Teacher Supply and Demand (TSD) 2010-11 Data Report Introductory Notes and Definitions

DATA Sources:

1) PMF (Personnel Master File) BEDS data collected BEDS day 2010 (first Wednesday of October) (Collected by Information and Reporting Services Office, K-12, NYSED)

2) IMF (Institutional Master File) BEDS data collected BEDS day 2010 (Collected by Information and Reporting Services Office, K-12, NYSED)

3) TEACH data from applications for initial teaching certification collected by Office of Teaching, Higher Education, NYSED

Notes on Data Definitions and Interpretation of Report Headings:

TSD Subject Areas (PMF Teaching Assignment/ TEACH Certification Areas): The first column of the first Teacher Supply and Demand (TSD) table lists 21 general "TSD" subject categories specified by 2-digit TSD codes. Later, in the "Specific Subjects" tables, these 21 general categories are further subdivided into a total of 136 subject/assignment "levels", specified by four-digit TSD codes. (For example, there is only one 2-digit TSD Code for "Languages Other Than English," TSD2 Code = "07". There are eleven 4-digit TSD "sub codes" for specific foreign language certifications/assignments, such as TSD4 Code = "0710" for "French", TSD4 Code = "0720" for Spanish, etc.) All currently issued NYS teaching certification codes, and all 800+ subject assignment codes (listed on the BEDS PMF forms for teachers to identify their assignments) are indexed to each of these 21, 2-digit, and 136, 4-digit, TSD Codes. The final table in this PDF report shows the "crosswalk" between all certification codes, all PMF assignment codes, and the 2- and 4-digit TSD codes. This categorization of both teaching assignments and certifications, into the same broad categories, allows a comparison between teachers hired for assignments and teachers certified to teach those assignments, on an annual basis, providing the basis for this "Supply and Demand" analysis.

All FTE Teachers: Total full-time equivalent (FTE) teachers with assignments within each TSD (assignment) subject area. Each October, all NYS public school teachers fill out a PMF BEDS form, listing each of their subject area teaching assignments, and indicating the FTE percentage value of each assignment. (e.g., if a full-time teacher reports working full-time and teaching five different assignments; each assignment is 20% of one FTE).

FTEs Certified in Assignment:

- **# FTEs**: The total number of FTE teachers that are certified for the subject assignment they are teaching. Each subject class assignment reported by a teacher on the PMF BEDS form is checked against NYS teacher certification records, and is rated "Yes" or "No" for being taught by a teacher with appropriate certification. The FTE values of assignments taught by appropriately certified teachers are summed to arrive at this total value for FTE teachers certified for their assignment. (NYS allows

public school teachers to teach one assignment out of their certification area, but for this analysis these "out-of-cert-area" assignments are not counted as "certified for assignment".)

- **% of All FTEs Certified**: This is the percentage of all FTEs teaching within a subject area that hold the appropriate certification for their assignment, computed by dividing the number of certified FTEs value by the all FTEs value.). For example, of the 2,434 FTEs teaching Reading and Literacy assignments, 2,363 or 93% were certified to teach those assignments. The federal government recognizes certified percentages under 95% as representing a potential teacher shortage area, but *only if* other evidence corroborates this finding. For example, NYC teachers reported only 88% certified for their assignments as "Reading and Literacy Specialists," so by the percentage certified criteria, only, NYC would qualify as experiencing a shortage of teachers with reading specialist certification. But, certification and new hire data show that for the same year, for every first-year teacher hired as a reading specialist in NYC, 376 NYC new teachers received certification as a reading specialist. So there was a pool of approximately 376 new teacher certified applicants for every vacancy filled by a new teacher as a reading specialist. (See section on computation of TSD ratio below.) Thus, % of all FTEs Certified is one indicator of a shortage area, but cannot be interpreted in isolation. Because a school may legally assign teachers to teach one assignment out of their certification area, certain positions are routinely filled in this manner.

New Teachers Hired FTEs: Counts of FTE teachers for an assignment that reported having no previous professional teaching experience (when responding to the PMF BEDS data form, October 2010). "New Teachers Hired FTEs" may be interpreted as the number of FTE vacancies for the subject assignment area that were filled by first-year teachers for the 2010-11 school year or, number of "new hires" for the assignment (but only new hires with no previous teaching experience). Previous years' reports labeled these counts as "New Hires." As an example in English (middle/secondary level) there were 1,138 vacancies that were filled by teachers reporting no previous teaching experience.

