New Haven Public Schools

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Program Narrative Addressing Need for Assistance; Promoting Science, Technology, Engineering, and Mathematics (STEM) Education; and the MSAP Selection Criteria

Priority 1- *Need for Assistance*. The Secretary evaluates the applicant's need for assistance under this part, by considering (a) The costs of fully implementing the magnet school project as proposed.

New Haven Connecticut is typical of many older urban areas. Once a thriving manufacturing center, it has lost jobs and white middle class residents to the suburbs. Its schools are predominantly black, Hispanic and poor. The surrounding suburban schools are mostly white and middle class.

New Haven has long been in the forefront of Connecticut's school desegregation movement. From 1963 to the present, it has field-tested and fine-tuned a variety of desegregation plans. It has paired and rezoned schools, encouraged voluntary transfers, and created magnet schools. With the exception of magnet schools, however, most of these efforts have failed to mitigate the problem.

Magnet schools give both New Haven and suburban parents high quality alternatives to their neighborhood schools that offer programs that are not available elsewhere in the region.

New Haven is a highly minority group isolated district (85% minority) with low test scores that reflect the poverty and educational needs of its students. Forced by the Connecticut Supreme Court's *Sheff v. O'Neill* decision to take action to remedy the disparities between urban and suburban schools, laws were enacted that offer urban and suburban students the opportunity to attend schools in each other's districts in an effort to ameliorate the racial isolation of all students. Urban and suburban districts alike are encouraged to develop magnet schools. While the State, under these statutes, provides 100% funding for transportation, it provides few resources for initial magnet school theme and curriculum development. Because New Haven's schools have limited financial resources and are supported by a weak local tax base, this legislative funding scheme makes it even more difficult for New Haven's magnets to attract students from the wealthier suburban districts.

However, with MSAP support, New Haven has developed 13 magnet schools since 2001: five schools in 2001, two in 2004 and four in 2007 and two in 2010. Using the first year of operation

as the baseline, every school has reduced minority group isolation through the current school year. In addition, every school is currently operating as a magnet school. Six are higher performing schools. Three of these schools were persistently low performing Title I schools. Therefore, to remedy the segregation of its schools and improve achievement, the New Haven Public Schools propose four new magnet schools to serve both New Haven and suburban students. The schools, their grades and racial/ethnic compositions are: ► **Celentano Biotech, Health and Medical Magnet School (PreK-8)** (66% black, 23% Hispanic, 3% Asian); ► **The 21st Century Communications Magnet and Lab School (K-4)** (Currently Strong Elementary 48% black, 39% Hispanic, 3% Asian); ► **Quinnipiac Real World Math STEM School (K-4)** (33% black, 53% Hispanic, 1% Asian, 2% other; ► **The New Haven Montessori Magnet School (PreK-6)** an elementary school that will open for project year 2, will also be minority group isolated (projected 43% black, 38% Hispanic, 2% Asian, 2%).

The New Haven Public Schools are requesting approximately $3.8 million to implement its Magnet Schools Assistance Program (MSAP) at these four schools for each of the next three school years. This will fund a Project Director, 8 Magnet School Resource Teachers (7 for year one), 4 Recruiters and extensive professional development for classroom teachers. New Haven could operate these schools without MSAP funds. It could not, however: ► Create 4 magnet schools with the power to attract suburban students. ► Integrate the magnet themes and STEM subjects into core curriculum areas as these schools are creating new units and lessons that are fully aligned with the Common Core State Standards (CCSS) in English language arts and mathematics and the Next Generation Science Standards (NGSS). ► Purchase the supplies and equipment needed to properly implement STEM programs and a Montessori Program that would compete with suburban and private schools.

A key to the successful development of these schools are the Magnet School Resource Teachers. They will: ► Participate in the writing of the curriculum materials that will be prepared for this project; ► Implement the new magnet curricula by training and coaching school staff; ► Teach demonstration lessons, for classroom teachers, in magnet theme areas and demonstrate various strategies for meeting the needs of students in heterogeneous classes; ► Facilitate collaborative team meetings for teachers; ► Support and facilitate the Curriculum Alignment Process; ► Help in the development and implementation school recruitment plans.

Without the Magnet School Resource Teachers, the activities described in this proposal that make each magnet school unique and will improve instruction and achievement cannot take place.

Therefore, the total cost (including indirect costs) of the MSAP program described in this application is $3, 786,320 for year one, $3,935,953 for year two and $3,729,102 for year three.

Priority 1- *Need for Assistance*. (b) The resources available to the applicant to carry out the project if funds under the program were not provided;

The New Haven public schools' financial resources come from the City of New Haven (local tax) revenues, the State of Connecticut, in the form of state education aid and grants, and from the Federal Government in the form of reimbursable program funds such as Title I. In the main, these are determined by formulas that allocate funds in proportion to student population and, as in the case of Title I, student need. **These funding sources do not supply supplemental funds for the activities that are described in this proposal.**

The City of New Haven's 2012-2013 budget for its public schools is $174 million. The City's budget for its schools for 2008-09 through 2011-12 ranged from $173,005,135 to $173,019,297 (basically flat funding) even though the student population increased from 19,855 to 21,241, personnel costs including health insurance and pension costs increased, transportation costs

increased, costs of supplies and equipment, transportation, etc., increased. The current budget represents an increase of less than one percent over the 2008-09 budget even though the student population has increased by 1,490 students since 2008-09 to 21,345 for 2012-13. State aid accounts for 87.5% of the revenues in New Haven's school budget. The 2012-13 amount, $152,575,455 is $809,000 less than the $153,383,955 in state aid received in 2008-09.

During this period, the New Haven public schools have been able to implement many education reforms such as: ► one of the first teacher and administrator evaluation and development systems that use student test scores as one of several factors to determine professional growth and competency (with the cooperation of its unions); ► implementing turnaround strategies in its lowest performing schools; and ► the continued development of magnet schools. However, this has been supported by federal stimulus and grant funds (about $13 million) which are no longer available. The Board of Education has balanced its budgets during this period through reducing staff, aggressive contract negotiations and fiscal efficiency. However, escalating fixed costs are overwhelming the flat funding that the schools have received for five consecutive years and is putting the gains that have been made in jeopardy. Costs that are being considered for reduction include reading and math coaches, library media support, guidance counselors, paraprofessionals, summer programs, arts programs and athletics programs. In addition, class size increases are being considered. Therefore, providing basic education services will be even more difficult during the next three years.

New Haven will receive approximately $50 million in federal grants this year including Title I. However, these funds are provided and targeted for specific purposes and cannot be used to develop and implement the magnet programs described in this application. Some of these grants, (e.g., Voluntary Public School Choice) are ending this year. Others, (e.g., Teacher Incentive fund) have

only a few years of funding before they end.

New Haven has many fewer resources to spend on its pupils than the affluent towns, and villages that surround it. As in many aging northeast cities, its tax base consists of poor and working class families. Whatever wealth and jobs New Haven once had are gone. In addition, much of the property owned by Yale University, the largest employer and landlord in New Haven, is tax exempt making it that much harder to raise revenues. This is why New Haven pays a smaller percentage of total education costs than the vast majority of the suburban communities that surround it. This is why the New Haven Public Schools cannot compete with suburban districts on the basis of resources offered to students. Suburban and most private schools have more supplies, equipment and resources than New Haven schools. With a meager tax base and flat funding from the city and state, the New Haven Public Schools do not have the resources to fund the activities described in this proposal.

Every successful interdistrict magnet school in New Haven has had MSAP support when it was first being developed. Magnet schools without this support have failed to attract suburban students because their programs could not compete with suburban schools, suburban interdistrict magnet schools and the successful charter schools in the New Haven area.

In addition, because New Haven has 28 low performing schools, the district, as many urban districts with low performing schools, is spending a larger proportion of local funds, in addition to state aid and Title I, on the core curricula especially reading, writing and mathematics.

New Haven supports 17 magnet schools with local (city and state) funds this year and will continue to do so. By next year, 21 magnet schools will be supported totally with local and state funds. New Haven administrators understand that the most expensive period for a magnet is when it first develops. If the four magnet schools that are requesting funding can have MSAP support, they will be able to successfully compete with suburban schools, as do other New Haven magnets.

Without MSAP support, these schools will struggle with weakly developed magnet programs.

Priority 1- Need for assistance. (c) The extent to which the costs of the project exceed the applicant's resources;

The requested budget for the project (direct costs) is $3,593,846 for the first year, $3,734,905 for the second year, and $3,535,354 for the third year. The project will reach 1,228 students in the first year and over 1,500 students by year 3. Therefore, the per-pupil cost of starting up these magnet schools is approximately $2,926 for the first year. Increases in student enrollment in subsequent years will cause the per-pupil cost will go down to $2,600 for project year 2 and $2,323 for project year 3. New Haven currently spends approximately $10,494 per student (school budget and grant funds). Its budget has increased by less than 1% over the last five years. Its state funding, which accounts for 87% of its operating budget is actually less than it was in 2008-09. Therefore, the New Haven Public Schools do not have the resources to increase the per pupil expenditures at the four proposed magnet schools by 28% project year one, 25% project year two and 22% project year 3.

Therefore, the New Haven Public Schools do not have the funds or resources to implement this project without Magnet Schools Assistance Program support. The cost of the project exceeds the resources of the New Haven Public Schools. If a greater proportion of the operating budget were used on magnet schools, nonmagnet schools would be inadequately staffed, and receive inadequate services, an unacceptable situation.

Priority 1- Need for assistance. (d) The difficulty of effectively carrying out the approved plan and the project

New Haven magnet schools must attract suburban students to significantly reduce minority group isolation. However, suburban magnet and neighborhood schools, some of which have STEM

programs, compete for the same students that New Haven is trying to recruit. Suburban school districts surrounding New Haven have an average minority population of 24%. New Haven schools need to have more complete and exciting programs to attract suburban students.

