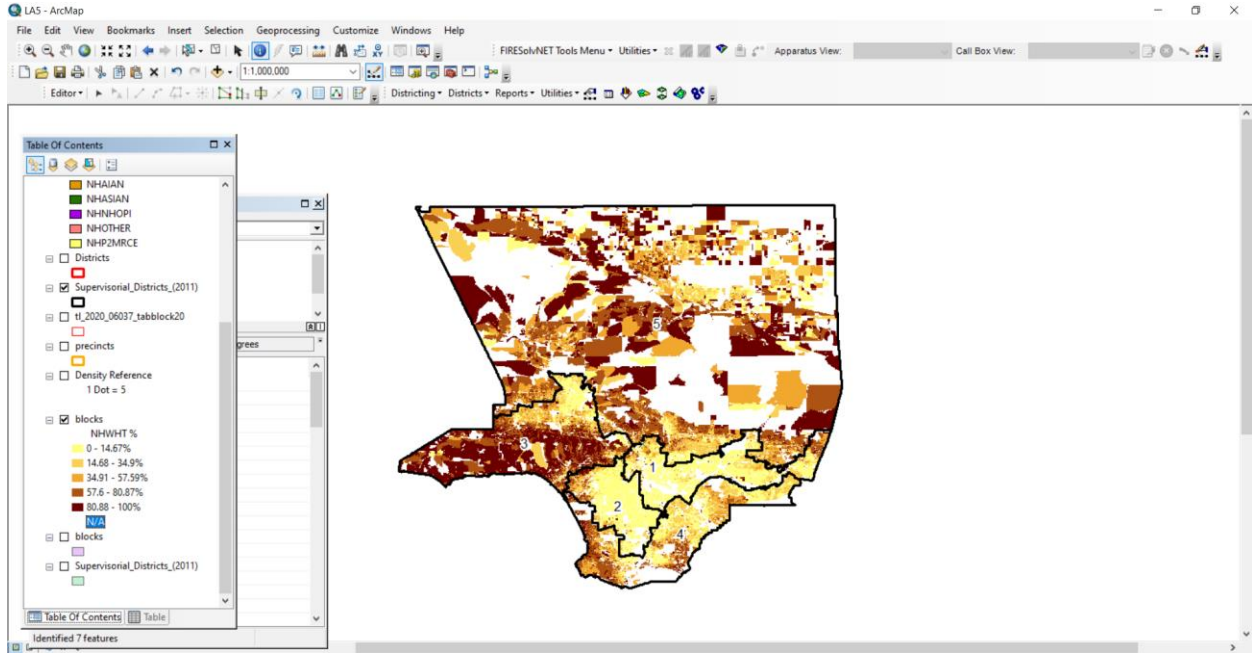


Figure 5 - Distribution of NH White Population by Census Blocks (2010)

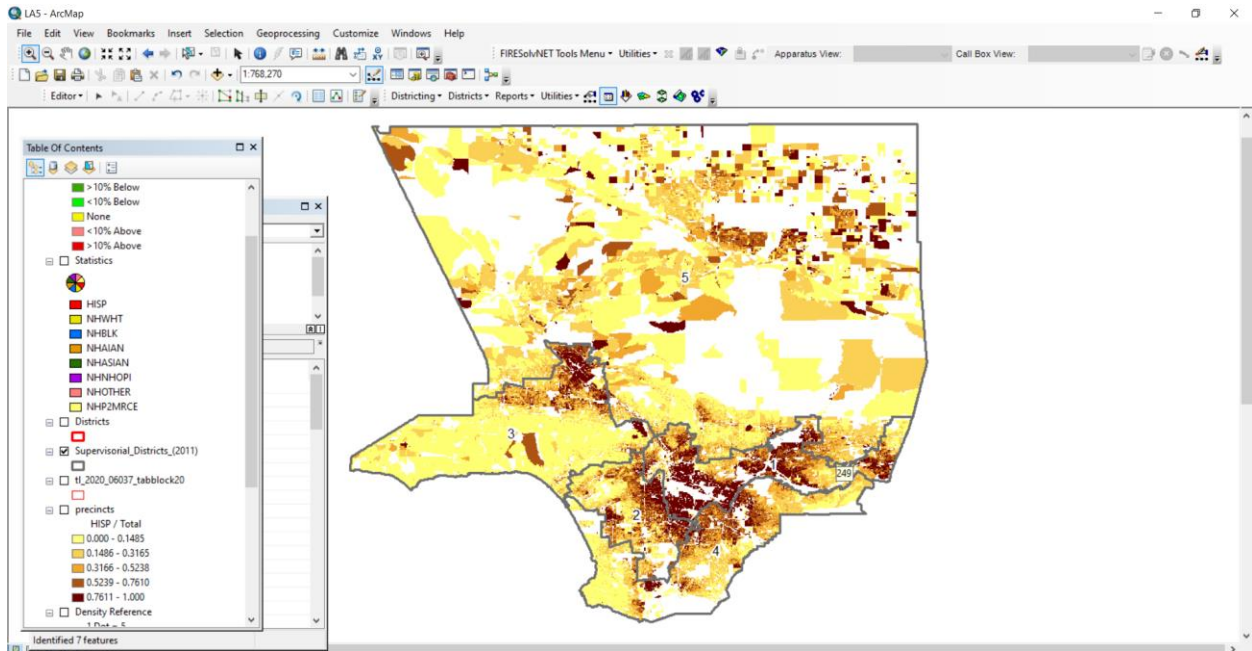


Figure 6 - Distribution of Hispanic Population by Census Blocks (2010)

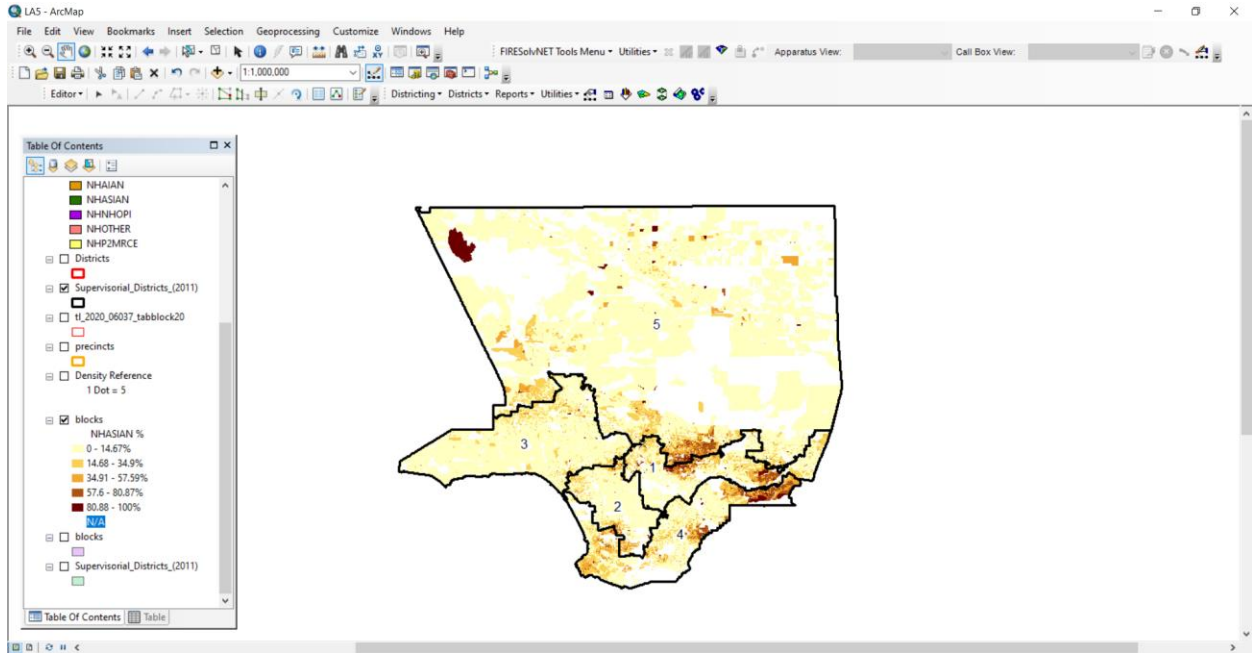


Figure 7 - Distribution of NH Asian Population by Census Blocks (2010)

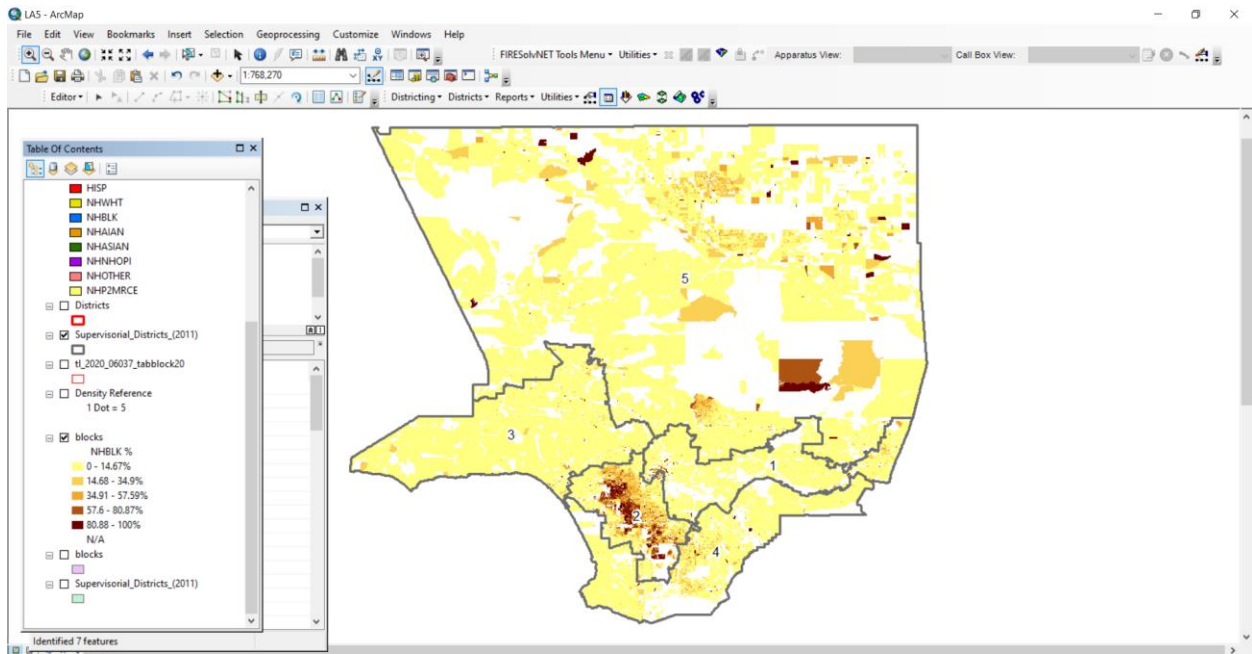


Figure 8 - Distribution of NH Black Population by Census Blocks (2010)

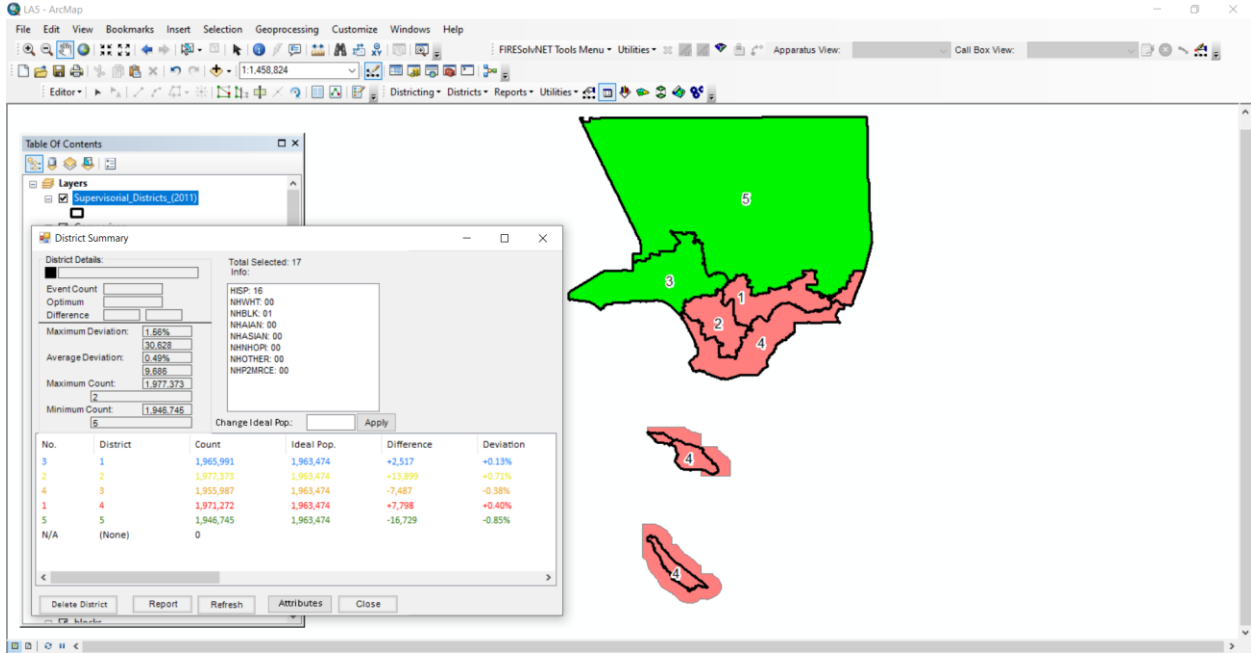


Figure 9 - Comparison of District Population with Ideal Population - Red (More) and Green (Less)