New Teachers as Percent of All FTEs: This is the percent of all FTEs in a subject area that identified themselves as "new hires" with no previous professional teaching experience. For example, within the "Arts" subject area, the total "New Teachers Hired FTEs (289) divided by total FTEs teaching in the "Arts" (13,541) is 2%. If the total number of FTEs is relatively constant from one year to the next, this value might approximate an annual turnover or replacement rate. However, if total FTEs are increasing (as they are for Charter schools) or decreasing (as they are for public schools outside NYC), then this rate does not represent "replacement" or "turnover" (as this value has been labeled in previous years' reports). Also, many positions are filled by experienced teachers, even more so in the rest of the State (ROS) than NYC.

 # Initial Certs: This value is the total count of initial-level certificates in a TSD subject area issued to individuals indicated by PMF data as not having taught in NY public or charter schools within at least the past five years. Presumably, for the most part, these certificates are issued to potential "new" teachers for NY public schools. About one third of certificates

are issued to teachers previously certified in another subject area and with teaching experience in NYS public schools. These certificate holders are not counted in this analysis as potential "new teachers" in the "supply" pool, but for some certification areas, such as bilingual education, two thirds or more of certificates are issued to experienced teachers, and the majority of people hired have previous teaching experience. This "supply and demand" analysis is less useful for such areas.

Newly Certified Teachers (FTE estimate): This value provides a rough estimate of the number of newly certified teachers (FTEs) available for hire in a TSD subject area (who have never taught before in NYS public schools). The "count" (see above) of initial certificates issued to new teachers, taken alone, overestimates the FTEs available for hire, because often new teachers are simultaneously awarded two or more initial certificates, but the individual is only available for hire as one "FTE". For example, often applicants are simultaneously certified in regular and special education. Even if that person was hired for a "split" assignment, that person could only be hired as one total FTE (or ½ FTE per subject certificate). So when estimating "Newly Certified FTEs" within subject areas, initial certificates are counted but "weighted" so each newly certified individual will only count as one FTE available for hire. In other words, an initial certificate within a subject area only counts as one newly certified "FTE" within that subject area, if the individual were only certified within that one area. If certified in two TSD areas, that individuals certificate only counts as ½ a new FTE in each subject area, if certified in three areas, then counts as 1/3 FTE in each area, etc.

The "TSD Ratio" (Newly Certified FTEs per New Teacher Hired): This ratio of the number of newly certified teachers in a subject area compared to the number of new first-year teachers hired in a subject area provides our best estimate of areas of teacher shortage and areas of teacher surplus in NYS. We refer to it as the "TSD Ratio", short for Teacher Supply and Demand Ratio. If a ratio is less than two newly certified FTEs for each new FTE teacher hired that year (less than 2.0) we highlight the value as representing a potential shortage area. If the ratio is more than three newly certified FTEs for each new FTE teacher hired within the certification area (greater than 3.0) we highlight the ratio value as representing a potential area of teacher surplus. (However, during a recession with greatly reduced hiring rates, a substantially higher ratio might be needed to indicate a surplus.)

For example, in the area of English (Middle/Secondary), the number of newly certified teachers is 1,441 and the number of new teachers hired is 275. So, of the 1,441 newly certified teachers, only 275 new teachers were hired – a ratio of 5.2. There were 5.2 newly certified teachers available for each of the 275 vacancies filled by a "new hire".

Vacancies Survey by Major Subjects and District Type Reports:

Location / Type: Data is reported separately for each of five "types" of "Districts":

- NYC Public Schools
- NYC Charter Schools
- ROS (Rest of State) Public Schools
- ROS Charter Schools
- BOCES

TSD Subject, All FTE Teachers, # and % Certified for Assignment, New Teachers Hired: Same definitions as for TSD Reports, above.

 # Recruited: This count is the number of vacancies Districts (or charters or BOCES) recruited to fill by hiring individuals with a specific preferred certification (classified within the listed TSD subject area) for that Fall (Fall 2010 for this analysis).

% Hired w Preferred Cert: This value represents the percent of vacancies Districts report having been able to fill by hiring an individual with the "preferred" certification. For example, ROS Public School Districts reported trying to recruit 273 teachers with specific "Career and Technical Education" (CTE) teaching certificates, but only having been able to fill 88.3% of those positions with the particular sought-after certification in each case. This means 21.7% of vacancies, or 59 positions, could not be filled by an individual holding the "preferred" certificate. A position may have been left vacant, or an uncertified individual hired, or an individual may have been hired with adequate "legal" certification for the position, such as "Technology Education", but not the "preferred" certificate for the vacancy, which might have been "Computer Technology 7-12". (Another example would be hiring a Middle School Generalist when an Earth Science 7-12 certificate holder was preferred, etc.) More detailed reports are available showing data for much more specific certification areas and showing specifically how Districts handled vacancies if a holder of the "preferred certificate" could not be hired. This new vacancy data could only be cross-referenced to the TSD data at the "Major Subject" level, though it is available at a more detailed specific certificate level.