One of the most important gaps in Connecticut's support of interdistrict magnet schools is that virtually all state funds are used to support the basic education program for out-of-district students. There are no funds for supplies and equipment, magnet resource teachers and the professional development needed to create the special magnet theme curricula. Affluent suburbs are better able to underwrite these activities than cash-starved cities.

New Haven proposes to implement 4 magnet schools that will serve both New Haven and suburban students. These schools, designed to attract a diverse population including students from white suburban communities, will be difficult to develop because they are highly minority group isolated Title I urban schools. The combined black and Hispanic population of each school exceeds 85%. In addition, Celentano is a Tier III school (consistently low performing across multiple measures). All 4 magnet schools will be competing against Project Choice, a state sponsored program that makes seats in high performing suburban schools available to New Haven students and successful charter schools. In addition, suburban students have good neighborhood and suburban magnet schools they can choose.

To recruit successfully, these magnet schools must be unique and attractive to a diverse student group. The programs that have been proposed for this project are complex and difficult to carry out unless there is ample professional development and support and appropriate equipment and materials. Without it, these themes will be only partially implemented, having much less impact on student achievement or the reduction of minority group isolation.

Priority 4-Promoting Science, Technology, Engineering & Mathematics (STEM) Education. Projects that are designed to address one or more of the following: (a) Providing students with increased access to rigorous and engaging coursework in STEM.

New Haven meets part (a) of *Priority 4* by providing students with increased access to rigorous, engaging coursework in STEM by opening two STEM magnet schools--Celentano Biotech, Health and Medical Magnet School (PreK-8) and Quinnipiac Real World Math STEM School (K-4)--and two magnet schools that will teach STEM subjects--The 21st Century Global Communications Magnet and Lab School (K-4) and the New Haven Montessori Magnet (PreK-6).

New Haven has only one elementary magnet school that has a science theme, Barnard Environmental Studies Magnet (PreK-8). It is not a STEM school because it does not integrate science, mathematics, technology and engineering. New Haven has a high school STEM magnet, the Engineering and Science University Magnet School (9-12) as well as high school magnet programs in Health Sciences and Sports Medicine. By establishing the schools described in this proposal, which will serve 1,522 students by project year 3, pathways in health sciences and STEM will be established from kindergarten through high school and many more students will have the opportunity and the interest to pursue STEM studies. For 2012-13, the New Haven Public Schools enrolled 21,345 students (43% black, 38% Hispanic, 2% Asian, 15% white).

This magnet program will provide access to STEM coursework to all students, especially those in groups traditionally underrepresented in STEM, including minority students, females and English language learners. Students, and their families, who feel that these schools meet their interests and needs can apply. There are no academic entrance requirements. Students will be selected through a lottery. Those in need of academic assistance will receive a wide range of support described in the *Quality of Project Design* section.

For the New Haven Public Schools, STEM education is the integration of science, mathematics, engineering and technology concepts throughout the curriculum. In all four magnet schools described in this proposal, students will have the opportunity to explore science, mathematics, engineering and technology using a project-based, thematic learning approach that weaves STEM topics throughout the curriculum so that students are able see the relevance of STEM through real-life application of their knowledge.

All four schools will use Singapore Math, Science and Technology for Children (STC) Kits, Engineering is Elementary, Robolab and have Discovery Room/Labs for STEM projects, demonstrations and experiments. All will have teacher created units, aligned with Common Core State Standards (CCSS) and Next Generation Science Standards (NGSS) that integrate the school's specific magnet theme with science, mathematics, engineering and technology. Each of these units will include a STEM project that integrates science and math topics students have learned with technology (e.g., the tools that scientists, engineers and mathematicians use) and engineering. Extensive professional development will support the creation of these units and projects. The report upon which the NGSS is based, *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas* (National Research Council, 2012) offers a vision for science that puts scientific and engineering practices squarely alongside traditional science content. Therefore, even though Connecticut will not adopt the NGSS until project year 2, the proposed magnet schools will use them beginning in year 1.

The STEM schools are: **Celentano Biotech, Health and Medical Magnet School (PreK-8):** The theme of the medical arts – medicine, health, and biotechnology – will be integrated into all subjects. Students in grades 3-8 will develop and present several "case studies" or projects each year. They will use inquiry, the engineering design process and project

based learning. Through these projects, students will define a problem and formulate a question in the area of medicine, health, biotechnology, or the environment; conduct background research which will use CCSS-aligned literacy skills for reading informational texts and writing non-fiction; collect and analyze data using CCSS-aligned mathematics skills; and communicate results and present conclusions using a variety of media. Younger students will be introduced to the prerequisite skills needed to solve and present case studies and projects in the course of exploring the medical arts though interdisciplinary units and lessons and will solve developmentally appropriate theme related problems. The school will create units that will integrate medical arts with the core curriculum. Grades 6-8 will focus on more complex year-long case studies. Eighth graders will do a capstone project related to the magnet theme that will include all elements of STEM. A technology/medical lab/Discovery Room will provide early tactile experiences (for the early grades), a fully equipped laboratory for all grades, and hands on technology such as interactive whiteboards and online simulations using iPads. Field trips to local hospitals, research labs and museums will complement units of study.

The Quinnipiac Real World Math STEM School (K-4) will serve to inspire a love of mathematics through "worlds of math" thematic units that incorporate mathematics, science, engineering, technology, and the arts with a special focus on applications and problem solving. Each world will be presented in an interdisciplinary unit, for each grade and will focus on a real-life application of mathematical concepts. The worlds of math are summarized below: In the **Constructed World**, children will use Engineering is Elementary and teacher created science and math units to solve problems using engineering and the tools that scientists and engineers use. In the **Financial World**, lessons based on *The National Standard of K-12 Personal Finance Education* will be integrated with STEM. As students participate in the **Geographic World**,

they will apply math in interdisciplinary lessons integrated with Social Studies and Technology centered around mathematical applications of maps and globes. In the **Physical World**, math will be integrated with science, engineering and technology as teachers present interdisciplinary units for grades K-4 around chemistry, physics and motion. STC Kits and other science supplies and technology will be used. In the **Creative World**, art and music teachers will incorporate science and mathematics into their lessons, implementing joint projects with regular classroom teachers. The **World of the Future** encompasses mathematical activities integrated with the *Robolab* curriculum developed by Tufts University Center for Engineering Education and Outreach. Robolab introduces primary school age pupils to the world of Control Technology.

The two schools above are STEM because they integrate the four areas of STEM in many ways. In addition, the units that will be created by teachers and magnet resource teachers, with the support of professional development partners, will integrate science themes (Celentano Biotech, Health and Medical Magnet School) or mathematics themes (Quinnipiac Real World Math STEM School) with core academic subjects engineering and technology. The following schools will also integrate the four areas of STEM and will also include all of the STEM components described in this proposal (Singapore Math, STC kits, Engineering is Elementary, Robolab and have Discovery Room/Laboratories for STEM projects, demonstrations and experiments). However, for the 21st Century Global Communications Magnet and Lab School, the teacher created units will be centered on STEM and communications. For the Montessori Magnet School, teacher created units, with the support of the STEM partner organizations and an exemplary Montessori training organization, will include STEM projects using Montessori pedagogy and methods.

21st Century Global Communications Magnet and Lab School (K-4). In this lab

school for the Southern Connecticut State University's (SCSU) School of Education teacher preparation program, 21st Century Global Communications will serve as the integrating context for the study of Science, Technology, Engineering and Mathematics (STEM). Students will study communication's impact on science and history through school-wide themes: Communications Inventions and Ideas: Students will study the great communications inventions from writing implements, to the printing press, to the telegraph and telephone, to the computer and the Internet. How We Communicate: Students will study both verbal and written communication in units integrating English language arts with science, math and the arts. How Communications has Changed the World: This theme will relate to social studies and to how the science of communications has changed the way we live. The Future of Communications: students will learn about emerging and rapidly changing communication technology. Each theme unit will include a STEM project and will be interdisciplinary.

At the **New Haven Montessori Magnet School (PreK-6)**, STEM is about curriculum integration and students' active engagement in hands-on, inquiry learning, key factors in Montessori and STEM learning. In the Primary Program, there will be a focus on the areas of *Sensorial*, which will enable the child to order, classify and describe sensory impressions in relation to length, width, temperature, mass, color, etc., and *Mathematics,* which makes use of world-renowned manipulative materials to enable children to internalize mathematics concepts. *Engineering* will be an additional prepared environment through the Discovery Lab and will integrate STEM learning through manipulative materials developed specifically for this program at the Connecticut Science Center, which will also be a site for student field work. Emphasis is on open-ended research and in-depth study using primary and secondary sources as well as the latest technology. There will be a major focus on inquiry and discovery through students' work

with the planned environments and specialized materials.

Priority 4-Promoting STEM Education. (b) increasing the opportunities for high quality preparation of, or professional development for, teachers or other educators of STEM subjects.

High quality professional development will be provided to the teachers at the four magnet schools by: The Connecticut Science Center (CSC) will collaborate with school and district staff to design Discovery Rooms/Laboratory's in each magnet school (described later in this proposal) and will also provide professional development in inquiry (5E Model) and project based learning as well as science content and the NGSS for elementary teachers. A focus of CSC's work will be how teachers can utilize the new Discovery Rooms for STEM projects.

The Center for Technology and School Change (CTSC), Teachers College, Columbia University. CTSC professional development will increase teachers' knowledge and skills in: 1) core math and science content and concepts based on the CCSS in Math and Next Generation Science Standards; 2) the design of interactive, student-centered STEM projects and learning environments; 3) use of state of the art, real world technology to enhance math, science and STEM projects; 4) use of formative assessment and data analysis to better understand student knowledge and skills.