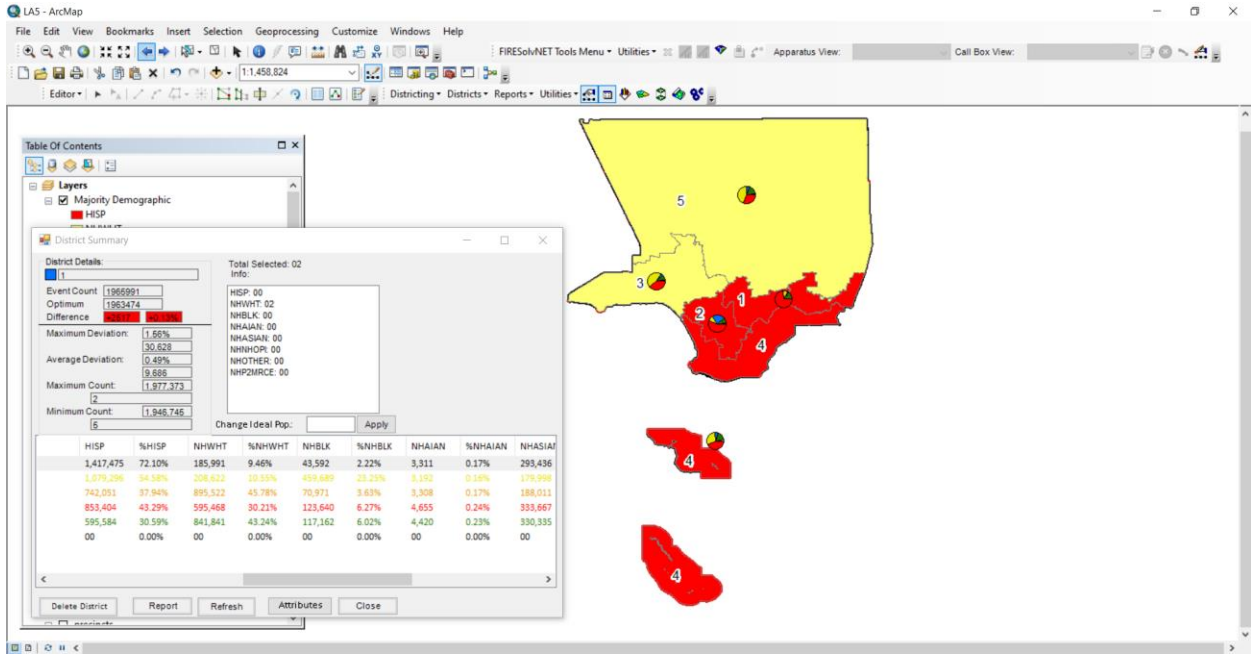


Figure 10 - Majority Minority Districts - Red (Hispanic Majority) and Yellow (NH White Majority)

## IV. TIMELINE

As per the RFP, ARCBridge will be available to meet the dates and timeframes as specified. Our team will be available after December 15<sup>th</sup> if the timeline changes.

|    |   | June | July | Aug | Sep | Oct | Nov | Dec |
|----|---|------|------|-----|-----|-----|-----|-----|
| 1  | Data Gathering<br>And Analysis of existing data                   |      |      |     |     |     |     |     |
| 2  | Review input from LA CRC public hearings May-July                 |      |      |     |     |     |     |     |
| 3  | Establish schedule and Implement Training                         |      |      |     |     |     |     |     |
| 4  | Loading of 2020 PL94-171 Data                                     |      |      |     |     |     |     |     |
| 5  | Guidelines for Maps to be posted on CRC website                   |      |      |     |     |     |     |     |
| 6  | Solicit draft Maps  |      |      |     |     |     |     |     |
| 7  | Review Maps with CRC  |      |      |     |     |     |     |     |
| 8  | Public Hearing  |      |      |     |     |     |     |     |
| 9  | Work with CRC to prepare its Plans                                |      |      |     |     |     |     |     |
| 10 | Incorporate Prison Population Estimates (Esri)                    |      |      |     |     |     |     |     |
| 11 | Attend 2 public Hearings  |      |      |     |     |     |     |     |
| 12 | Finalize Maps after public feedback                               |      |      |     |     |     |     |     |
| 13 | Deliver Finalized Maps  |      |      |     |     |     |     |     |
| 14 | Deliver Maps and Report for website                               |      |      |     |     |     |     |     |
| 15 | Coordinate with LA county for production of CRC redistricting map |      |      |     |     |     |     |     |
| 16 | Work with commissioners to adopt the map                          |      |      |     |     |     |     |     |
| 17 | Deliver final shapefiles/File geodatabases and report             |      |      |     |     |     |     |     |



## VI. PROPOSED TEAM

ARCBridge will assign the following team to the project. All proposed members are ARCBridge Employees or consultant.

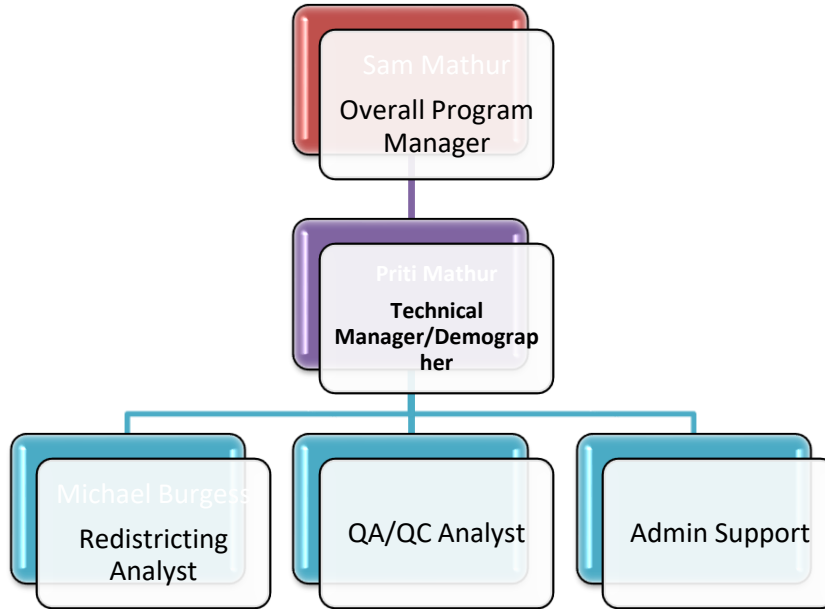


Figure 11 - Team Organization

**Mr. Sam Mathur** is a Principal at ARCBridge Consulting. Mr. Mathur has a MS. in Information Systems from Virginia Tech and has over 25 years of management and technical experience. Mr. Mathur has successfully managed most of ARCBridge projects over the last 20 years. Mr. Mathur will serve as the overall Program Manager. He will be responsible for all contractual matters. He has the overall responsibility for staff allocation, schedules, and responsibility to complete the project accurately on-time and within budget.

**Ms. Priti Mathur** is a Principal at ARCBridge Consulting. She has over 30 years of GIS consulting, application development and Database experience. She leads the Consulting & software development team at ARCBridge. She has extensive experience working with Census demographic and spatial data, leading the ARCBridge team in a nation-wide Metropolitan Areas delineation project conducted for the Bureau of Census, Population Division. Ms. Mathur has worked for over 5 years at the Department of Justice (DOJ), Civil Rights Division where she worked with DOJ Attorneys in helping them assess the redistricting plans submitted by jurisdictions. Ms. Mathur has presented several papers at professional conferences. She holds a Masters in Geography from Virginia Tech, Blacksburg, VA (1989). Ms. Mathur will lead the redistricting effort as ARCBridge's Technical Manager. All ARCBridge staff will be reporting to her. Ms. Mathur will be the technical point of contact. She will attend meetings, gather input and prepare and present alternate redistricting proposals.

██████████ has over 10 years of experience in processing Census data, using ArcGIS 10.x and developing maps and reports. He will assist in processing the Census block files, PL94-

171 data, preparing plans, maps and reports. He has assisted Ms. Mathur with all the redistricting projects in 2011 and the school and city redistricting projects from 2011 – 2020.

## V. Project Costs and Hourly Rates

| Deliverables and Milestones for Demographic and Mapping Consultant  | Related Tasks | Target Dates    | Price |
|---|---------------|-----------------|-------|
| 1. Obtain or review foundational data and map overlays developed by ISD; help identify and obtain any additional data sets to be added to the LA County/ESRI mapping software   | 1             | Jun 2021 on     |       |
| 2. Review input from the LA County CRC initial public hearings held in May-July 2021  | 1             | Jul-21          |       |
| 3. Establish a schedule and implement training for the LA County CRC and the public on using mapping software; coordinate the outreach regarding training opportunities with the LA County CRC’s Executive Director and Ad Hoc Working Group – Outreach | 1             | Jun-Sep 2021    |       |
| 4. Ensure proper uploading of Census 2020 data with ISD   | 1, 2, 3, 4    | Sep 30, 2021 on |       |
| 5. Prepare guidelines to be posted on the CRC website for submitting maps (e.g., the map must establish 5 and only 5 districts)   | 2, 3          | Aug-21          |       |
| 6. Solicit input – draft maps and redistricting suggestions – from the broader community; organize them for posting and public input on the LA County CRC website   | 2, 3          | Oct-21          |       |
| 7. Review identified maps with the full LA County CRC   | 3, 4          | Oct-21          |       |
| 8. Coordinate mapping efforts so that the LA County CRC can post public hearing dates, so the public has <u>at least 7 days</u> notification  | 3             | 19-Oct-21       |       |
| 9. Work with the full LA County CRC to develop its proposed map(s) <sup>3</sup> (Note: The LA County CRC will likely need to schedule additional meetings to meet this deadline.) <b>3 Alternate Plans will be developed.</b>                           | 4             | 25-Oct-21       |       |

|   |      |                                  |                    |
|---|------|----------------------------------|--------------------|
| 10. Incorporate State of California’s adjustments to Census 2020 for the state prison population to their resident addresses  |      | 30-Oct-21<br>(latest)            |                    |
| 11. Support the LA County CRC during <u>at least 2</u> public hearings on the LA County CRC’s proposed map(s) over a period of <u>no fewer</u> than 30 days   | 3, 4 | 1st Public Hearing: Oct 26, 2021 |                    |
| 12. Finalize maps according to LA County CRC direction, based on the public hearings’ feedback  | 4    | 3-Dec-21                         |                    |
| 13. Deliver the finalized redistricting map for the LA County CRC staff to post for 7 days  | 4    | Dec 4-10, 2021                   |                    |
| 14. Deliver the LA County CRC redistricting map(s) and draft Official Report as Agenda items for posting for the meeting to approve the map and Official Report   | 4    | Dec 4-10, 2021                   |                    |
| 15. Coordinate with LA County the production of the approved LA County CRC redistricting map  | 4    | Dec 10-15, 2021                  |                    |
| 16. Work with the Commissioners to adopt the final LA County CRC redistricting map and Official Report that explains the basis for its decision and compliance with the constitutional and statutory requirements; review the Official Report as a draft prior to LA County CRC approval before issuance <sup>4</sup> | 4    | 15-Dec-21                        |                    |
| 17. Following the LA County CRC adoption, deliver the CRC redistricting map (and shapefiles) and Official Report to the RR/CC and County Counsel  | 4    | 15-Dec-21                        |                    |
| <b>Project Total Price as per timeline tasks</b>  |      |                                  | <b>\$83,000.00</b> |
| <b>NOTE: Total Price above included upto 3 Alternate Plans and upto 3 on-site Visits</b>  |      |                                  |                    |
| Additional On-site Visit \$ 2500.00/Day   |      |                                  |                    |
| Additional Alternate Plans each   |      |                                  |                    |

**Hourly Rates**

| Labor Category           | Rate/Hour |
|--------------------------|-----------|
| Demographer/Project Lead | \$250.00  |
| Program Manager/SME      | \$150.00  |
| Redistricting Analyst    | \$125.00  |
| Admin Support            | \$55.00   |
| QA/QC Analyst            | \$85.00   |

## Appendix

### A. Firm Qualifications (see RFP Section IV.A)

#### Firm Overview

Incorporated in 1994, ARCBridge Consulting & Training Inc. (ARCBridge/ ARCBridge Consulting), is a Virginia-based, woman-owned business, with its headquarters in Sterling VA in the Washington DC Metro Area. ARCBridge has provided redistricting and general mapping services nationwide to a wide spectrum of clients to include special districts, State, Counties, Cities, Towns and School Districts. Having been in business for over 25 years, ARCBridge has extensive experience in Census data, GIS, and redistricting.

