GLASSBORO PUBLIC SCHOOLS
GLASSBORO, NEW JERSEY

TO: Mark Silverstein

FROM: Scott Henry

DATE: November 6, 2017

RE: Agenda Item for November 15, 2017

Contract for demographic study with Statistical Forecasting, was mailed to the vendor on October 31, 2107. Vendor indicated on November 6 the contract had not been received. Contract was e-mailed to vendor. Vendor will submit list of required data within the next few days.

A Proposal

to Perform Demographic Services

for the

Glassboro Public Schools

Prepared: September 22, 2017

STATISTICAL FORECASTING LLC

www.statforecast.com
877 299-6412

mailed contract
10/31/17

Company Overview

Founded in 1998, Statistical Forecasting LLC ("Statistical Forecasting") has been providing school demographic services such as enrollment projections, computer mapping, re-districting, and geocoding for school districts in the New York/New Jersey metropolitan area for the past 19 years. Our demographic studies are very comprehensive and are highly accurate as evidenced by our low error rates and large number of returning clients. We have provided demographic services for nearly 100 districts in New Jersey. In addition, since 2006, we have been the demographic consultant to the New York City Public Schools, which is the largest school district in the country.

Statistical Forecasting is led by Richard S. Grip Ed.D., Executive Director, who possesses a doctorate in educational statistics and measurement from Rutgers University (NJ). His dissertation, *Prediction of Public School Enrollments Using the Modified Regression Technique,* received the Outstanding Dissertation Award from the Rutgers University Graduate School of Education in 1998. Dr. Grip has testified as an expert witness in school demography, has written papers in numerous journals such as *Population Research and Policy Review*, and has presented nationally and internationally for the Population Association of America, American Educational Research Association, American Association of School Administrators, and Association of American Geographers. A curriculum vitae has been provided in the Appendix.

Consultant Qualifications and References

As stated previously, Statistical Forecasting has completed demographic studies for approximately 100 school districts in the State of New Jersey. This is our specialty; this is the only type of work we do. To project enrollments, we use the cohort-survival ratio method, which is approved by the New Jersey Department of Education ("NJDOE"). The following table lists three similar projects that have been recently completed by our firm.

	Project #1	Project #2	Project #3
School District:	East Brunswick Public Schools (PK-12)	Linden Public Schools (PK-12)	Bridgewater-Raritan Regional School District (PK-12)
Year Completed	2014, 2017	2016	2014
Scope of Services:	Performed demographic study consisting of ten-year enrollment projections. Analyzed township housing starts, historical birth trends, and socio-economic/ demographic trends from the Census. Completed extensive housing turnover analysis looking at historical home sales and student yields per housing unit. Using GIS, an extensive array of maps was created showing student residences over time.	Performed demographic study consisting of ten year enrollment projections. Disaggregated births by census tract and block to compute kindergarten students by elementary school attendance area. Student yields were computed by attendance area for apartments and townhouses, and districtwide by length of ownership for 1- to 4-family homes.	Performed demographic study consisting of five year enrollment projections. Disaggregated births by census tract and block to compute kindergarten students by elementary school attendance area. Student yields were computed by attendance area by tabulating the number of children on each street and dividing by the total number of houses on that street.
Contact Representative Name:	Mr. Bernardo Giuliana Business Administrator/ Board Secretary	Ms. Kathleen Gaylord Business Administrator	Mr. Kenneth Starrs Business Administrator

District Enrollment	7,933	5,950	8,565
Contact Representative Phone Number:	732 613 6723	908-486 2800	908 685 2777

Scope of Services

Option 1: Demographic Study

A Demographic Study would be prepared consisting of the following information:

a) Community Overview

As part of our general overview on the Borough of Glassboro ("Glassboro"), we would collect historical population counts (1940-2010) from the United States Census Bureau and future population projections from the Delaware Valley Regional Planning Commission. Selected demographic characteristics, such as racial breakdown, income levels, educational attainment, and number of owner- and renter- occupied units, would be compared at two time points: 2000 and 2010, using data from the Census and the American Community Survey (ACS).

b) Live Birth Data

Birth data would be collected for Glassboro and would be obtained from the New Jersey Department of Health. Accurate birth data is needed to project the number of kindergarten students five years later. Kindergarten enrollments would be calculated as follows. Birth data, lagged five years behind its respective kindergarten class, would be used to calculate the survival ratio for each birth-to-kindergarten cohort. Average birth-to-kindergarten survival ratios are computed using three, four, five, or six-year trends.