Intel Math provides 80 hours of professional development in mathematics, co-facilitated by a practicing mathematician and a mathematics educator that strengthens the mathematics content training of elementary school teachers, deepening their understanding of core K-8 mathematics concepts. Science and Technology For Children (STC) training will show teachers how to better use these science materials (developed by the National Science Resource Center, operated by the Smithsonian Institution and the National Academy of Sciences) while strengthening science content knowledge. Topics include: Getting Started with the NGSS; STEM and the Next Generation Framework; Engineering in the Classroom: Implementing STEM in Your Classroom with STC.

Engineering is Elementary is a research-based curriculum in which students engage in the engineering design process, apply science and mathematics to engineering problems and understand the role of materials and their properties in engineering solutions. EiE also helps elementary school teachers enhance their understanding of engineering concepts and pedagogy through professional development workshops and resources. Training will be through the Boston Science Museum.

The Yale Office of New Haven and State Affairs, at Yale University, will help the magnet program develop a speakers bureau of local STEM professionals to provide mentoring and career awareness for both teachers and students. These "scientists and engineers in residence" will help teachers with STEM project development, curriculum unit STEM integration and implementation and speak to students. Robolab training will be through the Tufts Center for Engineering Education and Outreach.

In addition, the two magnet resource teachers at each school will provide and facilitate embedded STEM professional development that will include: ►demonstration STEM lessons and coaching; ► observations and feedback; ►creation of magnet STEM standards, ►STEM curriculum mapping; ► help classroom teachers create STEM units and lessons that integrate the CCSS, the NGSS and the school's specific magnet theme, are project based, and use Inquiry, technology and the engineering design process; ► support individualized teacher learning plans.

The district's multi-stage teacher evaluation process will, for teachers at the four magnet schools, tie teacher evaluation to STEM-related student outcomes and effective professional development. This process will focus specifically on creating student and teacher STEM goals, assessing progress, and developing individualized, STEM-related professional development (teacher learning plans). These plans are consistent with the New Haven approach to professional development, which includes targeted and site-based/job-embedded activities.

(a) Plan of Operation. (1) The Secretary reviews each application to determine the quality of the plan of operation for the project. **(2)**The Secretary determines the extent to which the applicant demonstrates: **(i)**The effectiveness of its management plan to ensure proper and efficient administration of the project;

The New Haven Public Schools have 35 years of experience in the planning, and operation of magnet schools. Currently, the district has 21 magnets. Five have been in operation for more than 18 years; some for as long as 35 years. These schools are considered by most parents to be among the best in the region. The management plan that follows includes many of those who have helped to successfully implement past desegregation and magnets school efforts.

A. District Level: New Haven's Magnet Program will be implemented by a team of individuals with expertise in education and the design of innovative magnet schools. The Project Director will be housed in the District Office and will report to the Associate Superintendent for Portfolio and Performance Management and will meet with the Superintendent at least twice per month.

Overall responsibility for the operation of the Magnet School program will be assigned to the Magnet Project Director. The Magnet Director will develop, manage and monitor the budget, prepare interim and final fiscal reports, and provide centralized leadership for all magnet school program, recruitment and selection activities. S/he will work closely with the Directors of Instruction, who have direct supervisory responsibility for principals, to coordinate project activities with the Magnet School principals at the school level. S/he will also, for example, work closely with the District Curriculum Supervisors on the extensive curriculum development that is a cornerstone of this project; with the Director of Student Services and Special Education to ensure that the project effectively serves students with diverse needs; and the Director of Research, Assessment, and Evaluation, to ensure that district assessments both drive the project and adequately measure its

outcomes. S/he will also supervise all Magnet Schools Assistance Program staff.

New Haven has successfully managed federal and state funded programs for many years. Its Grants office manages programs that are relatively small and do not have full time project directors. Larger grants, those that have full time directors, are managed by the project director supported by Ms. Linda Hannans, the Business Director. Ms. Hannans has headed the Business Office since 1996, is expert in all aspects of project fiscal management, and will assure the proper and efficient fiscal administration of this project. The MSAP grant will be managed by the project director.

B. School Level Management: At each magnet school, a School Planning and Management Team will have overall responsibility for the program's success. It will be led by the building principal, and be composed of representatives of all adult stakeholders, including teachers, parents and magnet resource teachers. The project director will attend meetings. The team will have the responsibility of establishing guidelines to address systemic school planning, program implementation, modification of the curriculum, and staff development; coordinating the activities of all individuals, groups and programs in the school; and will work with the Parent Teacher Organization (PTO) to plan an annual activity calendar. It will also produce a School Improvement Plan for each magnet school. The project director will meet with magnet school principals and school based staff at least once a week.

***Organizational Reporting Relationships*:** The Magnet Project Director has primary responsibility for the successful implementation of the project. The Project Director's full responsibilities are described in the Quality of Key Personnel section of this proposal. Reporting to the Project Director are the Magnet School Staff (Magnet School Resource Teachers, Project Recruiters). All magnet resource teachers will be school based. Their daily activities will be supervised by the principal of each magnet school. The project director insures that all of their time

is spent on the activities described in this proposal, that project funds are spent appropriately, and that all project activities are implemented effectively and on time. If there is a problem in any of these areas, the project director will work with the Directors of Instruction (who supervise the principals) and the Associate Superintendent for Performance and Portfolio and the principals to modify and improve the activities in question. The Magnet Resource Teachers will help develop magnet curricula, facilitate and coordinate curriculum and coordinate systemic reforms at each magnet school in a variety of ways described in later sections of this application.

The Project Director will report directly to Mr. Garth Harries, the **Associate Superintendent for Performance and Portfolio**. Mr. Harries will meet at least twice each week with the Project Director and will regularly visit the magnet schools. The Associate Superintendent is responsible for supervising the magnet schools, the Directors of Instruction, schools and principals, the creation of new schools to better serve New Haven students, and teacher and administrator evaluations.

There will be a monthly (more frequently if needed) meeting at which the Project Director will meet with the Associate Superintendent for Performance and Portfolio, the Associate Superintendent for Curriculum and Instruction and the District Curriculum Supervisors to discuss the operation of New Haven's Magnet Schools Assistance Program, the activities that are being implemented, the progress that is being made, and the problems that have been encountered. At these meetings, problems will be solved, and the support services for the schools will be coordinated. These and other regularly scheduled meetings involving the Project Director and key administrative staff will ensure the coordination of the district curriculum, staff and other resources with project activities.

The **District Curriculum Supervisors** will give support in their disciplines to the teachers in every magnet school, and to the magnet school resource teachers. They will assist in the development and writing of curricula, and the training of teachers. They will be available to meet

with the School Planning and Management Teams at the magnet schools to plan staff development activities and to answer questions and offer suggestions concerning their subject areas. The support efforts of the District Curriculum Supervisors will be supervised by the Associate Superintendent for Curriculum and Instruction in cooperation with the Project Director.

Also reporting to the Associate Superintendent for Performance and Portfolio are the **four Directors of Instruction**, who supervise all New Haven principals. Each of these supervisors has been a successful school principal. They are, in a sense, master principals. Their responsibilities include not only supervising principals, but also giving them support, and helping them to solve administrative and instructional problems. In addition, each sits as the district's representatives on the School Planning and Management Teams of each of the magnet schools.

Reporting to the Directors of Instruction are the **Principals** of the magnet schools. They will direct their schools' programs, working cooperatively with their school's School Planning and Management Team, the Project Director, and the Magnet School Staff.

a) Plan of operation (2) … the extent to which the applicant demonstrates:(ii) The effectiveness of its plan to attain specific outcomes that; (A) Will accomplish the purposes of the program; (B) Are attainable within the project period; (C) Are measurable and quantifiable; (D) For Multi-year projects, can be used to determine the project's progress in meeting its intended outcomes;

Project Outcomes: This proposal's outcomes (i.e., objectives and performance measures) are aligned with the six purposes of the Magnet Schools Assistance Program (MSAP). A set of objectives and performance measures follow the Program Purpose they address.

*Program Purpose (1): The elimination, reduction, or prevention of minority group isolation in elementary and secondary schools with substantial portions of minority students….*All proposed magnet schools will reduce minority group isolation by decreasing the percentage of black or

Hispanic students and increasing the percentage of white students through the Connecticut Open Choice Program. The purpose of this program, a result of *Sheff v. O'Neill*, is to support interdistrict transfers to reduce minority group isolation. New Haven's MSAP program is consistent with the laws and regulations that govern the Open Choice interdistrict transfer program. The percentage of black students at Celentano (66%) and the 21st Century Communications Magnet (48%) are greater than the district-wide average of black students (43%). The percentage of Hispanic students at Quinnipiac (54%) and the Montessori Magnet (42% projected) is greater than the district-wide average of Hispanic students (38%). (A table of New Haven's PreK to grade 12 district-wide enrollment for 2012-2013 is in the appendix. The district-wide PreK to grade 8 enrollment and projections are on **Table 1: Enrollment Data-LEA Level**.)

Objective 1. Minority group isolation will be reduced at the proposed magnet schools. (This objective addresses MSAP Performance Measure a.)

Performance Measure 1.1-1.5: By October 1 of each project year, approved enrollment targets for each racial group (**see Table 3: Enrollment Data-Magnet Schools**) will be attained by reducing the isolation of **black students at** Celentano and 21st Century Communications Magnet and of **Hispanic students at** Quinnipiac and the Montessori Magnet, (using 2012-13 as the baseline) by at least 2 percentage points by year 1, 4 percentage points by year 2 and 6 percentage points by year 3. The schools and their 2012-13 enrollments are: **1.1** Celentano Biotech, Health and Medical Magnet School (PreK-8) (66% black, 23% Hispanic, 3% Asian; 464 students); **1.2** The 21st Century Global Communications Magnet and Lab School (K-4) (48% black, 39% Hispanic, 3% Asian; 240 students); **1.3** Quinnipiac Real World Math STEM School (K-4) (33% black, 53% Hispanic, 1% Asian, 2% other; 269 students); **1.4** The New Haven Montessori Magnet School (PreK-6) (Projected: (41% black, 42% Hispanic, 2% Asian, 2% other). Because the Montessori Magnet will open as a

new school in the fall of 2014 (project year 2), its 2012-13 enrollment is projected based on New Haven's district-wide k-6 enrollment. It will serve 207 students by project year 3.