Our principal and proposed Technical Manager, Ms. Priti Mathur, has a MS in Geography (Virginia Tech) with a concentration in Geographic Information Systems (GIS). She has over 25 years of experience working with census data and redistricting, and 5 years' experience working at the US Department of Justice Civil Rights Division, Voting Section where redistricting plans are evaluated.

Presented below is ARCBridge's corporate information for your reference:

|                           |   |
|---------------------------|---|
| Corporation Name          | ARCBridge Consulting & Training Inc.                          |
| Date of Incorporation     | January 1994 in Fairfax County VA                             |
| Main Office Address       | 21515 Ridgetop Circle, Suite 290; Sterling VA 20166           |
| Authorized Representative | Sam Mathur – 703-834-6511                                     |
| Email Address             | sam@arcbridge.com   |
| Website                   | www.arcbridge.com   |
| Certifications & Status   | Woman –Owned (WOSB); Small Disadvantaged Business (SDB) (SBA) |

Our clients span from Alaska to Florida and California to the East Coast. Some are listed below:  
**City of New Haven CT--** ARCBridge worked with the City Council of New Haven to update their 30 wards after 2010 Census. ARCBridge developed several plans for the City Council including an alternate plan creating a new district in the eastern side of the city and eliminating a low-population district on the west side of the city. ARCBridge used ArcGIS, DISTRICTSolv and Census 2010 demographic and geographic data. Ms. Mathur led the Redistricting Team.

**San Diego Unified School District--** ARCBridge provided redistricting assistance to the San Diego Unified School District for their school board. We have processed their data, developed 5 alternative plans, have attended their public hearings and the committee selected one of the plans with less than 1% deviation. The plan was then presented to the board and was unanimously accepted.

**County of Santa Barbara, CA –** ARCBridge has assisted the County of Santa Barbara in creating their districts. ARCBridge processed the PL94-171 data and the TIGER shapefiles and provided them with a ready to use data sets. ARCBridge provided them with DISTRICTSolv

extension and training in redistricting principles and creating their districts using total population and other demographic variables.

**Golden Triangle Planning and Development District, Inc. MS**– ARCBridge is supporting the redistricting services provided by the Golden Triangle Planning and Development District in MS. We provided DISTRICTSolv software for redistricting. ARCBridge processed the PL94-171 data and the TIGER shapefiles and provided them with a ready to use data sets for Choctaw, Clay, Noxubee, Oktibbeha, Webster, and Winston counties. ARCBridge provided them with DISTRICTSolv extension and training in redistricting principles and creating their districts using total population and other demographic variables.

**Metropolitan Community College MO**– The MCC is made of 12 school districts and 4 counties. ARCBridge compiled the data and held three public meetings to gather input on how the 3 alternative plans will be drawn. The meetings were scheduled in July and August 2011. All work was done using PL94-171 census demographic data and TIGER shapefiles within the ESRI ArcGIS framework. The committee voted on one of the plans as their final districts. The final plan was accepted by the MCC Board. ARCBridge provided large E-Scale maps and walking descriptions for each district.

**City of Pawtucket, Rhode Island**- ARCBridge assisted the City in redrawing their districts based on the Census 2010 population. We provided them with an initial report based on existing districts and then created alternative plans. We then attended public meetings to help them select a plan which met the goals of the City and the Voting Rights Act of 1965.

**Boone County MO** – ARCBridge is assisting Boone County MO with their voting districts and registered voter files. As each precinct boundary is adjusted, the voter registration file is updated with the new district information. The updated voter registration file is exported in a text delimited file, which is then imported into their voter database.

Other clients supported by ARCBridge are –

| Client Name                             | Services Provided                                  | Census 2010 Population |
|---|--|------------------------|
| Brownsville Independent School District | Evaluation of Capacity and School Attendance Areas | 183,229                |
| City of Newport RI                      | Redistricting and Reprecincting                    | 24,672                 |
| City of East Providence RI              | Redistricting and Reprecincting                    | 47,037                 |
| City of Central Falls RI                | Redistricting and Reprecincting                    | 19,376                 |
| Smithfield RI                           | Redistricting and Reprecincting                    | 21,430                 |
| Boone County MO                         | Redistricting and Reprecincting                    | 162,642                |
| Davidson County TN                      | Redistricting Software & Service                   | 626,681                |
| Jefferson County CO                     | Reprecincting                                      | 582,881                |
| Campbell County VA                      | Redistricting Software & Service                   | 54,842                 |
| Bedford County VA                       | Redistricting Software & Service                   | 68,676                 |
| Nelson County VA                        | Redistricting Software & Service                   | 15,020                 |
| Roanoke VA                              | Redistricting Software & Service                   | 92,376                 |

|                                      |  |           |
|--------------------------------------|--|-----------|
| City of Baltimore MD                 | Redistricting Software & Service                         | 620,961   |
| Clinton County MI                    | Redistricting Software & Service                         | 75,382    |
| Franklin County VA                   | Redistricting Software & Service                         | 56,159    |
| Greenwood County SC                  | Redistricting Software & Service                         | 69,661    |
| City of Newport News VA              | Redistricting Software & Service                         | 24,672    |
| Kenai Peninsula AK                   | Redistricting Software & Service                         | 55,400    |
| Orange County FL                     | Redistricting Software & Service                         | 1,145,956 |
| Rockingham County VA                 | Redistricting Software & Service                         | 76,314    |
| City of Augusta-Richmond County GA   | Redistricting Software & services                        | 195,844   |
| Gloucester County VA                 | Redistricting Software and Services                      | 36,858    |
| Prince Edward County VA              | Redistricting Software and Services                      | 23,368    |
| York County Public Schools           | Redistricting of Elementary Attendance Areas             | 68,280    |
| Los Angeles County Fire Department   | Evaluation of the Street Network for each battalion Area | 9.8 M     |
| City of Killeen TX Police Department | Analysis of Crime Data                                   | 127,921   |
| Fort Hood TX Police Department       | Analysis of Crime Data                                   |           |

## ARCBridge PROJECT DESCRIPTIONS

### 1. Project Details – City of New Haven Redistricting

*a) Project Name* - Redistricting of City of New Haven Wards

*b) Project Scope Summary-*

ARCBridge worked with the City Council of New Haven to update their 30 wards. With Census 2010, the population had shifted and the current wards had over 60% Maximum deviation. ARCBridge presented more than four plans, large e-size digital maps and individual ward maps to obtain input from the community and the redistricting committee. We attended four community meetings and several on-line WebEx meetings with the committee. The council unanimously voted on the final plan in May 2012. ARCBridge developed an alternate plan to create a new district in the eastern side of the city and eliminate a low-population district on the west side of the city. ARCBridge used ArcGIS, DISTRICTSolv and Census 2010 demographic and geographic data. Ms. Mathur led the Redistricting Team.

The City of New Haven is very diverse in population with minorities concentrated in different parts of the city. The community feedback was very helpful in identifying communities of interest. The meetings were held in different parts of the city. As consultants, we presented the redistricting requirements, software, as-is plan so the community. The community wanted to do what-if scenarios and try different ways of drawing the districts and see the impact. We used ArcGIS and our DISTRICTSolv to do live what-if scenarios.

*c) Dates when the project was performed* – 2012

*d) Project costs* - [REDACTED]

*e) Proposer's role and responsibilities in the project* – Prime Contractor. Our team was led by Ms. Mathur

*f) Proposer's performance on delivering the project on schedule and on budget* – ARCBridge completed the project within the client's schedule and budget.

*g) Proposer staff members who worked on the project;* - Ms. Priti Mathur, Mr. Sam Mathur, Mr. Michael Burgess, Ms. Thien Nguyen

*h) Client name, reference, and contact info* –

[REDACTED] Director of Legislative Services  
165 Church St. New Haven CT

[REDACTED]  
[REDACTED]