Additional Discussion and Analysis:

Even though the number of new teachers hired remained constant between 2009-10 and 2010-11, the total number of FTE teachers declined 2.3%. The decline must indicate an increased retirement rate and/or employment termination rate compared to the previous year. Over the same interval, NYS public enrollment decreased by only about .06% (or about ½ of 1%) so the decrease of 2.3% in FTE teachers means the overall teacher to student ratio has declined, probably a reflection of the impact of the recession on NYS public schools.

Narrative Interpretation of the Statewide Report for Major Subjects:

The first report shown in this sequence is at the Statewide level, summarizing in the first row the total annual 2010-11 data for all teaching assignments and certifications issued to newly certified teachers. The succeeding 21 rows provide the same data but for each of 21 general categories of teaching assignments/certification areas. (More "granular" "Specific Subjects" reports further in the sequence provide this same data but for each of 136 highly specific subject/certification categories. Some reports provide data for NYC compared to "Rest of State".)

BEDS data reported by teachers in NYS public, BOCES, and charter schools in Fall 2010 indicated a total of 216,971 FTE (full-time equivalent) teachers employed professionally. Of these 216,971 FTEs, 211,033 FTE teachers held the correct NYS teacher certification for their assignments, which means 97% of teachers were certified for their assignments.

Statewide, in Fall 2010 a total of 5,092 FTE teachers indicated that they had no previous professional teaching experience (in any subject area). These 5,092 first-time teachers, also referred to as "new hires", represented 2% of all 216,971 FTE teachers.

The next column in the report shows the total number of initial-level certificates issued during 2010-11 by NYSED to "newly certified" teachers, i.e., to individuals who have no record of having taught in NYS public/BOCES/charter schools within the past five years with the status of a certified teacher. For 2010-11 the total number of initial certificates issued to newly certified teachers was 36,674. But many individuals simultaneously earned two or more certificates, so the total of "newly certified FTE teachers" earning initial certification is much less than the total certificates issued to them. By counting each newly certified individual only once, regardless of how many certificates simultaneously earned by that individual, the total number of "newly certified teachers" in NYS during 2010-11 is 26,230 individuals (FTEs).

The final column of the report shows the "TSD Ratio" (Teacher Supply and Demand Ratio) for NYS for 2010-11. This ratio is the number of "newly certified" NYS teachers compared to (divided by) the number of "new" teachers hired in NYS schools (public/charter/BOCES). For all teacher certification areas in NYS, there were 26,230 newly certified FTE teachers divided by 5,092 "new hires", which equals 5.2 newly certified teachers for each new teacher hired. In general, this indicates that for every five individuals receiving certification in NYS, only one was hired by a NYS public school in 2010-11. Last year, reporting 2009-10 data, the TSD ratio Statewide across all subject areas was also 5.2 newly certified individuals for each new hire. Over both years, the number of newly certified individuals and number of new hires remained fairly constant, so the ratio has remained constant.

After the "State totals" first row in the "Statewide by Major Subjects" report, the following rows show the same measures for each major subject/certification area. In general, for each specific subject area, a TSD ratio between 2:1 and 3:1 is considered optimum. Typically a ratio under 2:1 has been considered representing a likely shortage area, and greater than 3:1 representing a likely surplus area. (During this recession, however, ratios of 3:1 and higher may be more of an indication of the inability of districts to hire than of an actual surplus.)

For many years consecutively, this TSD data has indicated a substantial surplus in the number of elementary-level teachers earning certification. This past year 8,883 new teachers were certified in this area, but only 1,138 were hired, yielding a ratio of 7.8 newly certified individuals per new hire.

A low value for percent certified in an assignment area may be one indication of a teacher shortage. The federal government specifies that less than 95% of teachers in a state must hold valid certification for a subject assignment area in order to consider that subject an area of "teacher shortage." If 5% or more of teachers in a subject area are not appropriately certified, then college students may qualify for federal "TEACH" scholarships who commit to earning certification and teaching in that subject area. But the federal government warns that "percent certified" should not be used as the only criteria for gauging areas of shortage.