1.5-1.6 By Oct. 1 of project year 3, the isolation of black students will be reduced at: **1.5** Celentano by 13 percentage points; and **1.6** 21st Century Communications magnet by 8 percentage points.

1.7-1.8 By October 1 of project year 3, isolation of Hispanic students will be reduced at: **1.7** Quinnipiac by 8 percentage points; **1.8** Montessori Magnet by 8 percentage points.

1.9 For each project year, each magnet school will receive at least 100 applications.

Purpose 2: To develop and implement magnet school projects that will assist local education agencies achieve systemic reforms, and provide all students the opportunity to meet challenging State academic content standards and student academic achievement standards;

The implementation of systemic reforms, magnet themes and rigorous curricula for all students will be facilitated and supported by the project and district office resource staff.

Objective 2: All students will receive instruction that includes their school's systemic reforms and magnet themes in units and courses aligned with State standards.

Performance Measures: **2.1** By October 15 of each project year, each magnet school's School Improvement Plan will be revised and include objectives and activities that support: ▸ the adoption of high standards for all students and ▸ specific systemic reforms (e.g., Common Core Standards in ELA and Math, 5E Inquiry, Next Generation Science Standards); and describe how they are coordinated with MSAP activities. Success will be determined through inspection of each school's plan. Implementation success will be measured by performance measure 3.1.

Purpose 3: The development and design of innovative educational methods and practices that promote diversity and increase choices in public elementary and secondary schools …. Magnet theme development and implementation and adoption of systemic reforms will increase diversity and

choice because the curricula are distinctive (not offered at other schools at the same grade levels) and innovative (combine systemic reforms and unique magnet themes).

Objective 3. All students, at each magnet school, will receive magnet theme instruction.

Performance Measures: **3.1** By the end of each project year, all students, at all magnet schools, will receive magnet theme instruction coordinated with or including systemic reforms for at least 3 (year 1), 6 (year 2) and 10 (year 3) hours per week. Success will be determined through unit plan analysis and confirmed with surveys, interviews, and walkthroughs. Units and lessons produced as a result of this program will be peer reviewed.

Program Purpose 4: Courses of instruction within magnet schools that will substantially strengthen the knowledge of academic subjects and the attainment of tangible and marketable vocational, technological and professional skills of students attending such schools.

The U.S. Department of Education has approved Connecticut's ESEA Flexibility Request (NCLB Waiver). The School Performance Index (SPI), is a composite of multiple data points that allows the assessment and comparison of school performance across more than one tested grade, subject or performance level. There are SPIs for each school for its total population, for each defined subgroup, and for each subject area tested. The defined subgroups are black students, Hispanic students, students who are eligible for free or reduced price lunch, students with disabilities, and English Language Learners. The subject area SPIs are Reading, Writing, Mathematics, and Science. SPIs are based on the Connecticut Mastery Test (CMT) for grades 3-8 and the Connecticut Academic Performance Test (CAPT) for high school.

The SPI scale is 0-100. An SPI of 0 means that "on average, all students are at the below basic level." 33 means that "on average, all students are at the basic level." 67 means that "on average, all students are at the proficient level." 88 means that "on average, all students are at the

target level." 100 means that "on average, all students are at the goal level or higher."

Schools have annual goals for the entire school, for each subject tested and for each subgroup with 20 or more students. Please note that subgroup SPIs are composites that include all subjects tested. For example, the SPI for black students includes all subjects tested. SPI goals are based on school base-lines (the means of SPIs for the last three years) and the target SPI of 88. Schools with SPIs of 88 or higher must maintain an SPI of at least 88 to meet its goal. Schools with baselines less than 88 must progress $1/12^{th}$ the distance from their baselines to 88 each year. The maximum annual goal is capped at 3 points.

Objective 4. Each year, for each magnet school, the proportion of students in each subgroup defined by the Connecticut Flexibility Request will meet or exceed its SPI goals for the entire school, for each subject tested and for each subgroup with at least 20 students.

Performance Measures 4: By the end of each project year, each magnet school will achieve its SPI goal: **4.1:** in reading. **4.2:** in mathematics. **4.3:** in writing. **4.4:** in science.

4.5 By the end of each project year, each magnet school will achieve its SPI goals for their total population and for each defined subgroup. (These SPI measures include all subjects.)

4.6-4.8 By the end of each project year, the percentage of students from major racial and ethnic subgroups in magnet schools receiving assistance who score proficient or above on the CMT will increase when compared with the previous year in: **4.6:** reading. **4.7:** math. **4.8:** writing. This performance measure addresses MSAP Performance Measures b and c: *The percentage of students from major racial and ethnic groups in magnet schools receiving assistance who score proficient or above on State assessments in reading/language arts and math.*

4.9 By the end of the project period, as a result of the implementation of theme curricula, 75% of students at each magnet school will develop mastery of that curriculum, as determined by methods

such as portfolio evaluations, rubrics and tests.

Purpose 5: Improvement of the capacity of LEAs, including through professional development, to continue operating magnet schools at a high performance levels after Federal funding…is terminated. **Objective 5.** Provide professional development for magnet school teachers related to systemic reforms and magnet theme development and implementation.

Performance Measures 5: By the end of each project year, magnet school teachers will receive at least 30 hours of professional development (e.g., workshops, courses, coaching) in each of the following areas: **5.1** the development and implementation of the systemic reforms listed in the school improvement plan; and **5.2** directly related to the implementation of the magnet theme.

Other performance measures related to capacity building include: (2.1, 3.1) development and implementation of systemic reforms and magnet theme units and courses.

Purpose 6: Ensuring that all students enrolled in the magnet school programs have equitable access to high quality education that will enable the students to succeed academically and continue with postsecondary education or productive employment.

An important aspect of ensuring that all magnet school students have equitable access to high quality education is to monitor access. Performance measure 6.1 will be reported on each year and monitored by the each magnet school's principal, the project director and the evaluator. Schools not attaining the measure will take corrective action approved by project and district staff. **Objective 6a:** All students enrolled in the magnet schools will have equitable access to high quality education. **6.1** By the end each project year, for each magnet school, at least 75% (yr. 1), 85% (yr. 2) and 95% (yr. 3) of classes (elementary) and STEM classes (middle grades), will reflect their grade's enrollment for each racial/ethnic group (and gender for STEM classes) by ±15 percentage points.

Parent involvement also promotes equitable access to high quality education for all students.

Objective 6b: There will be an increase in parent participation at each magnet school.

6.2 By the end each project year, for each school, there will be an increase (compared with the previous year) in the numbers of parents who participate in school activities.

Note: Please note that The 21st Century Communications Magnet and Lab School (K-4) is currently Strong Elementary School (K-2) serving 486 students who could not attend their home school due to overcrowding. A district plan to alleviate the overcrowding is being phased in beginning next year. Instead of closing Strong and opening it next year with only magnet students, magnet applicants will be accommodated one grade at a time as some current students voluntarily return to their home schools or apply to magnet schools. Parent meetings indicate that many will return to their home schools. All students at the new magnet school will be part of the magnet program.

New Haven's magnet school model has reduced minority group isolation and increased achievement. Since 2001, New Haven has developed 13 magnet schools with MSAP support. Using the first year of operation as the baseline, every school has reduced minority group isolation through 2012-13. These schools gained 612 white students, many from the suburbs, and reduced minority group isolation from 91.1% to 82.3%. A five year evaluation study by Dr. David Silver, at the time (2007) a senior researcher at the CRESST Center at U.C.L.A. concluded that students who transferred from New Haven's Title I Schools in Need of Improvement to higher performing schools had significantly higher test scores in reading, mathematics and writing than carefully matched groups of students who transferred to higher performing non-magnet schools or students who did not transfer. In an evaluation study last year, CRESST senior researcher Dr. Jia Wang found that Brennan-Rogers magnet school, which is a low performing turnaround school, had statistically significant gains in reading, writing and math after only two years of being a magnet school. It also reduced minority group isolation of

black students from 75.9% to 67.7% in two years.

a) Plan of operation. **(2)** The Secretary determines the extent to which the applicant demonstrates: **(iii)** The effectiveness of its plan for utilizing its resources and personnel to achieve the objectives of the project, including how well it utilizes key personnel to complete tasks and achieve the objectives of the project;

Summary of Objectives: By the end of each project year, minority group isolation will be reduced at four interdistrict magnet schools. ***Uses of Key Personnel To Achieve Objective***: Minority group isolation will be reduced at the four proposed magnet schools by attracting suburban students who are predominantly white**,** a strategy has worked well for New Haven's 21 magnet schools.

The success of these objectives depends on the following key personnel who have important roles in the recruitment plan that is described in the next section: The Project Director, Magnet Recruitment Coordinator and Specialists, Magnet School Principals, Members of the School Planning and Management Teams at each magnet school, Magnet School Teachers, Parents, Magnet Resource Teachers and the Project Evaluator. Recruitment activities will include magnet fairs, open houses and school tours, direct and e-mail, district website with magnet school information including on-line application, Magnet Resource Center, public libraries for on-line access, monitoring of applicant pool and school enrollments to improve effectiveness of recruitment activities.

Objective 2: All students will receive instruction that includes their school's systemic reforms and magnet themes in units and courses aligned with State standards. **Objective 3.** All students, at each magnet school, will receive magnet theme instruction. **Objective 4.** Each year, for each magnet school, the proportion of students in each subgroup defined by the Connecticut Flexibility Request will meet or exceed its SPI goals. **Objective 5.** Provide professional development for magnet school teachers related to systemic reforms and magnet theme development and implementation.