i) Examples of draft maps provided to the public for comment -

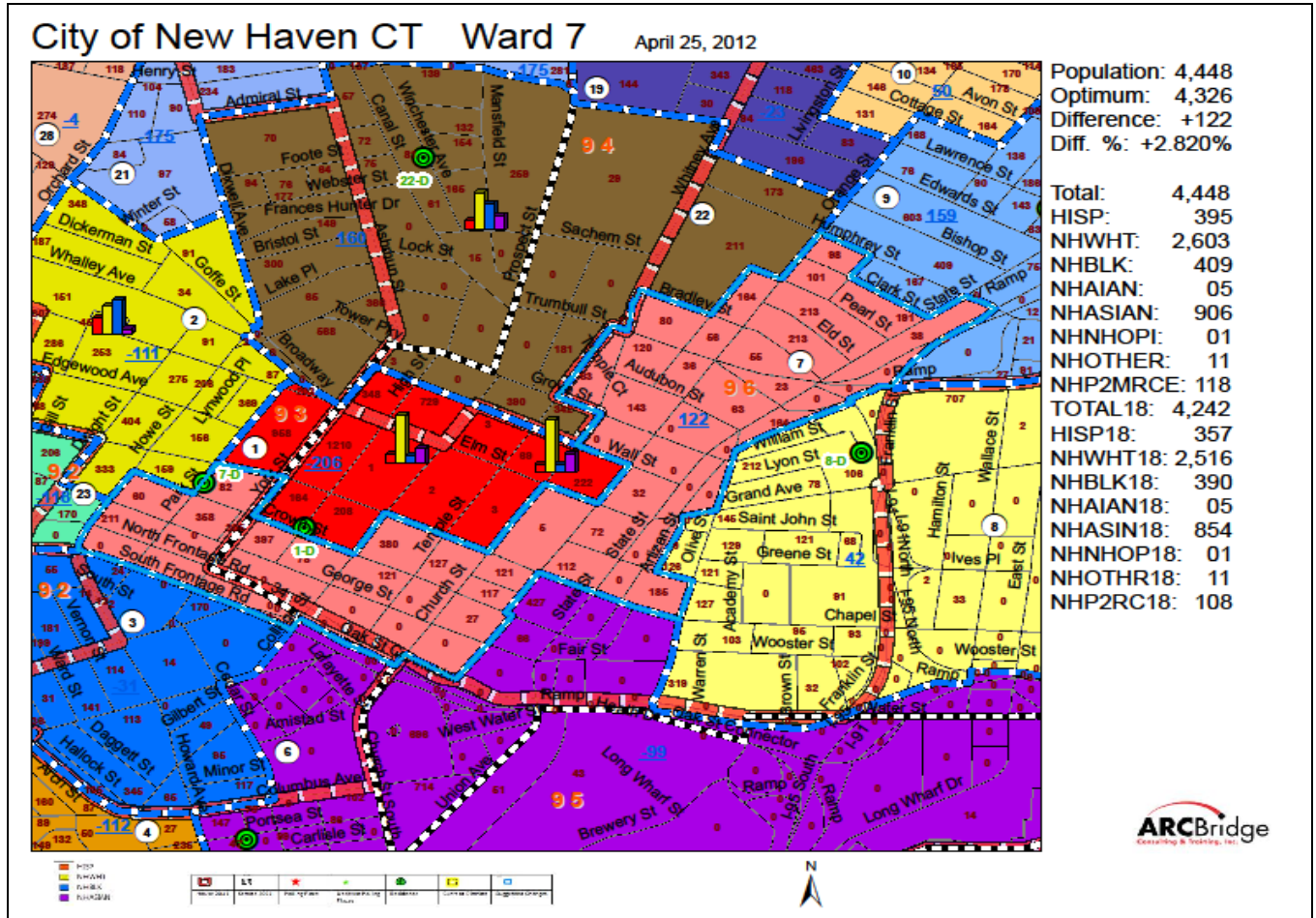


Figure 12 - City of New Haven - Draft Maps for Public Comment



*j) Examples of final maps approved by the jurisdiction*

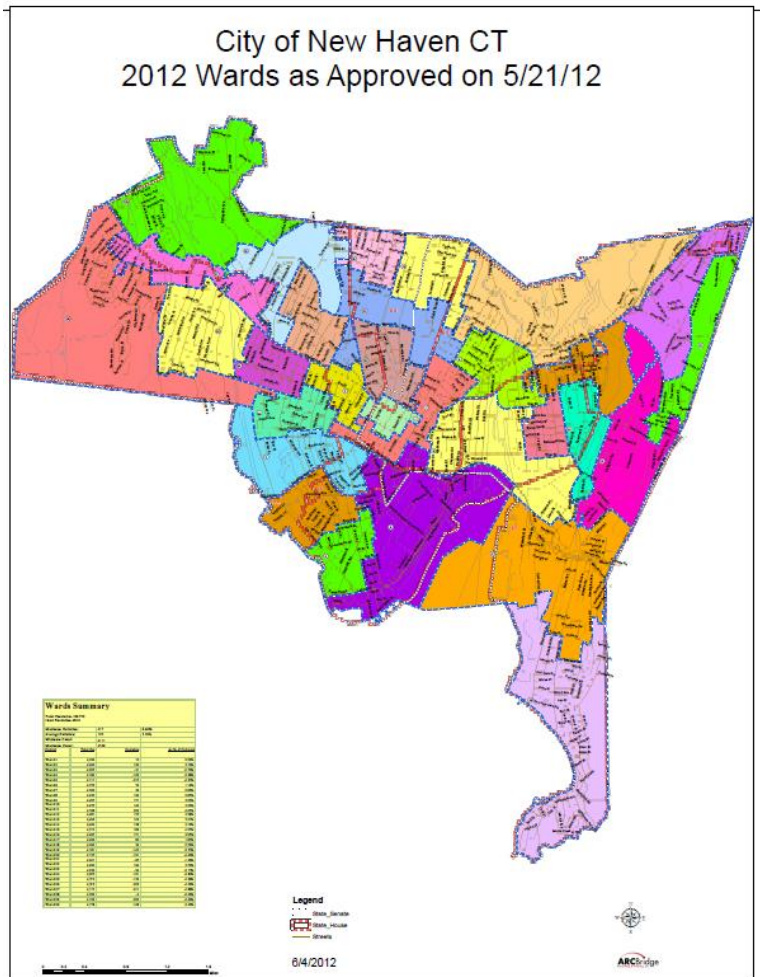


Figure 13 - City of New Haven - Final Large-Scale Map

|    | A               | B      | C | D | E | F |
|----|-----------------|--------|---|---|---|---|
| 1  | blockid         | wardid |   |   |   |   |
| 2  | 090091401001005 | 1      |   |   |   |   |
| 3  | 090091401001015 | 1      |   |   |   |   |
| 4  | 090091401001016 | 1      |   |   |   |   |
| 5  | 090093614011000 | 1      |   |   |   |   |
| 6  | 090093614011001 | 1      |   |   |   |   |
| 7  | 090093614011002 | 1      |   |   |   |   |
| 8  | 090093614011003 | 1      |   |   |   |   |
| 9  | 090093614013003 | 1      |   |   |   |   |
| 10 | 090093614013007 | 1      |   |   |   |   |
| 11 | 090093614022004 | 1      |   |   |   |   |
| 12 | 090093614022005 | 1      |   |   |   |   |
| 13 | 090093614022006 | 1      |   |   |   |   |
| 14 | 090093614022007 | 1      |   |   |   |   |
| 15 | 090091407002000 | 2      |   |   |   |   |
| 16 | 090091407002001 | 2      |   |   |   |   |
| 17 | 090091407002002 | 2      |   |   |   |   |

Ready

Figure 14 - Block-Equivalency File

## Testimonials



**Albert E. Lucas**  
Director

**CITY OF NEW HAVEN  
BOARD OF ALDERS  
OFFICE OF LEGISLATIVE SERVICES**

165 Church Street, New Haven, CT. 06510

Phone (203) 946-6483, Fax (203) 946-7476

Email [alucas@newhavenct.gov](mailto:alucas@newhavenct.gov)



To Prospective ARCBridge Redistricting Customer:

I am pleased to offer my reference for ARCBridge. I can do so without hesitation based on the work they did in 2012, when ARCBridge worked with the New Haven Board of Alders to update their 30 ward boundaries based on 2010 PL94-171 data.

With Census 2010, the population had shifted, and our wards had over 60% Maximum deviation. We engaged ARCBridge to assist in rectifying this. The ARCBridge team attended several in-person and on-line community meetings and created and presented more than three plans, large e-size digital maps and individual ward maps to obtain input from the community and the redistricting committee. ARCBridge also developed an alternate plan to create a new district on the eastern side of the city and eliminate a low-population district on the west side of the city.

ARCBridge then used ArcGIS, DISTRICTSolv and Census 2010 demographic and geographic data to present the Board of Alders with 3 final plans. One of which was adopted and serves us to this day.

Based on this experience I highly recommend that you contract them. The ARCBridge team exceeded our expectations complete their work for us in our scheduled timeframe and budget and can do the same for you.

Best Regards,

*Albert E. Lucas*

Director, Legislative Services

## 2. Project Details – San Diego Unified School District Redistricting of Trustee Areas

**a) Project Name** - Redistricting of San Diego Unified School District Board Areas

**b) Project Scope Summary-**

ARCBridge worked with the San Diego unified School District to update their districts after the 2010 Census. ARCBridge presented more than four plans, large e-size digital maps and individual ward maps to obtain input from the community and the redistricting committee. We attended four community meetings and several on-line WebEx meetings with the committee. ARCBridge used ArcGIS, DISTRICTSolv and Census 2010 demographic and geographic data. Ms. Mathur led the Redistricting Team.

The community feedback was very helpful in identifying communities of interest. The meetings were held in different parts of the District. As consultants, we presented the redistricting requirements, software, as-is plan so the community. The community wanted to do what-if scenarios and try different ways of drawing the districts and see the impact. We used ArcGIS and our DISTRICTSolv to do live what-if scenarios.

ARCBridge provided full redistricting services to include –

- Data preparation and processing
- Redistricting Training & Criteria
- AS-IS Plan (current districts) and 4 alternate plans
- Prepared maps and reports for each plan
- Attended public meetings; presented at the meetings
- Gathered community feedback; revised alternate plans based on feedback
- Recommended a final plan to the school board
- Created final electronic maps and district shapefiles

**c) Dates when the project was performed** - 2011

**d) Project costs** - [REDACTED]

**e) Proposer's role and responsibilities in the project** – Prime Contractor. Our team was led by Ms. Mathur

**f) Proposer's performance on delivering the project on schedule and on budget** – ARCBridge completed the project within the client's schedule and budget.

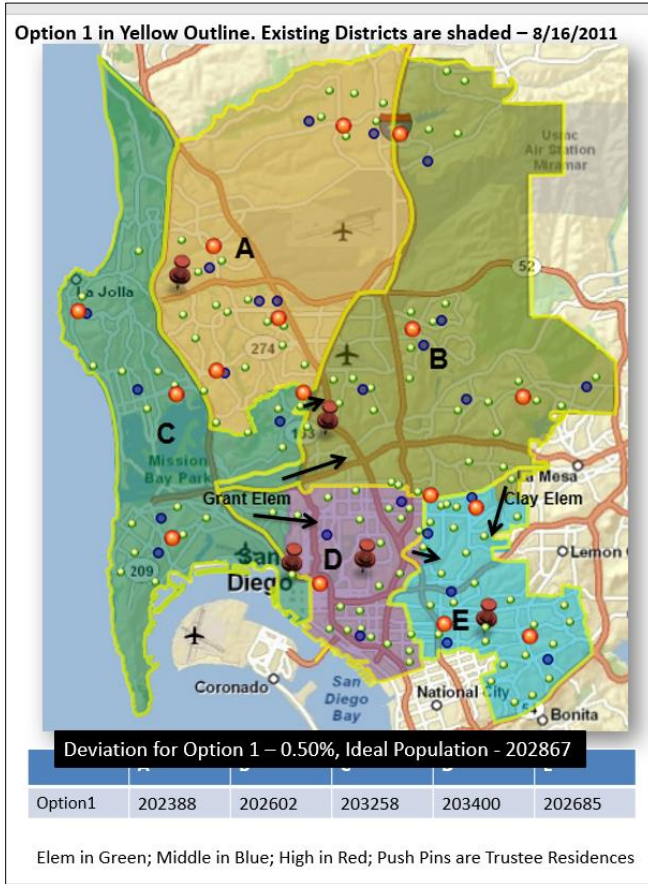
**g) Proposer staff members who worked on the project;** - Ms. Priti Mathur, Mr. Sam Mathur, Mr. Michael Burgess, Ms. Thien Nguyen

**h) Client name, reference, and contact info** -

[REDACTED] – Chief of Staff SDUSD [REDACTED] -  
[brhinerson@sdccd.edu](mailto:brhinerson@sdccd.edu)

[REDACTED], Director (now retired)  
 Instructional Facilities Planning Department  
 Office of the Deputy Superintendent, Business  
 Now serving as a Redistricting Commissioner at the City of San Diego  
[wrmacphail@gmail.com](mailto:wrmacphail@gmail.com)

*i) Examples of draft maps provided to the public for comment -*



Option 1 as created in the RAC Meeting on 8/16/11

8/17/2011

### District Summary

**SD\_Demo\_1**

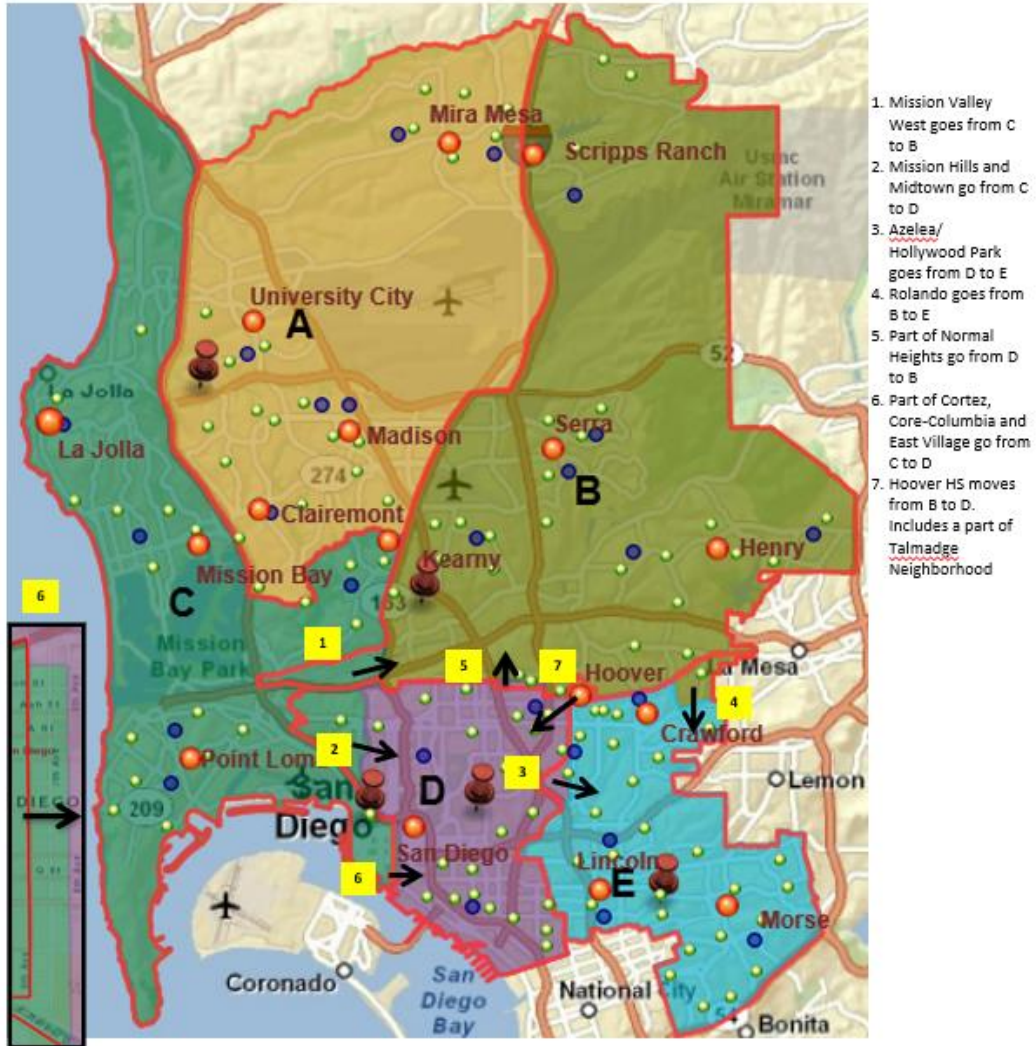
|                    |                |
|--------------------|----------------|
| District Count:    | 5              |
| Maximum Deviation: | 1,012<br>0.50% |
| Average Deviation: | 370<br>0.18%   |
| Minimum Count:     | 202,388        |
| Maximum Count:     | 203,400        |