Birth data from 2004-2015 will be used to project the number of kindergarten students through 2020. To project the number of kindergarten students for 2021 and 2022, birth rates would need to be estimated. Future births will be estimated by averaging the number of births in the last five or six years and using this value for the remaining years of the projection period.

c) Historical Enrollment Trends

A review of the district's historical enrollment trends for the past ten years would be conducted using data from the Fall Report and NJ SMART databases. This would be conducted not only for the entire district, but also for the elementary (PK-6), middle (7-8), and high school (9-12) levels.

d) Self-Contained Special Education

Since there are no survival rates for self-contained special education students as compared to regular education students, a different methodology is employed. Special education enrollments are projected by calculating the average proportion (based on a certain number of years of historical data) of self contained special education students with respect to the historical regular education subtotals and multiplying this proportion by the future regular education subtotals. This method has been found to be highly accurate, provided that a district has not changed its policy on educating

special education students. For instance, if a district, has decided in the last year that it would like to mainstream more of its special education population, using an average special education proportion from the last three years would overly inflate the number of special education students.

e) Enrollment Projections

PK-12 enrollments would be projected annually for a five-year period beginning with the 2018-19 school year and ending in 2022-23 using the Cohort-Survival Ratio (CSR) method. In this method, a survival ratio is computed for each grade progression, which essentially compares the number of students in a particular grade to the number of students in the previous grade during the previous year. Simply stated, a survival ratio of 1.00 indicates stable enrollment, less than 1.00 indicates declining enrollment, while greater than 1.00 indicates increasing enrollment. If, for example, a school district had 100 fourth graders and the next year only had 95 fifth graders, the survival ratio would be 0.95. Due to the fluctuation in survival ratios from year to year, it is necessary to calculate an average survival ratio. This value is then used to calculate future grade enrollments five years into the future. Depending upon growth patterns in the district, average or weighted-average survival ratios would be based on a four year, five year, or six year trend. The average survival ratios selected would be at the discretion of our firm. To provide a range of potential enrollments, two sets of projections will be completed.

The projections will also be displayed in tables for the five-year period as follows:

1. District-wide PK-12 by individual grades
2. Configuration Level (PK-6, 7-8, and 9-12)

We would also project the additional number of pre-kindergarten students to be phased in over the next five years as a result of the School Funding Reform Act of 2008 (SFRA) whereby all school districts in New Jersey are to provide expanded Abbott-quality pre-school programs for at-risk 3- and 4-year olds. While the program has not yet rolled out due to budgetary constraints, we will assume that the program will be eventually established to determine the full impact on the district.

f) Housing Growth

The Glassboro construction and/or planning departments would be contacted to receive information on new home construction to determine the impact, if any, on the school district. The number of potential children would be estimated using the Rutgers University Center for Policy Research ("CUPR") student yield multipliers.

g) Homes Sales

The number of Glassboro home sales will be collected from 2001-2016 to show historical trends.

Deliverables

Statistical Forecasting LLC will provide an electronic copy of the report in PDF format. We would be able to submit the report within 60-90 days upon receipt of all data. Our reports contain an array of tables and charts, which enable them to be read and understood by a wide range of audiences.

If desired, a PowerPoint presentation can be provided to the Board of Education summarizing the findings of the study.

Option 1 Cost of Service: **$5,500** ___ check if desired
$6,250 (with presentation) ✓ check if desired

The following represents additional options that the district may consider.

Option 2: Detailed Housing Analysis

In this option, we would compute student yields explicitly based on Glassboro housing data, which would be most useful if the community has a large number of new housing units planned. This would provide more specific yields for any proposed housing construction as compared to the yields available from CUPR, which are regionally-based and are older data based on the 2000 Census. Homes owned 10 or fewer years will only be considered, as homes with low lengths of ownership typically have the most children according to our research. This would only be computed for 1- to 4- family homes and would not include rentals or apartments. We would join the district's 2017-18 student database with the property database of Glassboro. Student yields by housing type (detached single-family, townhouse, etc.) will then be computed where the number of school children will be tabulated and divided by the total number of homes to determine the student yield per home.

Apartment student yields will also be computed based on the number of units in a complex and the number of current students residing in the development.

The number of school children projected from any new housing developments would be computed by using the student yields extracted from this analysis, which provides a more valid way of estimating future school children since we would be using actual yields as derived from existing housing data.

Option 2 Cost of Service: **$4,200** ___ check if desired

Option 3: GIS Mapping

We will geocode (electronically pin-map) student addresses from the 2012-13 and 2017-18 school years. Data specifications for the student address database are provided in the Appendix. Using Geographic Information Systems computer mapping software, we would generate maps showing the following outputs over the two different time periods:

- Locations of where students live.
- Student population by census block or tract to show the locations where the fewest and greatest number of students resides.
- Student density by census block or tract. Since census blocks/tracts vary in size, these maps show the fewest and greatest number of students per square mile by census block/tract.