Uses of Key Personnel To Achieve Objectives: Students will study science, mathematics, engineering and technology using a project-based, thematic learning approach that integrates STEM topics throughout the curriculum. To support this program, all four schools will use Singapore Math, Science and Technology for Children (STC) Kits, Engineering is Elementary, Robolab and have Discovery Room/Labs for STEM projects, demonstrations and experiments. Teachers will create units, aligned with Common Core State Standards (CCSS) and Next Generation Science Standards (NGSS) that integrate their school's specific magnet theme with science, mathematics, engineering and technology. Each of these units will include a STEM project. Systemic reforms will include aligning interdisciplinary STEM units, lessons and projects with CCSS and NGSS.

This will be supported by professional development from: Connecticut Science Center (Inquiry, PBL, Discovery Room/Labs), Boston Museum of Science (EiE); Intel Math (strengthening math content for elementary teachers); Center for Technology and School Change (Strengthening math and science content for teachers; Design STEM projects with teachers); Yale Office of New Haven and State Affairs (Engineers and Scientists in Residence, Speakers Bureau); Tufts Center for Engineering Education and Outreach (Robolab); STC (STC Kits).

Staff development for the project will be coordinated by the Magnet School Director who will contract with outside experts and schedule district personnel to best utilize district and project resources, and coordinate training both within schools, and among schools. Curriculum, unit and project design will also be supported by the District Curriculum Supervisors and the Associate Superintendent for Curriculum and Instruction and coordinated by the Project Director. Heidi Hayes Jacobs will support teachers with curriculum mapping, the structure of unit development and curriculum alignment. The magnet resource teachers will assist in and support the professional development of teachers in the magnet theme areas including STEM

subjects. They will assist teachers in the development of the magnet theme curricula and the development and implementation of STEM projects and units integrated with core subjects and will assist with the curriculum writing and alignment described in the quality of project design. **Objective 6a:** All students enrolled in the magnet schools will have equitable access to high quality education. **Objective 6b:** There will be an increase in parent participation at each magnet school. ***Uses of Key Personnel To Achieve Objectives***: An important aspect of ensuring that all students enrolled in the magnet schools have equitable access to high quality education is to monitor access. Performance measure 6.1 (see previous section) will be reported on each year and monitored by the each magnet school's principal, the magnet resource teachers, the **project director**, and the evaluator. Schools not attaining the measure will take corrective action approved by project and district staff including examination of effectiveness of interventions and academic supports for students in need of greater assistance as well as teacher and administrator effectiveness.

Cultural competency training to support equitable access will be done collaboratively by the Brown University Equity Assistance Center staff with follow-up by the magnet resource teachers. A Parent Participation Plan will be developed at each school by the School Planning and Management Team with the help of the magnet resource teachers. Each school will offer various workshops for parents to better acquaint them with the school program and make them feel welcome.

(a) Plan of operation. (2) … the extent to which the applicant demonstrates: **(iv)** How it will ensure equal access and treatment for eligible project participants who have been traditionally underrepresented in courses or activities offered as part of the magnet school, e.g., women and girl in mathematics, science or technology courses, and disabled students;

In its landmark 1996 *Sheff v. O'Neill* decision, the Connecticut Supreme Court held that the extreme *de facto* school segregation found in Hartford (overwhelmingly black and Hispanic

schools) and its surrounding suburbs (overwhelmingly white schools) violated the state's constitution. Justice David M. Borden of the Connecticut Supreme Court said that the court's majority has effectively struck down, not just for the greater Hartford area, but for the entire state the municipality-based school system that has been in effect in this state since 1909. The court stated: "We conclude that the existence of extreme racial and ethnic isolation in the public school system deprives schoolchildren of a substantially equal educational opportunity and requires the state to take further remedial measures." The result is the state's support of interdistrict choice.

The focus of this project is to provide equal educational opportunity for minority students who have been denied access to a high quality education and to remedy the violation cited by the court. (The Office for Civil Rights of the U.S. Department of Education has classified New Haven's desegregation plan as a mandatory plan for previous MSAP grant cycles.)

An important method for giving students access to high quality education is to encourage transfers from low to higher performing schools as well as improve low performing schools. Therefore, New Haven has one of the most robust public school choice programs in Connecticut. Over the last six years, 2,072 students transferred from low performing Title I New Haven Schools to higher performing schools (5.3% of eligible students). Last year, New Haven had 39 schools that had grades in which students were tested. Fifteen (15) were Title I Schools in Need of Improvement. An additional 14 were non-Title I Schools in Need of Improvement. Of the 10 higher performing schools, 6 are magnet schools. All New Haven students are eligible and encouraged to transfer to higher performing magnet schools, charter schools, or suburban schools (Open Choice).

Equity and Excellence for all New Haven Schools and Students:

The New Haven Public Schools will actively recruit applicants for magnet schools who are underrepresented in STEM fields and programs (members of racial or ethnic minorities, females,

English language learners, and students with disabilities) and ensure their participation in all magnet school activities described in this application. It is essential that these students be exposed to and be successful in mathematics, science, engineering and technology from the beginning of their schooling, so they will have confidence in their abilities and develop interests in STEM subjects. It is also essential that students from underrepresented groups be given all of the prerequisites, especially in elementary and middle school, so that they can enroll and be successful in advanced courses in these areas in high school, an important goal of this project.

All Magnet Schools Assistance Program recruitment materials will make clear to all parents of special education children the full range of choices that will be made available in New Haven's magnet schools. New Haven will actively recruit special education students and students with disabilities to ensure that every magnet school is serving the broadest population of students posible. Each magnet school is working with the Director of Student Services and Special Education to create a special education component that will maximize the possibilities for mainstreaming students, incorporating them as fully as possible into each school's magnet program. New Haven is committed to making all of its magnet schools accessible to students with physical disabilities.

The magnet schools will include English Language Learners (ELLs) in all of its activities. Language instruction for ELLs will reflect the State Board of Education *Position Statement on the Education of Students Acquiring a Second Language*, which affirms that such students: "master the same content and meet the same academic performance standards expected of students whose first language is English." The Supervisor of Bilingual/ESL Programs, and his staff, will work with the project director to ensure their full participation in magnet activities.

New Haven magnet schools do not use academic criteria to select students. Student interest is the only criteria. Once they enter a magnet school, students from underrepresented groups receive

equitable treatment. Differentiated instruction, cooperative learning, heterogeneous classes, and staff development activities: (1) prevent resegregation within the school; (2) counter stereotypes and other biases; and (3) facilitate more positive interactions among diverse groups of students and between staff and students and staff and parents. To insure these important strategies are fully implemented, this project has performance measures to insure that students will be taught in heterogeneous classes, will be exposed to the magnet program the same number of hours per week and will be instructed by teachers who receive the same amount of high quality professional development.

To better understand the role of equity in this project and improve interracial understanding every magnet school staff member will receive training (workshops) from the Equity Assistance Center at Brown University, part of the University's Educational Alliance. For example, to respond with cultural competence to the needs of students from different cultural and linguistic backgrounds, these workshops will draw on the publications: *Leading with Diversity: Cultural Competencies for Teacher Preparation and Professional Development* (Trumbull & Pacheco, 2005) and *The Teacher's Guide to Diversity: Building a Knowledge Base* (Trumbull & Pacheco, 2005). *Leading with Diversity* provides a synthesis of the research and practical knowledge related to cultural competency and is designed to help teachers work more effectively with diverse groups of students.

In addition, the following programs and resources will be used: Race Study Circles are small interracial groups convened to discuss race issues. Over a period of several weeks participants talk about their own experiences, forms of racism, problems related to race and potential solutions, school policies, and related topics. Facing History and Ourselves engages students in exploring racism, prejudice and anti-Semitism. It gives teachers resources and strategies to promote students' development in this area. In Sex Equity Awareness in Career Education workshops participants will discuss: (1) traditional and non-traditional female and

male roles in the world of work; (2) factors which influence career development patterns; (3) factors which limit female/minority pursuit of math/science interests; (4) strategies for reversing this; and (5) resources for implementing these strategies. Facilitators with support from the Brown Equity Assistance Center will draw on training programs and materials including: *Why So Few? Women in Science, Technology, Engineering, and Mathematics* (AAUW); *Equity in On-line Professional Development: A Guide to E-learning that Works for Everyone*.

As part of its larger gender equity focus, the magnet project will support in multiple ways, girls' access to and success in challenging STEM activities. For example, the magnet recruitment teams will pay particular attention to making the STEM-focused magnet schools attractive to girls. Girls' attitudes toward STEM as subjects, as an area of exploration, and as a future career are influenced by, among other things, the existence--or absence--of female role models. Working with, the Education Alliance at Brown and Yale Office of New Haven and State Affairs, the magnet schools will include female mentors and classroom speakers, especially those who represent the students' varied ethnic and racial backgrounds, who have chosen STEM careers and can provide information about the needed educational preparation.

(a) **Plan of operation. (2)** … the extent to which the applicant demonstrates: **(v)** The effectiveness of its plan to recruit students from different social, economic, ethnic, and racial backgrounds into the magnet schools;

The Recruitment Team -- Key to the success of the entire recruitment process are the relationships which the District has already forged among parents, educators, administrators and the community. Because New Haven has 21 magnet schools, it has districtwide procedures and systems in place that will support recruitment in the four new magnets. The New Haven recruitment team has overall responsibility for planning, directing, and coordinating recruitment

activities at the district and school levels. The district team consists of the Project Director, the Recruitment Coordinator and 3 Recruitment Specialists. The team members will be housed at the Magnet School Office. Working closely with each school's stakeholders, the district recruitment team will create print and online applications, brochures, and guidebooks and work with each new magnet school to develop a brand and design a logo. Moreover, the recruitment staff will work with the district Supervisor of Bilingual/ESL Programs to translate all materials into the languages that are spoken by the parents in the district.