| District | Lead    | Optimum | Deviation From Optimum |                 |
|----------|---------|---------|------------------------|-----------------|
|          |         |         | Deviation              | As % of Optimum |
| A        | 202,388 | 202,867 | -479                   | -0.24%          |
| B        | 202,602 | 202,867 | -265                   | -0.13%          |
| C        | 203,258 | 202,867 | 391                    | 0.19%           |
| D        | 203,400 | 202,867 | 533                    | 0.26%           |
| E        | 202,685 | 202,867 | -182                   | -0.09%          |

|   | Hisp  | NHWHT | NHBLK | NHASIAN |
|---|-------|-------|-------|---------|
| A | 15.19 | 49.00 | 2.99  | 27.86   |
| B | 16.40 | 61.96 | 5.37  | 11.08   |
| C | 15.50 | 69.28 | 2.85  | 8.44    |
| D | 45.55 | 37.69 | 7.90  | 5.47    |
| E | 45.36 | 12.44 | 17.11 | 21.09   |

Figure 15 - Draft Option Plans and Data

**San Diego Unified School District - Boundary Adjustment Option5**  
 As Adopted by the Redistricting Advisory Committee on 9/1/2011



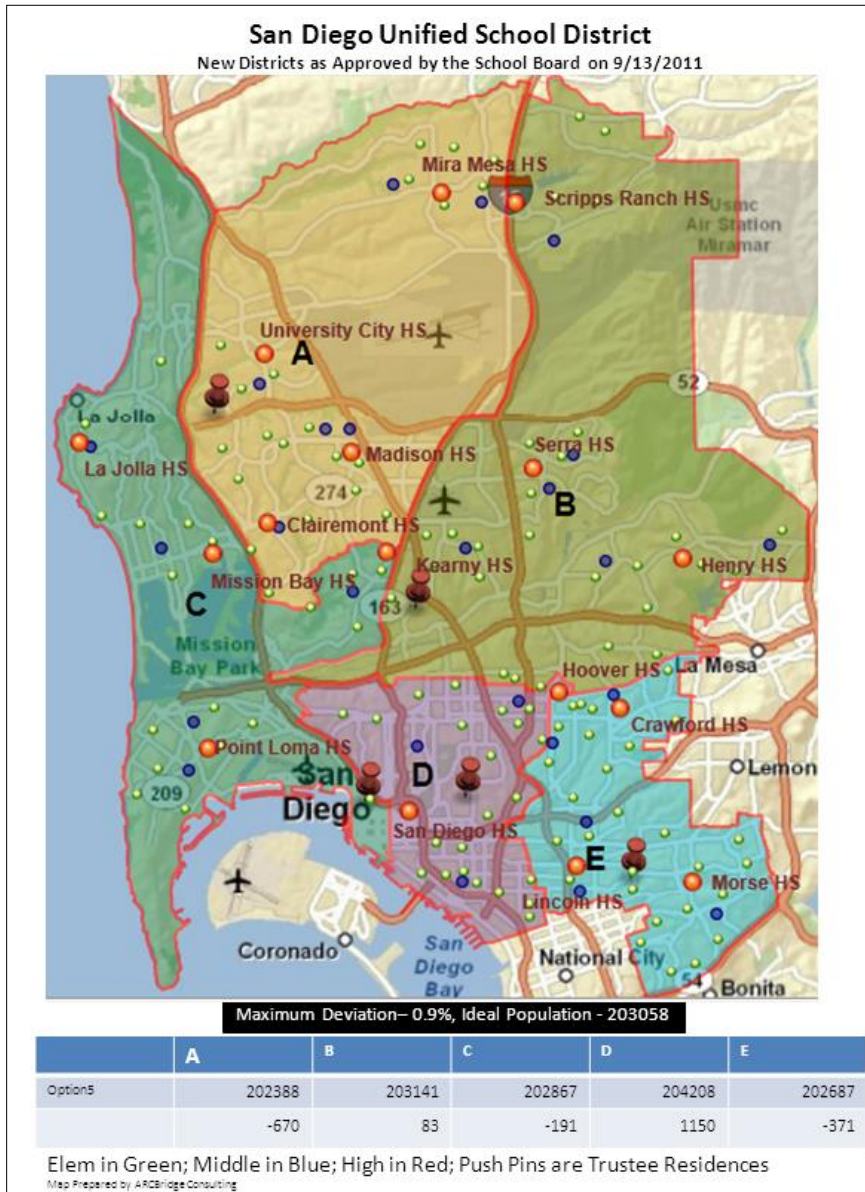
**Deviation for Option 5 – 0.9%, Ideal Population - 203058**

|         | A      | B      | C      | D      | E      |
|---------|--------|--------|--------|--------|--------|
| Option5 | 202388 | 203141 | 202867 | 204208 | 202687 |
|         | -670   | 83     | -191   | 1150   | -371   |

Elem in Green; Middle in Blue; High in Red; Push Pins are Trustee Residences

Figure 16 - Draft Option Plans with Explanation of Changes



*j) Examples of final maps approved by the jurisdiction*



| District Summary              |         |         | New Board Districts |                 |
|-------------------------------|---------|---------|---------------------|-----------------|
|                               |         |         | District Count:     | 5               |
|                               |         |         | Maximum Deviation:  | 1,820<br>0.90%  |
|                               |         |         | Average Deviation:  | 493<br>0.24%    |
|                               |         |         | Minimum Count:      | 202,388         |
|                               |         |         | Maximum Count:      | 204,208         |
| <b>Deviation From Optimum</b> |         |         |                     |                 |
| District                      | Load    | Optimum | Deviation           | As % of Optimum |
| A                             | 202,388 | 203,058 | -670                | -0.33%          |
| B                             | 203,141 | 203,058 | 83                  | 0.04%           |
| C                             | 202,867 | 203,058 | -191                | -0.09%          |
| D                             | 204,208 | 203,058 | 1,150               | 0.57%           |
| E                             | 202,687 | 203,058 | -371                | -0.18%          |

Figure 17 - Final Plans with Total Population, Ideal Population

## Testimonials

RE: Here is the new districts map  



**Rhinerson Bernie** <brhinerson@sandi.net>  
to me, Macphail, Sam ▾

Thu, Sep 15, 2011, 4:48 PM



Priti

Thanks for this final map.

Again it was a pleasure working with you. Thanks for the excellent service, expertise and responsiveness during this project.

Bernie Rhinerson

### 3. Project Details - Stafford County Public Schools (SCPS)

**a) Project Name** - Redistricting of Elementary School Attendance Areas-2019

**b) Project Scope Summary-**

ARCBridge team was led by Ms. Mathur and performed all the tasks listed below -

- Understanding and implementation of redistricting criteria, school capacity and applying them for balancing elementary school enrollment
- Used current enrollment to create AS-IS scenario to determine areas of growth/negative growth
- Used SCPS Planning Units as building blocks for creating the new attendance areas.
- Used our own DISTRICTSolv, an ArcGIS extension to create plans/scenarios and generate the enrollment for new plans/boundaries
- Presented the redistricting process to the public, explained AS-IS scenario and prepared alternate plans
- Attended SCPS organized Town Hall Meetings, School Board Meetings, Board Work Sessions and Public Hearings.
- Facilitated community interaction/participation by setting up communication tools like a dedicated email account for community feedback; Added a Facebook Page for community communication
- Aggregated the community concerns in an excel spreadsheet and forwarded to the SCPS planning office
- Created reports, E-size maps of proposed plans which were then posted online by SCPS staff.
- Used ArcGIS 10.x and Excel workbooks to generate maps and reports for redistricting plans
- Created PowerPoint presentations
- For more information, please visit [bit.ly/SCPS\\_ES\\_2018](http://bit.ly/SCPS_ES_2018)

**c) Dates when the project was performed** - Fall of 2018 – Spring 2019

**d) Project costs** - \$60,000.00

**e) Proposer's role and responsibilities in the project** – Prime Contractor. Our team was led by Ms. Mathur

**f) Proposer's performance on delivering the project on schedule and on budget** – SCPS requested additional alternate plans and required additional meetings. ARCBridge completed the project within the client's schedule and budget.

**g) Proposer staff members who worked on the project;** - Ms. Priti Mathur, Mr. Sam Mathur, [REDACTED]

**h) Client name, reference, and contact info -**

[REDACTED], Superintendent  
Stafford County Public Schools Elementary School Redistricting  
31, Stafford Ave, Stafford VA  
[REDACTED]  
[kiznersr@staffordschools.net](mailto:kiznersr@staffordschools.net)