- Number of students per housing unit (student yield) by census block/tract.

Option 3 Cost of Service: **$1,550** ___ check if desired

Option 4: Race and Poverty Analysis

The racial distribution of students will be compared at two time points, 2012-13 and 2017-18, to determine if there has been a shift in racial composition in the district. Enrollments by race will be analyzed not only for the total population, but by school as well.

As a proxy for measuring poverty in the school district, counts of students receiving free or reduced lunch will be compiled by school for 2012-13 through 2017-18. This will aid in determining whether there are any trends, either increasing or decreasing, in the percentage of students in poverty.

Option 4 Cost of Service: **$1,900** ___ check if desired

Option 5: Housing Turnover Analysis

Rising enrollment in a school district is often not due to new housing growth, but is instead caused by the selling of homes of older residents to families with children. To analyze the existing housing turnover rate, parcel-level data of approximately 4,000 housing units from Glassboro will be combined with student address data, the latter to be provided by the district. The housing units that will be analyzed are 1- to 4-family homes. From the parcel-level data, we will be able to identify homes that have sold recently (in the last 25-30 years). This will help to determine a) the housing turnover rates by length of ownership and b) the current distribution of homes by length of ownership. The student address data will be used to compute the student yields (average number of students per housing unit) by length of ownership.

In short, the housing turnover model uses length of home ownership as a proxy for the age of the homeowners since this variable is unknown and cannot be accurately determined through other data collection methods such as surveys. Research has shown that student yields are smallest in long held homes and greatest in homes that were recently sold. While it has been shown that enrollment tends to increase when long-held homes are sold, it is not clear that the ***overall*** enrollment will increase in the district since some houses that currently contain children will have declining yields as children graduate or leave the district to attend private or parochial schools. Therefore, it is not correct to assume that having a high percentage of long-held homes will lead to an enrollment increase in the district.

As deliverables, we would project a distribution of 1- to 4-family homes based on length of ownership and historical turnover rates for five years into the future. Residences such as apartments are excluded since the length of time a tenant occupies a residence cannot be determined. Using the student yields computed separately for length of ownership, the total number of students would be projected for a period of five years into the future. Unfortunately, due to data constraints, it is not possible to compute enrollment at the grade configuration level. It should be noted that this is a completely independent analysis that can show housing turnover rate scenarios whereby enrollment in the district is likely to increase.

Option 5 Cost of Service: **$5,750** ___ check if desired

Notes:

- The quoted prices above do not include on-site meetings, which if requested, cost $750 and include all travel-related costs. Skype and telephone conferences are free.
- Any requests for services to be performed outside the scope of this proposal will need to be negotiated with Statistical Forecasting LLC as a change order and to be verified in writing.
- This proposal has been prepared by Dr. Richard S. Grip, Executive Director of the firm. The proposal shall be valid for ninety (90) days from the day of submission.
- While Statistical Forecasting LLC strives to provide accurate enrollment projections, future events occurring in the Borough of Glassboro that are beyond the control of Statistical Forecasting LLC may affect the accuracy of the demographic study. The enrollment projections produced by Statistical Forecasting LLC use the most recent data available at the time of the study. By agreeing to the terms set forth in this document, the Glassboro Public Schools will not hold Statistical Forecasting LLC liable for any change in enrollments for the stated projection period.

Agreed by Glassboro Public Schools

[signature]
Name

Business Administrator
Title

10/18/17
Date

[signature]
Signature

Agreed by Statistical Forecasting LLC

Richard S. Grip Ed.D.
Name

Executive Director
Title

September 22, 2017
Date

[signature]
Signature

APPENDIX

Student Address Data Specifications for Geocoding

Required Data: Each record (row) of the student enrollment database should contain data for one **ACTIVE** student. Each of the numbered items below should be a separate field (column) in the database. In the home address field (#4), the information should always be in the indicated order.

1. student's last name, first name (separate fields)
2. school attending
3. grade level (K or 0, 1, 2, 3, etc.) for all students, including special education students
4. student's home address (number, street name, street type, apartment # or letter, city, zip) This information needs to be separated into the following fields.
    a) Number and street name
    b) Apartment number, if applicable **(MUST BE IN SEPARATE FIELD)**
    c) City
    d) State
    e) Zip Code

Please include a ***street address*** (not a Post Office Box) for each student. It is very important to include the street type (Road, Street, Court, etc.). The only abbreviations that should be used are for street types. These abbreviations should be standardized as follows:

Avenue = Ave	Court = Ct	Place = Pl	Way = Wy
Boulevard = Blvd	Drive = Dr	Road = Rd	
Circle = Cir	Lane = Ln	Street = St	