The school-based recruitment team will consist of the principal, the school's parent coordinator, and the magnet resource teachers, guided by the school's School Planning and Management Team. Each team will act as recruitment coordinators for its magnet school. Team members include the principal, teachers and other school staff, and parents. Also critical to the recruitment process is each school's Parent-Teacher Association, which will actively recruit parents for the magnet schools program. Further, the project director and the recruitment staff will use the resources of the district's parent involvement program, including the various parent workshops conducted at the district and school levels and parent newsletters and bulletins (electronic and print versions) to inform parents of all school activities.

The Recruitment Plan for the New Haven Public Schools is designed to disseminate magnet school information to parents from every racial and ethnic group both in New Haven and its surrounding suburban communities, and offer assistance to those who need it. All recruitment activities have extensive district and school level activities. District level recruitment activities will be directed and coordinated, for project schools, by the Project Director, the Recruitment Coordinator, and the Recruitment Specialists. The New Haven recruitment plan combines 21st-century mediums and approaches to branding and marketing with traditional media and still-

essential face-to-face communication. As a result, it will reach a broad range of parents, including those who do not have online access at home or at work. Although many of the recruitment strategies described below are part of the district recruitment plan, decision-making at and input from the school level is essential regarding the design and implementation of open houses, magnet fairs, branding, staffing of recruitment events, and the creation of media and other materials.

As soon as the grant is funded and staff hired, work will begin on developing and implementing project-wide and school-specific recruitment plans for the four magnet schools. Each will include clear timelines, staffing responsibilities, descriptions of activities, and target neighborhoods, feeder schools, or parent sub-groups. All school plans must be approved by the Project Director and district recruitment staff who will act as resources during their development. Each school's recruitment plan will be coordinated with district activities.

Using Feedback and Outcomes to Develop Recruitment Activities -- Every month, magnet and school staff will engage in an analysis of recruitment strategies using data such as changes in school enrollments and demographics, the number and diversity of students who apply and then enroll in magnet schools, the attendance at open houses and magnet fairs and the number of hits on the district magnet web site. During the application period, magnet staff will monitor the size and diversity of the applicant pools to modify activities for schools with few applicants or applicant pools that are not sufficiently diverse. Magnet and school staff will develop and use recruitment strategies only after carefully analyzing what would be most effective including the best approaches for different groups and soliciting input from parents, students, and staff. District recruitment team members will, for example, create an online parent-response form to learn about parent insights and concerns that can be used to fine-tune recruitment strategies.

In addition, parent focus groups will explore the magnet programs to be offered and parents' feelings about sending their children to New Haven magnet schools. Focus groups will play a valuable role providing feedback throughout the project that will strengthen all recruitment strategies and make clear to parents that the magnet schools welcome their involvement.

The magnet director will work with the evaluator to ensure that recruitment strategies enable the program to meet its benchmarks and performance measures related to the reduction of minority group isolation and the size and diversity of the applicant pool. The evaluator will work with the district and school recruitment teams to examine the successes of the magnet schools in reducing minority group isolation and suggest areas for improvement. During the recruitment period, applicant pool data will be reviewed weekly to determine the size and diversity of the pools for each school regarding race/ethnicity and gender. Adjustments will be made quickly during the recruitment period (e.g., more open houses or tours in some schools, send more direct mail or email some zip codes or families with children in certain feeder schools). Schools that do not reach their recruitment goals and desegregation objectives will, with the assistance of the magnet director and magnet recruiter, either modify the plan or develop a new one.

The Recruitment Center -- New Haven has a Recruitment Center located at the district office, a location easily accessible to all parents either by public transportation and public highways. It will house the Recruitment Coordinator, three Recruitment Specialists and the project director.

The Recruitment Coordinator will be the main planner and resource person regarding recruitment and the development and implementation of recruitment plans and will supervise the Recruitment Specialists. The Recruitment Specialists will have intimate knowledge of New

Haven and its communities, its residents and its magnet school programs. They will be able to present the magnet programs to their peers in a convincing and persuasive manner.

The recruitment center also houses computers and written materials in multiple languages. The center has hard copies of all online recruitment materials, including application forms, magnet school booklets, brochures describing the magnet program at each school, and a list of common questions and answers about the magnet program and how to apply. Parents will be able to take home a DVD about the magnet schools. They will learn at the center how to access the project website at home, at a public library, or elsewhere, where they can share it with other family members, including children and will have their questions answered about specific magnet programs and will receive assistance, if needed, to complete applications.

The Recruitment Coordinator and Specialists will give presentations both at the Center and at community meetings. They will be trained to assist parents individually in the school selection process, and, most importantly, in the application process (completing and returning the application in a timely fashion). They will keep individual records of their contacts with parents and will follow up with letters, email and telephone calls when necessary. The Recruitment Coordinator and Specialists will also make appointments for parents to visit magnet schools and meet with the magnet staff. A particularly important task is giving individual and group guidance to parents who need assistance before they can make a choice or complete an application, because they find negotiating the school bureaucracy is an impossible task.

The Recruitment Coordinator and Specialists will make presentations about magnet schools and the resources of the center at parent workshops for every feeder school in New Haven as well as at suburban feeder schools in the suburban towns where interest in New Haven magnet schools has traditionally been high.

Magnet Recruitment Training -- The Recruitment Coordinator and Project Director will provide training that will enable school staff and parents on the school-based recruitment team to describe the magnet program in clear, compelling, and consistent ways as well as enable them to develop a magnet school brand and recruitment strategies. Training sessions will also prepare participants to respond to the questions that parents of prospective students are likely to ask during open houses and school tours.

New Haven Magnet Schools' Website and Individual School Websites -- New Haven's website gives detailed information about each magnet school, online applications, open house/tour dates, magnet fair dates, the application process and rules for New Haven and suburban residents, transportation information, directions, and magnet staff contact information. The site will also include links to information about each magnet school. The individual magnet schools will have their own websites containing additional school information. School websites might also include a slide show of student art posted throughout the hall, video of a STEM field trip with students wearing clothing branded with the school logo and colors, or a virtual school tour that enables a person to watch theme-based classroom activities.

Getting the Word Out: Snail Mail/Email, Old Media/New Media

Direct Mail as a Tool*:* New Haven has current mailing lists for its target groups, which it has used, in part, for extensive mailing of magnet information. It updates its lists on a regular basis. After the magnet program begins, the magnet office will send periodic mailings to its prime target groups. The objective is to introduce and inform prospective applicants, and follow-up with families who have expressed interest in specific schools by attending open houses, magnet fairs, calling the magnet office or visiting schools to ask questions about programs.

Print Media and Audio/Visual Media*:* New Haven will use print and audio/visual media to advertise the Citywide New Haven Magnet Fair, the Interdistrict Magnet Fair, Individual Open Houses/Tours Dates for each Magnet School, the web site for online applications, application deadlines, Magnet Office contact information, and school contact information. The *New Haven Register*, the city's major newspaper will be used to maximum advantage (editorial, advertising, etc.). The district also sends press releases to and advertises in smaller community newspapers, such as *The Inner City* (English and Spanish ads), *The Advocate*, and, the *Yale Daily News*. These smaller newspapers maintain wide circulation locally and are closer to the "heartbeat" of the local community than the larger *Register*. New Haven also runs announcements of magnet events on local TV and radio stations. New Haven has produced 30- and 60-second magnet commercials that run on local TV stations, with a link to the magnet website on each TV station's page. The longer commercial plays at New Haven and suburban movie theaters along with the coming attractions. Both commercials are on YouTube.

Social Media: Each school will develop its own Facebook page, which staff will update regularly. It might contain, for instance, a list of upcoming events or the podcast of videotaped workshops on school choices, including magnet schools, which will be held at the recruitment center and at rotating libraries in different parts of the city. Twitter will be especially useful for sending out short program updates. School and magnet teachers and school-based administrators, magnet resource teachers, and classroom teachers will be encouraged to promote their magnet schools by creating a LinkedIn profile of professional information about them.

Personal Email and Email Blasts and Newsletters: At open houses, school tours, individual school-choice counseling sessions, and other recruitment activities, magnet and school staff will request email addresses from those parents who have them and cell phone numbers

from those who text. Magnet staff will follow up with personalized emails responding to questions posed by parents who agreed to such use of their email address. They will also send parents email blasts (along with U.S. mail) about upcoming events, new school selection information, and application deadlines. Magnet staff will also email each school's electronic, multi-color, and clearly branded newsletter to all parents in the midst of the choice and application process and to libraries and faith-based and community-based groups. They will also email New Haven and suburban schools the dates of key district-wide and school recruitment events to add to their weekly/monthly newsletter.

Magnet Fairs as Meeting Ground and Stimulus: Each year, New Haven holds a Citywide School Fair and an Interdistrict Magnet Fair staffed by principals, teachers, students and parents with booths set up to reflect their magnet themes. They answer questions about their programs, invite people to their open houses, and distribute flyers about their unique programs. These fairs will have three-dimensional brochures, and displays and image-rich student work that describe and model the STEM themes and educational objectives of the various magnet schools, as well as videotapes of each magnet school. There will be teachers, administrators, parents, and students available to engage in dialogue with parents and prospective students. Each school's table will also have flyers listing its open house dates; a prominent sign or banner that contains both the school name and its brightly colored logo; and a PowerPoint that runs in a loop with information about the school and pictures of fun, challenging student activities.

Reaching Out to PreKindergarten Programs: The New Haven Public Schools will strengthen its links to pre-kindergarten programs by implementing parent workshops and parent and child joint learning activities to familiarize parents with the magnet programs. In addition, the pre-kindergarten programs will distribute the magnet school literature to the families that they serve.

Open Houses, School Tours, and Shadowing: Each New Haven magnet school will be required to hold at least three open houses and additional school tours in the months immediately after the Citywide and Interdistrict Magnet Fairs. Open houses and school tours will be critical for getting parents and prospective students into the school. Deciding on the primary message, as well as the length of the open house, will help determine which of the possible activities and events will be part of it (e.g., a group tour; a short performance, presentation, or exhibit; a brief film, a PowerPoint presentation, or question-and-answer session). An open house is also a good time to solicit feedback from parents on recruitment materials and their impressions of the schools.