**i) Examples of draft maps provided to the public for comment -**

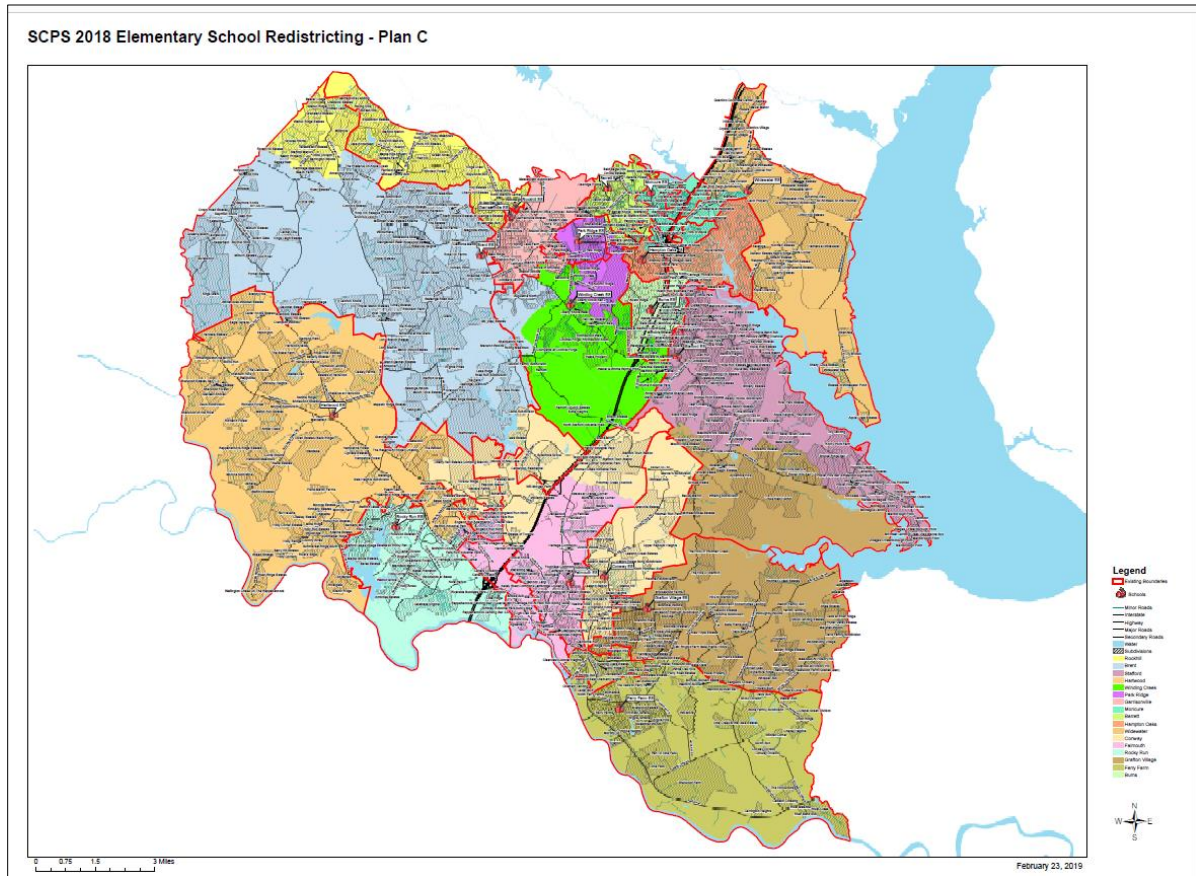


Figure 18 - Examples of Draft Map PDFs



j) Examples of final maps approved by the jurisdiction

## Revised Plan E2-1 Table

| School Name     | Program Capacity | 2019-2020 | 2020-2021 | 2021-2022 | 2022-2023 | 2023-2024 | Free % | Free & Reduced% | Minority% | LEP%  |
|-----------------|------------------|-----------|-----------|-----------|-----------|-----------|--------|-----------------|-----------|-------|
| Barrett         | 966              | 87.27     | 86.96     | 85.92     | 84.27     | 83.85     | 43.68  | 50.00           | 69.09     | 12.41 |
| Brent           | 986              | 75.35     | 76.67     | 76.27     | 78.19     | 80.02     | 13.44  | 14.89           | 30.30     | 3.29  |
| Burns           | 966              | 83.75     | 87.47     | 89.86     | 91.51     | 92.86     | 32.07  | 37.04           | 70.94     | 7.20  |
| Conway          | 966              | 88.41     | 87.37     | 88.92     | 89.13     | 91.10     | 32.05  | 35.90           | 47.47     | 12.29 |
| Falmouth        | 778              | 84.83     | 83.80     | 83.68     | 81.75     | 81.75     | 36.91  | 44.26           | 59.71     | 7.35  |
| Ferry Farm      | 782              | 80.82     | 78.52     | 77.37     | 76.47     | 77.11     | 28.94  | 34.24           | 37.30     | 3.38  |
| Garrisonville   | 848              | 68.99     | 67.57     | 67.81     | 67.45     | 66.86     | 24.41  | 32.23           | 45.51     | 11.13 |
| Grafton Village | 868              | 85.25     | 85.14     | 86.29     | 88.25     | 89.17     | 20.16  | 23.82           | 30.45     | 3.38  |
| Hampton Oaks    | 952              | 89.71     | 90.23     | 88.97     | 88.13     | 88.97     | 16.69  | 22.29           | 43.66     | 4.11  |
| Hartwood        | 670              | 80.15     | 83.28     | 88.51     | 92.39     | 97.61     | 19.74  | 22.37           | 37.41     | 4.32  |
| Moncure         | 989              | 90.70     | 87.97     | 86.35     | 83.42     | 85.14     | 45.72  | 53.41           | 79.74     | 23.19 |
| Park Ridge      | 900              | 85.89     | 87.89     | 91.22     | 93.44     | 93.78     | 18.34  | 22.89           | 58.90     | 6.43  |
| Rockhill        | 862              | 78.07     | 77.61     | 77.84     | 78.65     | 80.28     | 23.80  | 27.54           | 46.41     | 4.49  |
| Rocky Run       | 941              | 87.14     | 91.39     | 93.62     | 95.75     | 95.96     | 31.87  | 36.92           | 57.64     | 9.59  |
| Stafford        | 814              | 88.33     | 91.28     | 92.26     | 93.61     | 94.47     | 18.17  | 24.32           | 55.08     | 5.29  |
| Widewater       | 841              | 84.19     | 82.76     | 83.12     | 84.54     | 84.19     | 41.10  | 47.03           | 66.71     | 13.89 |
| Winding Creek   | 978              | 80.57     | 87.73     | 90.29     | 92.74     | 96.83     | 21.21  | 23.95           | 60.17     | 8.08  |

Demographic fields are calculated using K-5 Students as of Sept. 30<sup>th</sup> 2018 excluding out of county or otherwise ungeocoded students. All calculations are based on students' home addresses.

SCPS 2018 Elementary School Redistricting - Revised Plan E2-1

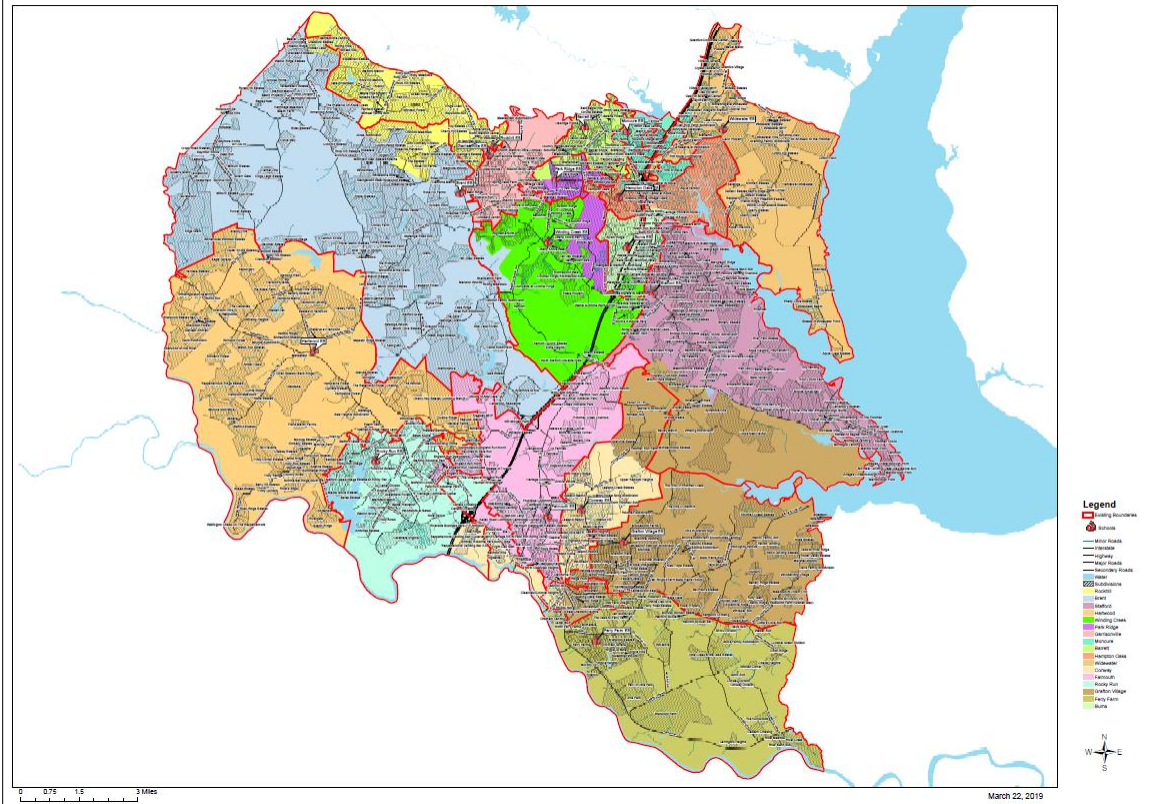


Figure 19 - Final Adopted Plan

## Testimonials

Scott R. Kizner, Ph.D.  
Superintendent



### STAFFORD COUNTY PUBLIC SCHOOLS

31 Stafford Avenue  
Stafford, Virginia 22554-7246  
Phone: 540-658-6000  
www.staffordschools.net

#### Office of the Superintendent

**SCHOOL BOARD**  
Holly Hazard, Chair  
Irene Hollerback, Vice Chair  
Dr. Sarah Chase  
Patricia Healy  
Susan Randall  
Dr. Elizabeth Warner  
R. Pamela Yeung

August 5, 2020

Dear Prospective ARCBridge Redistricting Customer:

ARCBridge provided redistricting services for elementary school attendance areas for Stafford County Public Schools in 2018-2019.

ARCBridge staff processed the student enrollment and enrollment projection data to create plans to identify school areas that required adjustment. ARCBridge conducted public information meetings to gather feedback from the community, created alternate plans to meet the needs of the community, and met the requirements of the school board's redistricting criteria. With the goal of collecting community feedback, large scale maps were posted on Stafford County Public Schools website and communication tools (email and Facebook) were established. The ARCBridge team met with our school board and community, presented the alternate plans, and listened to feedback, which was used to draw and edit alternate plans.

The ARCBridge team exceeded our expectations and the project was completed within our scheduled timeframe and budget. If you have any questions, please contact me.

Sincerely,



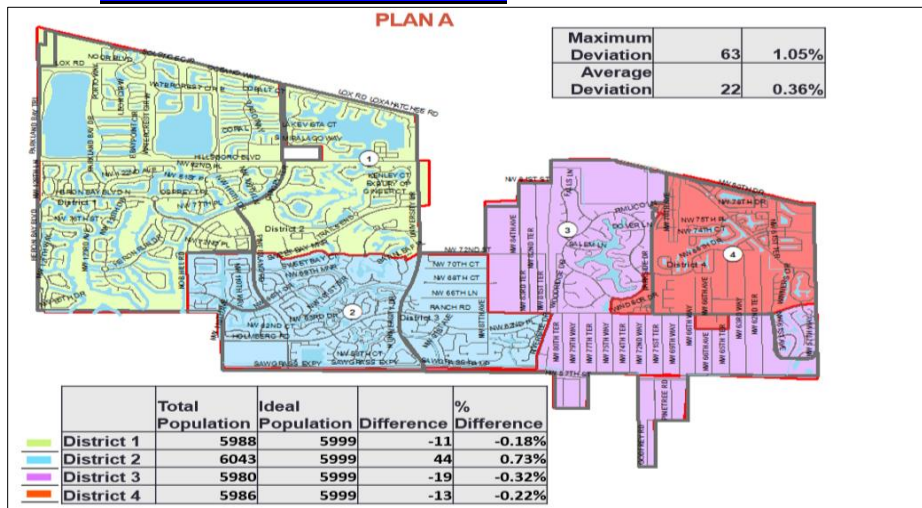
Scott R. Kizner, Ph.D.  
Superintendent

## Other Projects

### City of Parkland FL (2018)

ARCBridge worked for the City of Parkland in redrawing balanced council districts. The City charter requires redistricting every 4 years. ARCBridge used the Census data as well estimated population data based on parcels and housing unit counts for the city, land-use and other relevant data. We held on-line meetings with the City staff, attended in-person meeting with the board; prepared alternate plans and maps. Here is what the City Manager had to say about our services. Ms. Mathur led the ARCBridge Team.