The "Health Education" data row in the 2010-11 report provides a good specific example of why "percent certified" taken alone is not an adequate indication of a shortage area. For

2010-11, only 87% of the 1,799 FTE teachers teaching health education in NYS held an appropriate certificate for that assignment. On the other hand, the TSD ratio data shows that 266 individuals were newly certified "Health Education" teachers that year, but only 42 new teachers were hired to teach health, yielding a ratio of 6.4 newly certified teachers per each new hire. The explanation for a low percent certified value and a high TSD ratio value for the same subject area, such as for the health education example, is that schools may assign teachers to one "out-of-certification-area" assignment with no penalty from the state, and schools tend to do so with particular frequency for specialty areas such as health education. Thus shortage and surplus areas need to be assessed using both percent certified data, and the TSD ratio.

A third indicator of possible teacher shortage areas is the success of school districts in filling vacancies with appropriately certified teachers. NYSED has begun to collect this data as part of the BEDS survey, and the vacancy/recruitment data reported by ROS public school districts, charter schools and BOCES for Fall 2010 is shown in the final tables of this report, "Vacancies Surveys by Major Subject and Type of Districts".

Changes from 2009-10 TSD Data Analyses:

There were no changes to the methodology of the basic TSD Analysis between last year (2009-10 data) and this (2010-11 data).

However, the results of a new IMF data collection were added to the TSD analysis this year. Public School Districts, BOCES and Charter Schools were required to report the number of vacant positions in each major certification area for which they recruited, and the result of those recruitment efforts. Reporting options for "results of recruitment efforts" included:

- Filled by Applicant with Preferred Certificate;
- Filled by Applicant Certified for Assignment, but Not Preferred Certificate;
- Filled by Applicant not Certified for Assignment;
- Left Vacant (includes reassignment of existing staff to meet assignment needs).

The final report in this compilation, "NYS FTE Assignments by Subject Area – By District Type by NYC/ROS" combines the PMF data findings with the new IMF "Recruitment to Fill Vacancies" findings. These summary tables report, for the major TSD subject areas, the number of positions recruited for, and the percentage of positions which could be filled with applicants with the preferred teaching certification. Reports are presented for NYC Public Schools, NYC Charter Schools, ROS Public Schools, ROS Charter Schools and BOCES.

Unfortunately, NYC Public Schools did not report this newly required "Vacancies" data, so findings could not be included in this report for NYC Public Schools.

Summary of Findings of Potential Shortages and Surpluses

The 2010-11 TSD data is overall very similar to the 2009-10 data, except the total number of NYS public school FTE teachers (includes charter schools and BOCES) dropped from 222,183 to 216,971 FTEs. The number of new hires (newly hired teachers with no professional teaching experience) remained constant (5,087 for Fall 2009 compared to 5,092 for Fall 2011), as did the percentage of NYS teachers certified for their assignments (97% both years). The total number of initial certificates issued to new teachers (36,497 for 2009-10 compared to 36,674 for 2010-

11) as well as initially certified FTEs (26,431 for 2009-10 compared to 26,230 for 2010-11) also stayed remarkable constant. This data indicates that greater numbers of teachers retired before the 2010-11 school year than before the 2009-10 school year, accounting for the decreased total FTEs even though the rate of hiring of new teachers remained constant (overall, though a disproportionate amount of hiring was done by charter schools compared to public schools).

Each year the NYS Education Department uses this data as the basis for submitting to the federal Education Department a list of potential subject shortage areas for certified teachers in New York State. The federal government uses this data to designate for each state the certification areas for which students will be eligible for federal "TEACH" scholarships, repaid by a period of years teaching in the shortage subject area. The criteria for designating a certification area as potentially experiencing a shortage of certified teachers is a combination of a percentage certified value below 95% and a TSD ratio at or below 2.2 FTE certificates per new hire. Also, the statewide number of new hires must be five or above, for an area to be considered a shortage area, regardless of the other criteria. This year, as last year, the following teaching certification areas qualified as likely shortage areas statewide:

- Bilingual Education Extensions, especially for SWD teachers
- Career and Technical Education: Technology Education & 7-12 Health Occupations Certificates
- Earth Science (5-9 or 7-12)
- Physics (7-12)
- Students with Disabilities 5-9 and 7-12 Subject Specialist Certificates

Subject areas for which New York State may be preparing a surplus of certified teachers, with limited employment prospects, include the following:

- Reading and Literacy
- Elementary and Early Childhood
- Health Education
- Social Studies (Middle and Secondary)