The school-based recruitment team, in consultation with the magnet director and recruitment coordinator, will decide questions related to school tours, such as the role of the tour guide, the route and the things to highlight. Because school tours can be tailored to the needs of a small group of parents, they can meet multiple needs, including restricted schedules. Tours will be conducted in English, Spanish and other languages by district staff and parent volunteers.

Also, each magnet school will, in the period before and after the Fairs, allow students in 3rd grade and up the opportunity to shadow a student for a day. This helps students and parents make informed decisions before they apply to schools.

Linkages With The Community: Many parents have strong ties to their respective religious communities. The churches, synagogues, and mosques in the neighborhoods are frequently a focal point for family activities and parental interaction. These religious institutions will be used as critical meeting places where parents can be presented with brochures and hand-outs as well as joining together to discuss the proposed magnet schools in focus groups.

All public libraries in New Haven and targeted suburban communities will have hard

copies of the resource materials found at the recruitment center. The magnet recruiter will train public library staff so that they will be more familiar with the magnet school program. Library staff will refer interested parents to the recruitment center and show them how to access, using library computers, the project website, with its wide range of recruitment information.

Recruitment specialists, with the cooperation of local merchants, will set up temporary mobile information centers at supermarkets, malls, public housing projects and other places prospective magnet school applicants can be reached to disseminate materials and applications.

Local bus advertising, complete with the school's logo, will help the wider community learn about the magnet program, while building school pride as students and parents see their school name and logo displayed prominently in their neighborhood. Digital billboard will be placed along highways to capture suburban audiences with an announcement of the start of the Magnet Application Campaign. Street Banners in English and Spanish in New Haven and suburban neighborhoods will advertise the Citywide Magnet Fair and the Interdistrict Magnet Fair. The district also mails large posters with dates and locations of district and school recruitment events to over 200 public and private schools in 30 suburban towns and to all New Haven schools.

(B)Quality of personnel. (2) The secretary determines the extent to which (i) the extent to which the project director is qualified to manage the project; (3) Experience and training in fields related to the objectives of the project including the key personnel's knowledge of and experience in curriculum development and desegregation strategies.

New Haven has 35 years of experience in the planning, and operation of magnet schools. Currently, the district has 21 magnets. Therefore, many of those who have helped to successfully implement past desegregation and magnets school efforts will insure the success of this project.

Qualifications of the Project Director (100% FTE):

The Project Director will be a principal with successful magnet school experience, and experience in STEM curriculum development, magnet theme development, teacher professional development, and the creation and implementation of school improvement plans that have increased student achievement. New Haven operates 21 magnet schools. Therefore, New Haven has experienced principals and administrators with the qualifications needed to insure the success of this project.

Specific qualifications will include: ► advanced education degree and State certification as a School Administrator; ► at least five years experience as a principal and three years experience in a magnet school; ► a dynamic instructional leader; a exemplary administrator; ► at least five years experience as a classroom teacher; ► proven ability to manage large projects; ► experience in the development of STEM programs and expertise in the themes that are described for the proposed magnet schools; ► experience and knowledge related to the Common Core Standards and the Next Generation Science Standards; ► Masters Degree in science or mathematics education or equivalent.

The Project Director will: ► manage all aspects of the project; manage all project staff; • ensure that the activities of the magnet school project are continually focused on promoting desegregation; ► assist magnet school principals implement their MSAP program; ► work closely with the District Curriculum Supervisors to coordinate their support for curriculum development; ► work closely with university and other professional development partners to insure their coordination with magnet resource teachers and principals to insure that teachers receive the professional development that is needed to support the programs that are described in this proposal; ► manage, in cooperation with the school district's business director, all fiscal and budget aspects of the project; ► keep all project records; ► file all necessary reports with the U.S. Department of Education; ► coordinate the recruitment/ application process, the magnet schools lottery, and the student selection process

(B)Quality of personnel. (2) (ii) Other key personnel are qualified to manage the project.

The Magnet Schools program will be housed at the District Office. The Project Director will be supervised by the Associate Superintendent for Portfolio and Performance Management.

Dr. Reginald R. Mayo, the Superintendent of Schools, has spearheaded the effort to desegregate the New Haven's public schools through the establishment of magnet schools. Under Dr. Mayo's leadership, 19 of New Haven's 21 magnet schools were developed. Dr. Mayo has been an educator for four decades. He has held the posts of science teacher; mathematics and science department chair; Assistant Principal; Principal; Director of Schools, K-8; Executive Director for School Operations; as well as Superintendent.

Dr. Mayo holds a Masters degree from Southern Connecticut University, a Doctorate from the University of Connecticut, and has taken Post-Doctoral Studies at Yale University.

As Superintendent, Executive Director of Operations, and Director of Schools, K-8, Dr. Mayo has been responsible for overseeing desegregation efforts and magnet school development in New Haven schools for over twenty years. Through his leadership, New Haven's public schools have participated in some of the most innovative reform efforts in the nation. New Haven has more magnet schools than any other Connecticut district, has more students who transferred from Title I low performing to higher performing schools than any other Connecticut district and offers its students a great variety of school choices (neighborhood schools, New Haven magnets, suburban magnets, Project Choice, and charter schools). New Haven's outstanding magnet school and choice programs exist because of Dr. Mayo's vision and outstanding leadership. In addition, Dr. Mayo and New Haven's Mayor, John DeStephano, negotiated one of the first contracts with an affiliate of the American Federation of Teachers that includes an evaluation system that uses student test scores and growth data as a significant factor

in determining teacher effectiveness.

Garth Harries, Assistant Superintendent for Portfolio and Performance Management, is responsible for designing and implementing the New Haven Public Schools' reform plan including the teacher and administrator evaluation and development program. Mr. Harries came to his current position in 2009 after working six years for New York City's Department of Education. As a Project Manager in the Office of the Chief of Staff, Mr. Harries coordinated strategic planning for secondary school reform. While serving as the Chief Operating Officer and Chief Executive of the NYC DOE Office of New Schools, Mr. Harries led the creation of 333 new DOE schools including many magnets. Mr. Harries then became Chief Executive for Portfolio Development, where he developed portfolio planning for New York City schools; and oversaw programs for new schools including magnet and charter schools. Mr. Harries earned a B.A. in Ethics, Politics, and Economics from Yale University and graduated from Stanford Law School with distinction. As the magnet director's immediate supervisor, Mr. Harries will work closely with the director and the principals to monitor the progress of all MSAP objectives and activities. Mr. Harries reports to Dr. Mayo.

Immacolata Canelli, the Assistant Superintendent for Curriculum and Instruction, who works closely with the Project Director, is the supervisor directly in charge of district curriculum initiatives that develop and align new curricula, in all subject areas, to meet revised state standards including the implementation of the Common Core Standards. As the key individual responsible for coordinating all educational programs, she supervises all subject area curriculum resource specialists (the District Curriculum Supervisors) as well as the development and writing of all curricula. Ms. Canelli will ensure the coordination of the district resource staff with project activities through meetings with the Project Director at least twice each week,

through weekly meetings with the District Curriculum Supervisors, and through frequent visits to magnet schools. She reports directly to Dr. Mayo.

Prior to becoming Assistant Superintendent for Curriculum and Instruction, Ms. Canelli served as New Haven's Director of Curriculum and Instruction. She has extensive experience as a curriculum writer, having developed the Reading and Language Arts Curriculum Frameworks for New Haven and curricula for grades 4 and 5. She also has experience as a staff developer and a classroom teacher. She received an M.S. in Reading, a B.S. in Intermediate and Upper Education and a Sixth Year Professional Diploma from Southern Connecticut State University.

William Clark, **Chief Operating Officer,** is responsible for the supervision of the business office, food service, facilities, and operations. Mr. Clark also served as the Director of Labor Relations for New Haven. Mr. Clark received his law degree from Quinnipiac University's and a B.A. from the University of Notre Dame.

Linda Hannans, Business Director has headed the Business Office since 1996 and is expert in all aspects of project fiscal management. Ms. Hannans earned a Bachelors Degree in business economics from Southern Connecticut State University and a Masters Degree in Public Administration from the University of New Haven.

District Curriculum Supervisors: Because New Haven has had successful magnet schools for many years, every Curriculum Supervisor (Science, Mathematics, English Language Arts, Foreign Language, Music and Art) has assisted in the design of magnet school curricula, and in the integration of magnet themes with the curricula of their discipline. A summary of their qualifications appear in the appendix. Please note that the two who will most directly support this project are **Science Supervisor Richard Therrien** and **Mathematics Supervisor Ken Matthews.** Both have over 25 years of experience as educators and have been in their current

positions since 2006 and 2005 respectively. Both have organized, developed, and facilitated professional development and curriculum development in their respective subjects for hundreds of New Haven teachers. Both have assisted in the design of magnet school curricula including the design of the successful 6-12 Engineering and Science University Magnet School as well as the design of the schools described in this proposal.

Magnet School Principals: The principals will have overall responsibility implementing the activities described in this proposal in their schools. They will oversee the school-based magnet activities and maintain open lines of communication with the central office, parents, and members of the community. Each magnet principal is an experienced professional with years of teaching and administrative experience. They are all licensed principals and hold numerous university credentials. Further, they have all been highly rated by New Haven's administrator evaluation and development system. Summaries of their experiences and qualifications can be found in the appendix of this proposal. The Montessori school will be implemented during project year 2. Since it is a new school, a successful principal who is a Montessori educator with science, math or STEM expertise, coursework or experience will be hired.