 City Manager  
 6600 University Drive, Parkland FL  
  
[nmorando@cityofparkland.gov](mailto:nmorando@cityofparkland.gov)



**PLAN A – DEMOGRAPHICS**

| Numbers by race |        |       |       |       | Percentages by race |                 |        |        |        |        |        |
|-----------------|--------|-------|-------|-------|---------------------|-----------------|--------|--------|--------|--------|--------|
| District        | Plan A | 1     | 2     | 3     | 4                   | District        | Plan A | 1      | 2      | 3      | 4      |
| Total           | 5988   | 6043  | 5980  | 5986  | 5986                | Total           | 5988   | 6043   | 5980   | 5986   | 5986   |
| HISP            | 854    | 691   | 775   | 804   | 804                 | HISP            | 14.26% | 11.43% | 12.96% | 13.43% | 13.43% |
| NHWHT           | 4,092  | 4,767 | 4,385 | 4,286 | 4,286               | NHWHT           | 68.34% | 78.88% | 73.33% | 71.60% | 71.60% |
| NHBLK           | 455    | 243   | 399   | 407   | 407                 | NHBLK           | 7.60%  | 4.02%  | 6.67%  | 6.80%  | 6.80%  |
| NHAIAN          | 4      | 6     | 4     | 2     | 2                   | NHAIAN          | 0.07%  | 0.10%  | 0.07%  | 0.03%  | 0.03%  |
| NHASIAN         | 443    | 237   | 315   | 401   | 401                 | NHASIAN         | 7.40%  | 3.92%  | 5.27%  | 6.70%  | 6.70%  |
| NHNSHOPI        | 0      | 1     | 1     | 1     | 1                   | NHNSHOPI        | 0.00%  | 0.02%  | 0.02%  | 0.02%  | 0.02%  |
| NHOTHER         | 29     | 20    | 26    | 14    | 14                  | NHOTHER         | 0.48%  | 0.33%  | 0.43%  | 0.23%  | 0.23%  |
| NHPersons2+Race | 111    | 78    | 75    | 71    | 71                  | NHPersons2+Race | 1.85%  | 1.29%  | 1.25%  | 1.19%  | 1.19%  |

| Voting age population by race |        |       |       |       | Voting age population % by race |                    |        |        |        |        |        |
|-------------------------------|--------|-------|-------|-------|---------------------------------|--------------------|--------|--------|--------|--------|--------|
|                               | Plan A | 1     | 2     | 3     | 4                               |                    | Plan A | 1      | 2      | 3      | 4      |
| TOTAL18                       | 3,894  | 4,139 | 4,279 | 4,196 | 4,196                           | TOTAL18            | 3,894  | 4,139  | 4,279  | 4,196  | 4,196  |
| HISP18                        | 556    | 440   | 510   | 545   | 545                             | HISP18             | 14.28% | 10.63% | 11.92% | 12.99% | 12.99% |
| NHWHT18                       | 2,653  | 3,292 | 3,209 | 3,047 | 3,047                           | NHWHT18            | 68.13% | 79.54% | 74.99% | 72.62% | 72.62% |
| NHBLK18                       | 302    | 177   | 282   | 287   | 287                             | NHBLK18            | 7.76%  | 4.28%  | 6.59%  | 6.84%  | 6.84%  |
| NHAIAN18                      | 2      | 2     | 4     | 2     | 2                               | NHAIAN18           | 0.05%  | 0.05%  | 0.09%  | 0.05%  | 0.05%  |
| NHASIAN18                     | 309    | 175   | 211   | 273   | 273                             | NHASIAN18          | 7.94%  | 4.23%  | 4.93%  | 6.51%  | 6.51%  |
| NHNSHOPI18                    | 0      | 1     | 1     | 1     | 1                               | NHNSHOPI18         | 0.00%  | 0.02%  | 0.02%  | 0.02%  | 0.02%  |
| NHOTH18                       | 17     | 14    | 17    | 6     | 6                               | NHOTH18            | 0.44%  | 0.34%  | 0.40%  | 0.14%  | 0.14%  |
| NHPersons2+Race18+            | 55     | 38    | 45    | 35    | 35                              | NHPersons2+Race18+ | 1.41%  | 0.92%  | 1.05%  | 0.83%  | 0.83%  |

Demographics based on 2010 PL94-171 Data from Bureau of Census

Figure 20 - Draft Maps for City of Parkland FL



August 7, 2020

**RE: Letter of Recommendation for ARCBridge to Provide Redistricting Services**

To Prospective ARCBridge Redistricting Customer:

ARCBridge provided redistricting services to the City of Parkland, FL in 2019.

- ARCBridge has worked with the Census Blocks and PL94-171 data.
- ARCBridge used population estimates derived from parcel database for the City of Parkland. The team used ArcGIS, DISTRICTSolv, and Census geography to create alternate plans.
- ARCBridge worked with the City Commission, Mayor, and City Clerk to draw the alternate plans.
- ARCBridge presented the plans at the Commission meetings and prepared maps, reports, and alternate boundaries.
- ARCBridge used ArcGIS-based DISTRICTSolv for creating alternate plans.

The ARCBridge team met our expectations and the project was completed within our scheduled timeframe and budget.

If you would like to speak further regarding ARCBridge, please feel free to contact me directly.

Regards,

Nancy Morando  
City Manager  
[nmorando@cityofparkland.org](mailto:nmorando@cityofparkland.org)  
954-753-5040 x 4123

**CITY OF PARKLAND – OFFICE OF THE CITY MANAGER**  
6600 University Drive | Parkland, Florida 33067 | (954) 753-5040 | Fax: (954) 341-5161  
[www.cityofparkland.org](http://www.cityofparkland.org)

## Community Engagement Experience

ARCBridge has attended public meetings, created hand-outs, created PowerPoint presentations, developed agendas, maps and reports for the website. Here are some links to our coverage of public meetings and maps –

[https://www.newhavenindependent.org/index.php/archives/entry/east\\_rock\\_dont\\_make\\_us\\_wooster\\_square/](https://www.newhavenindependent.org/index.php/archives/entry/east_rock_dont_make_us_wooster_square/)

<https://issuu.com/yaledailynews/docs/0420issuu>

[https://fredericksburg.com/news/local/stafford-public-schools-offers-preview-of-elementary-school-redistricting-process/article\\_a4690fd0-95c7-5c9f-9c91-422b6b27e815.html](https://fredericksburg.com/news/local/stafford-public-schools-offers-preview-of-elementary-school-redistricting-process/article_a4690fd0-95c7-5c9f-9c91-422b6b27e815.html)

[https://fredericksburg.com/news/local/stafford-school-board-to-consider-three-new-redistricting-plans/article\\_d1bd697c-92ef-5eb3-93d2-b8d6989b27c5.html](https://fredericksburg.com/news/local/stafford-school-board-to-consider-three-new-redistricting-plans/article_d1bd697c-92ef-5eb3-93d2-b8d6989b27c5.html)

# Ward 1 likely to expand eastward

BY NICK DEFIESTA  
STAFF REPORTER

Aldermen are struggling to determine the shape of New Haven's wards ahead of a fast approaching deadline.

A special committee of the Board of Aldermen considered three different ward maps at a Thursday evening meeting at Roberto Clemente Leadership Academy, the latest in a series of meetings held in an effort to equalize populations across the city's wards.

The committee was unable to come to a consensus during the meeting, and if they do not agree upon a final ward map by May, the redistricting project will be taken out of their hands – and into Mayor John DeStefano Jr.'s.

By city charter, the Board must redraw lines between the city's 30 wards every decade, based on updated U.S. Census population figures. In redrawing the wards, aldermen must

SEE REDISTRICTING PAGE 4



NICK DEFIESTA/CONTRIBUTING PHOTOGRAPHER

At a special committee meeting Thursday evening, aldermen failed to achieve consensus on changes to ward boundaries necessitated by the city charter.

## B. Team Biographies or Resumes (see RFP Sections IV.A and IV.B)

### Resume of Ms. Priti Mathur, ARCBridge Technical Project Manager/Demographer

#### **EDUCATION**

M.S. Geography with concentration in GIS, 1989, Virginia Polytechnic & State University

#### **EXPERIENCE**

##### ***ARCBridge Consulting & Training, 1997 - present***

Ms. Mathur, President of ARCBridge Consulting & Training Inc. founded the company to provide state-of-the-art GIS services to federal, state and local governments. Ms. Mathur has over 30 years of experience in data analysis and GIS. She has been leading GIS efforts at ARCBridge; Ms. Mathur spent over 5 years at the Department of Justice, Civil Rights Division, Voting Section assisting attorneys analyze plans submitted to DOJ for preclearance.

#### **SELECTED PROJECTS**

- ***Stafford County Public Schools VA – Redistricting 2018-2019***  
Attended public meetings, gathered community feedback, developed alternate plans for elementary attendance areas; attended school board meetings; prepared electronic maps and reports for the community meetings and school redistricting website; presented the alternate plans to the School Board and the community and assisted the board in selecting the final plan.
- ***City of Parkland FL – Redistricting 2019***  
Worked with the City Clerk, community to draw council districts. Used parcel layer to estimate the population, used census data, developed alternate plans, had virtual meetings with the city staff and prepared maps and reports.
- ***Brownsville ISD TX – School Enrollment and Assessment of Attendance Areas – 2020***  
Worked with the school planning staff; analyzed capacity utilization of elementary, middle and high schools; identified schools that are currently over capacity; generated enrollment forecast by schools and recommended changes to balance the school enrollment; made presentations to the school board and prepared maps and reports.
- ***York County Public Schools VA- Balancing Elementary School Boundaries - 2016-2017***  
Worked with the school staff to prepare alternate boundaries for school attendance areas; prepared enrollment forecast; presented to the school board; prepared electronic maps and reports.
- ***Redistricting for the City of New Haven CT – 2012***  
Attended public meetings; meetings with the Board of Aldermen; processed census data; generated alternate boundaries for the 30 wards in the city; followed the redistricting requirements; collected community feedback to create 3 alternate plans; created large- and small-scale maps for public meetings.
- ***Redistricting for the City of East Providence RI, City of Newport RI, San Diego USD, Metropolitan Community College Kansas City MO and many more***
- ***Developed DISTRICTSolv for Redistricting – ArcGIS-based tool***
- ***Census Count Review: (1999 – 2004):*** Managed a team to successfully analyze the Census 2000 data. Worked with a team of Census experts to develop and apply measures of evaluation of Census 2000 Counts. The model was applied to short form variables and then to long form variables. This was the first time GIS was used in conjunction with data

processing tools like SAS to evaluate the spatial distribution of population counts. The comparison datasets used were Census 2000 Estimates and Claritas estimates.

- ***New York City Homeless Census:*** ARCBridge used the New York city street files and study areas to determine the best routes for census enumerators.
- ***HUD Colonias Study:*** Priti led the Colonias Project for HUD. ARCBridge made field visits to the counties on US-Mexico border to collect data on Colonias. The states covered in the study were New Mexico, Arizona and California. Colonias data was matched to census tracts.
- ***Census Urban Area Delineation study:*** Until 2000, Urban Areas were delineated using semi-automated procedures and delineation was subjective based on the analyst. Census Bureau wanted to develop a model where various predefined conditions were used to model the process. The urban areas started with urban cores defined by population density by block. The definition process worked with blocks, Street files and demographic data. The model was extremely complicated but ARCBridge under the leadership of Ms. Mathur completed the project in time. Urban areas were then created for 1990 to create comparable areas.
- ***Census Metropolitan Area Study:*** Metropolitan areas are created using counties as building blocks. Ms. Mathur worked with the Census Researchers to generate the model, and then developed routines so that the model could be run for a given area. 1990 Census data was processed. The Journey-to-Work was processed so that it could be used. The project was done using ArcView.
- ***Evaluation of Racial Discrimination by Police Officers:*** Managed the data analysis effort; Geocoded Police Traffic Violation data; assigned the geocoded data to census blockgroups; assessed the racial composition of the census areas in study, compared the ratio of tickets to minorities with the ratio of minorities in the area. The study was done for the Department of Justice. It involved working with Census demographic data, census geographic data, and GIS Analysis.

#### ***Northrop Grumman (Originally Sylvest management Systems, Lanham MD) 1991 - 1997***

- ***NASA Congressional Districts Database Development:*** Managed the conversion of USPS zip+4 files into Arc/Info coverages which were spatially overlaid on congressional districts coverage to create a nation-wide database of zip+4 with congressional district information.
- ***US Department of Justice Redistricting Data Analysis:*** Worked with Census PL94-171 data to evaluate the redistricting plans submitted by jurisdictions. PL94-171 data was processed at all block, blockgroup, tract, place, MCD and county summary levels. TIGER Line files were processed to create corresponding census geography boundary files. ARC/INFO and ArcView was used on UNIX machines.

#### ***Greenhorne & O'Mara Engineering Firm in Greenbelt MD (1989-1991)***

- ***Federal Emergency Management Agency (FEMA):*** Automated the conversion of the Census

#### ***PUBLICATIONS /PRESENTATIONS:***

- "Implementation of a Large Scale GIS at the U.S. Department of Justice for Redistricting Analysis", Presented at the Twelfth Annual Esri User Conference, Palm Springs, CA., June 1992. The paper is published in the 1992 proceedings.
- "Delineating Metropolitan Areas using commuting data, for the year 2000", Presented at the Twelfth Annual Towson GIS Conference at Baltimore Convention Center, May 1999.

## Resume of Mr. Michael Burgess, Redistricting Analyst

### *EXPERIENCE*

#### ***ARCBridge Consulting & Training, 2004 - present***

Mr. Burgess is a GIS Analyst/Technician at ARCBridge Consulting. He has over 10 years of experience working with ArcGIS 8.x, 9.x and now ArcGIS 10.x. ,Network Analyst, COGO, Spatial Analyst and more. He has worked on several ARCBridge Projects.

Mr. Burgess has worked on some notable projects listed below -

- Stafford County Public Schools – 2018-2019 – developed reports and maps
- City of Parkland FL – Redistricting
- Brownsville ISD – Student Enrollment
- York County Public Schools Redistricting – developed data, maps and reports
- City of Philadelphia (2010 – present) Created a time and distance model for Fire Response Analysis for the City of Philadelphia Fire Department
  - Created a database in SQL Server to import 911 data for analysis for the City of Philadelphia (PA) Fire Department PA. - present
  - Developed tools to model what-if scenarios for the city.
- Supported Fauquier County Fire Department with Response Planning and Analysis.
- BLM Project (2016) - Creating a File Geodatabase of Right of Way for BLM – using ArcGIS 10.3.1 and COGO extensions, working with pdf case files, drawings, aerial imagery, legal descriptions, survey documents and more. Using COGO extension as needed. The Right of Way is granted to oil & Gas Companies.
- Worked on FRA Datasets and updated the network database using Rail lines and Freight Stations.
- Created the Master Address Repository for the District of Columbia (Washington DC) government; (Used ArcGIS and Oracle). Used Parcel layer and Pictometry data; Used Imagery to locate addresses - 2004 – 2005.
- Aligning the Fire Response Areas to the Parcels for Fairfax County (VA) (Used ArcGIS, Aerial imagery, Parcel and other layers) 2006
- Creating a Geodatabase for Redistricting for the City of New Haven CT (Used ArcGIS) Created a Metes and Bound description of New Council Districts. (2012)
- Developed map template for Jefferson County CO and supported the county with creating precincts and description
- Created a workflow and provided assistance to Jefferson County CO for realigning their precincts based on 2010 Census.
- Created a nationwide database of Citizen Voting Age population from American Community Survey using population tables and TIGER Line files
- Created a Geodatabase for ARCBridge product clients across the country



**C. References (see RFP Section IV.C)**

**1. SCPS Redistricting 2019**

[REDACTED]

[REDACTED]  
[kiznersr@staffordschools.net](mailto:kiznersr@staffordschools.net)

[REDACTED]

**2. City of New Haven CT Redistricting 2012**

[REDACTED]

[REDACTED]  
[alucas@newhavencct.gov](mailto:alucas@newhavencct.gov)

[REDACTED]

**3. San Diego Unified School District CA (School Board Areas) Redistricting 2011**

[REDACTED]  
[brhinerson@sdccd.edu](mailto:brhinerson@sdccd.edu)

[REDACTED]  
[wrmacphail@gmail.com](mailto:wrmacphail@gmail.com)

[REDACTED]

[REDACTED]

**4. Metropolitan Community College Kansas City MO**

[REDACTED]

[Cindy.Johnson@mcckc.edu](mailto:Cindy.Johnson@mcckc.edu) | [www.mcckc.edu](http://www.mcckc.edu)

[REDACTED]

**5. County of Santa Barbara CA**

[REDACTED]

[tmatlov@cosbpw.net](mailto:tmatlov@cosbpw.net)

[REDACTED]

**Other References**

**6. City of Parkland FL Redistricting 2019**

[REDACTED]

[nmorando@cityofparkland.gov](mailto:nmorando@cityofparkland.gov)

**7. City of Pawtucket RI Redistricting 2012**

[Redacted text block]

[kmcgill@pawtucketri.com](mailto:kmcgill@pawtucketri.com)

[Redacted text block]

## **D. Compliance with Ethics Requirement (see RFP Section IV.D)**

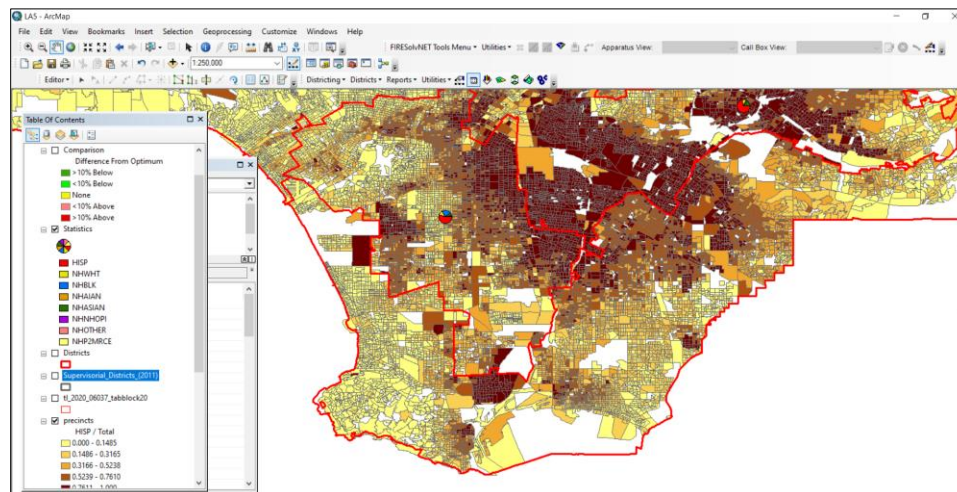
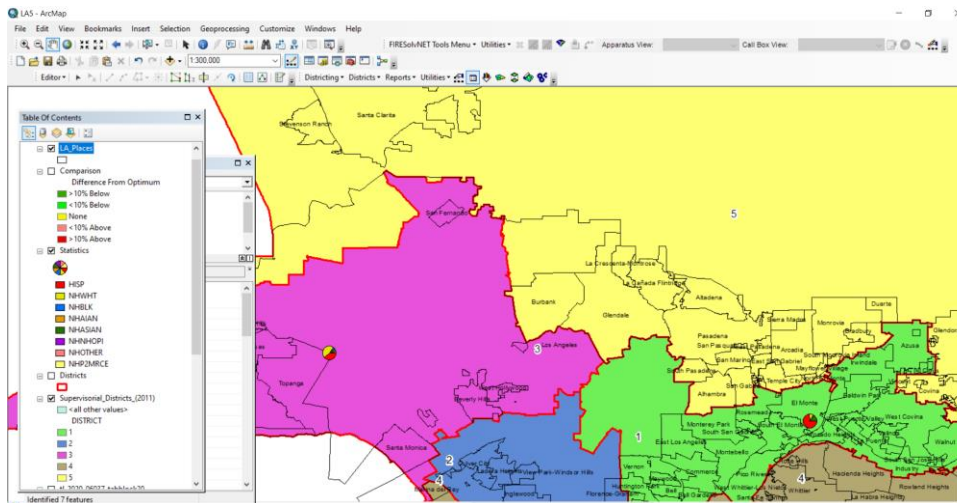
Forms Attached

## TECHNICAL EXPERTISE

### Mapping Software Experience

ARCBridge has been working with Esri software since 1997. ARCBridge has been an Esri Business Partner and has offered GIS services to federal, state and local governments. We have worked with local redistricting clients and performed similar services using Esri ArcGIS. To make mapping and analysis easier and perform redistricting specific services, we developed DISTRICTSolv, an ArcGIS extension. Currently the software works with the latest version of ArcGIS 10.x. ARCBridge has developed other customized tools for Fire Departments, Police Departments and for Routing Analysis.

The ARCBridge team has experience working with all mapping tasks. We have worked with geocoding large datasets, and importing data sets. ARCBridge has experience creating locators for geocoding and importing data from ASCII, Excel, dbf files. For redistricting, we calculate ideal population, maximum deviation, average deviation and creating maps and reports. Below we have examples of districts with cities in LA county and Precincts shades by Hispanic total population.




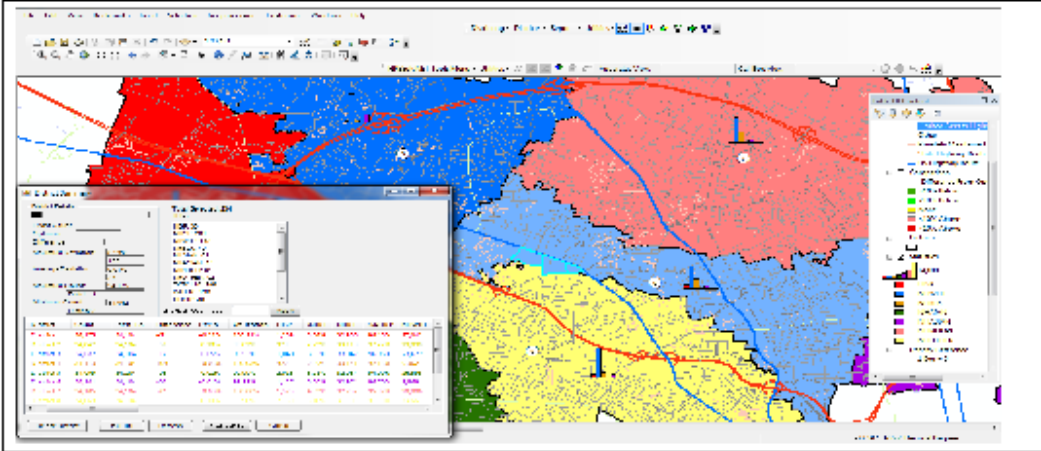
## Redistricting Software Experience – DISTRICTSolv and ArcGIS

Our DISTRICTSolv has been used by our clients across the country. Here is information about its functionality.

# DISTRICTSolv

### ArcGIS Extension for Redistricting Creates Districts, Precincts, School Attendance Areas, Planning Areas, Service Areas and more






### Key Features of DISTRICTSolv

- Create any number of Plans
- Create Plans based on existing plans
- Automatically create districts
- Import Plans
- Use any polygon base layer
- Merge plans
- Save edits to Plans
- Save Snapshots of plans and revert to a snapshot
- Rename Plans, Rename Districts, Delete Districts
- Create New plans based on the control field which could be total population, total voting age population
- Add political data
- Perform What-If Analysis – interactively move blocks from one district to another and see the impact of the change- see the statistics change
- Use default colors or user-specified colors for districts
- Create plans based on a base map
- Export Plans as Block-Equivalency files/KML
- Use census geography and additional layers
- Select features by using Point, line, poly selection tools
- Select features using other layers
- Use the District Summary dialog to display information about the districts, max deviation, ideal population & more
- Add additional demographic data at any time.
- Draw or select features to create Community of Interest (COI) Areas
- Choose to keep the COI together
- Import COI from another layer
- Create Reports of Communities of Interest
- Add comments/notes about the plan.
- Lock Districts/mark them as complete
- Highlight districts <> ideal pop
- Identify unassigned areas
- If unassigned areas are islands in districts, automatically assign them to districts
- Allow the user to interactively fix the unassigned areas
- Identify non-contiguous areas
- Show majority demographic
- Create charts/bars
- Compare two plans
- Compute area, perimeter, population density, length-width, convex hull ratio, Reock, Polsby-Popper, tests of compactness.
- Create Map Books, Reports in pdf/text files
- Works with ArcGIS 10.x

Excellent client Support  
Email, phone & web support  
Please call for a web demo

Phone: 703-834-6511  
[priti@arcbridge.com](mailto:pritti@arcbridge.com)  
[sam@arcbridge.com](mailto:sam@arcbridge.com)  
[www.arcbridge.com](http://www.arcbridge.com)

ARCBridge Consulting & Training Inc.  
21515 Ridge Top Circle,  
Suite 290, Sterling VA 20166



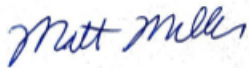
## Testimonials for DISTRICTSolv

To Prospective ARCBridge/DISTRICTSolv User:

**Roanoke Valley-Alleghany Regional Commission used ARCBridge's software** – DISTRICTSolv for our redistricting efforts in 2011. We have used the software for redistricting efforts in Alleghany County, Craig County and the City of Covington. DISTRICTSolv is an ArcGIS extension and works with ArcGIS 10.x. We were very satisfied with the product as it provided all the redistricting functionality in an easy-to-use Graphic User Interface that works within the familiar ArcGIS environment. It allowed us to prepare and refine multiple redistricting options.

ARCBridge also provided ready-to-use Census geography files with PL94-171 data and the software generated all the reports and maps that we needed. It saved us countless hours of work and I recommend DISTRICTSolv.

Regards,



To prospective ARCBridge DISTRICTSolv users:

**Albany County, NY used ARCBridge's software DISTRICTSolv for their redistricting efforts in 2011.** DISTRICTSolv is an ArcGIS extension and integrates very well with ArcGIS 10.x.

We were very satisfied with the product, as it provided all the redistricting functionality, we needed in an easy-to-use Graphic User Interface that works within the familiar ArcGIS environment.

Also, ARCBridge provides ready-to-use U.S. Census geography data with PL94-171 data and their program was able to make all the reports and maps that we needed.

Best of all, though, was the personal and friendly technical support we received whenever it was needed.

I liked using the program and highly recommend DISTRICTSolv for your use.