Deborah Sumpter-Breland, Recruitment Coordinator, (1 at 100% FTE) has been a recruitment coordinator for New Haven's magnet schools since 1999. To a great extent, the success of New Haven's recruitment campaigns have been due to Ms. Sumpter-Breland's extensive experience and her ability to plan and implement recruitment activities that are effective in both in New Haven and its suburban communities. Before she became a recruitment coordinator, Ms. Sumpter-Breland was an English teacher in New Haven for twelve years. She has a Bachelor's Degree in English from Southern Connecticut State University and a Masters Degree in Urban Education from Fayetteville State University. The **Recruitment Coordinator**

will: ► supervise the recruitment specialists; ► work closely with the Project Director on all aspects of student recruitment; ► assist in the development of recruitment literature; ► help parents better understand magnet school choices and complete magnet school applications; ► help plan and attend Open Houses, Magnet Fairs and other recruitment activities. ► work directly with principals and district staff to ensure coordination of school and district level recruitment activities; ► be responsible for all recruitment records and documentation.

Recruitment Specialists (3 at 100% FTE). Candidates must: ► know the New Haven and suburban communities; ► know about the magnet themes and be able to discuss schools' themes with parents and students; ► be able to maintain recruitment records. ► Associate's Degree.

The Recruitment Specialists will: ► help implement previously described recruitment plan; ► help parents understand magnet school choices and complete magnet school applications; ► help plan and attend Open Houses, Magnet Fairs and other recruitment activities; ►visit New Haven and suburban schools to speak with students and parents about magnet programs.

Budget and Purchasing Specialist (1 at 100% FTE) will provide clerical and budget support for the project director. S/he will have accounting, organizational and record keeping skills.

American Educations Solutions (AES) will evaluate **t**his project. For the past 18 years, AES has evaluated 51 Magnet Schools Assistance Program grants. In addition, the AES team has partnered with the Education Alliance at Brown University and the SERVE Center at the University of North Carolina on 10 rigorous MSAP evaluations. For the 2010-2013 cycle AES is partnering with the National Center for Research on Evaluation, Standards, and Student Testing (CRESST) at UCLA on 5 rigorous MSAP evaluations as well as on survey development and analysis. CRESST will perform the rigorous test score study described in the evaluation section of this proposal. The AES MSAP site visit team includes former school administrators.

All have been teachers and have extensive evaluation experience. One was an assistant superintendent, 4 were magnet school principals, 2 were magnet school directors and one an Equity Assistance Center director. The duties of the evaluators are described in the evaluation section.

(B)Quality of personnel. (iii) Teachers who will provide instruction in participating magnet schools are qualified to implement the special curriculum of the magnet schools;

Qualifications of Magnet School Resource Teachers (Year 1, 7 full time; Year 2, 8 full time)

School-based Magnet School Resource Teachers will be hired to work in the 4 proposed magnet schools. In Year 1, when the Montessori School will be in the planning stage, there will be 7 Resource Teachers, one focusing on the new school's planning process and 6 (2 per school) at each of the others; in Years 2 and 3, there will be 2 Resource teachers assigned to each of the magnet schools. At least one Magnet Resource Teacher at each school will be expert in STEM subjects. The other will have considerable STEM expertise as well as expertise in the specific magnet theme.

Minimum requirements for these Resource Teachers will include: ► A highly qualified classroom teacher for at least 5 years with proven ability in STEM subjects. ► Experience with curriculum development in the magnet theme area and (for one resource teacher at each school extensive experience developing STEM curricula) and have previously written curriculum materials, related to the magnet theme (or STEM subjects). ► Have experience in desegregation related programs and/or magnet schools. ► Able to handle staff training responsibilities. ► Have college courses, including graduate courses, in curriculum development, and the magnet theme (for one resource teacher per school STEM education courses or a science or math degree).

Duties and Responsibilities: These master teachers will support all of the school based activities that are described in this proposal. They will assist in and support the professional

development of classroom teachers in the magnet theme areas including STEM subjects. They will assist in the development, with teachers, of the magnet theme curricula and the development and implementation of STEM projects and units integrated with core subjects. They will assist with curriculum alignment, facilitate collaborative planning for teachers, teach model lessons and help in the development and implementation of district and school recruitment plans and activities.

New Haven places its teacher evaluation system in the larger context of the district system for professional development. New Haven uses a clear process for determining teacher effectiveness based on student outcomes, teacher instructional practice, and teacher professional values, to develop for each teacher an individual plan. The teacher learning goals in this plan result in targeted, primarily job-embedded professional development designed to improve each teacher's ability to help improve student learning. For the teachers at the four magnet schools, this process will focus on STEM-related student outcomes, professional practices, and teacher learning goals. Teachers will receive an annual summative rating using a five-part scale (exemplary, strong, effective, developing, needs improvement). Magnet resource teachers must be highly effective with a rating of Exemplary or Strong if they possess special qualifications related to STEM including a degree in STEM subjects. Classroom teachers must be rated Exemplary, Strong or Effective. Classroom teachers with lower ratings will receive extensive professional development and will be continued only if they improve.

(B)Quality of personnel. (iv)… will ensure that its personnel are selected for employment without regard to race, religion, color, national origin, sex, age, or disability;

The New Haven Board of Education's employment policy prohibits discrimination on the basis of race, color, religion, sex, age, national origin or disability. The Board's Affirmative Action Plan recognizes the importance of taking aggressive action to seek qualified applicants for employment

from under-represented groups. The district promotes its non-discriminatory employment policies by insuring that information regarding its Affirmative Action policy and Title IV compliance is included in all publications and advertisements for positions.

New Haven has also made linkages with local teacher training colleges and universities and have encouraged them to place qualified minority student teachers in the school district. The district also monitors internal procedures to be certain that women are given access to administrative positions and policy-making bodies, and it has a self-policing policy on salary levels that assures that all levels are determined by experience and qualifications rather than on the basis of race or sex. The following specific steps will be taken to insure ensure that personnel are selected for employment without regard to race, religion, color, national origin, sex, age, or disability:

► All position announcements will be circulated internally in all New Haven schools. ► Advertisements of openings for magnet school professional personnel will be placed in newspapers which have broad regional or national distribution and which have the potential to reach candidates from a variety of racial and ethnic backgrounds. ► Recruiting trips to colleges with high percentages of minority graduates will be made by district administrators to disseminate information about available positions for minority group candidates in the magnet school program. ► Written materials in Spanish and languages other than English as appropriate.

New Haven currently employs staff who have disabling conditions, and does not discriminate on the basis of disability in the staff selection process. Women have been and will continue to be involved in all Magnet Schools Program activities. The district annually reviews its Sex Equity Plans which contain strategies for insuring that women have access to positions in areas in which they have been traditionally under-represented (such as administration).

(C) Quality of project design. (1) … the quality of the project design. **(2)** The Secretary determines the extent to which each magnet school for which funding is sought will-**(i)** Promote desegregation, including how each proposed magnet school program will increase interaction among students of different social, economic, ethnic, and racial backgrounds.

Promoting Desegregation in a Highly Minority Group Isolated Urban School District

On July 9, 1996 the Connecticut Supreme Court (*Sheff* v. *O'Neill*) declared that racial segregation (whether *de jure* or *de facto*) in Connecticut's public schools violated the state Constitution, and ordered the General Assembly to remedy the disparity between urban schools serving minority and poor students and suburban schools serving mainly white and affluent students. The *Sheff* case and the resulting legislation established the foundation for the interdistrict transfer programs that have become important school reforms in Connecticut.

Students from 27 suburban school districts, with a total population of 68,000 in elementary and middle school grades of which 71% are white, can transfer to New Haven magnet schools for the purpose of reducing minority group isolation through the Interdistrict Magnet School Program, or through Open Choice. For students and their families, there is no distinction between the two programs. Students simply apply to schools that have programs that they are interested in. For this project, students will transfer under Open Choice. Per capita state aid to districts is higher under the interdistrict magnet school program than under Open Choice. Therefore, Open Choice is more cost effective for the State even though this means less state support for New Haven's magnet schools.

This project will build on the district's outstanding record of success with magnets. Since 2001, New Haven has developed 13 magnet schools with MSAP support: five in 2001, two in 2004, four in 2007 and two in 2010. Using the first year of operation as the baseline, every school has reduced minority group isolation through the current school year. In addition, every school is currently

operating as a magnet school. Six are higher performing schools. Three of these schools were persistently low performing Title I schools. These schools have gained 612 white students, many from the suburbs and have reduced minority group isolation from 91.1% to 82.3%. New Haven's successes illustrates that urban districts can create alternatives to neighborhood schools that can be attractive to both urban and suburban families.

The success of New Haven's magnet schools is also important because more than half of the higher performing schools in New Haven are magnets. Of the 10 schools that made Adequate Yearly Progress (AYP) last year (the last year calculated), 6 were magnet schools. The New Haven magnet school model not only increases diversity, but also improves student achievement.

It is New Haven's success with creating magnet schools that can meet the needs of both urban and suburban students and the ability to attract suburban students to its magnet schools that will promote desegregation in this project. For urban districts like New Haven, the first step is to attract a more racially and ethnically diverse population to a school. The next steps are described below.

The four magnet schools described in this proposal will serve students from New Haven and from its surrounding suburban communities and reduce minority group isolation. These schools' programs will be described in a later section of this proposal.

Increasing Interaction among Students from Different Backgrounds

To insure that students from different backgrounds will interact during the course of the school day, New Haven will use heterogeneous classes and cooperative learning strategies. Each is part of a philosophy that helps guide the New Haven Schools: all children can learn and must be given the opportunity to learn the same things together.

Heterogeneous Grouping: Every Class, Every School

Objective 6a: All students enrolled in the magnet schools will have equitable access to high quality

education. **6.1** By the end each project year, for each magnet school, at least 75% (yr. 1), 85% (yr. 2) and 95% (yr. 3) of classes (elementary) and STEM classes (middle grades), will reflect their grade's enrollment for each racial/ethnic group (and gender for STEM classes) by ±15 percentage points.

The first step in insuring the interaction of students from different racial, social, and economic backgrounds is to put them in the same classes, avoiding the use of "ability" as the sole criteria for the organization of classes. Therefore, every magnet school class will have virtually the same racial composition, and nearly the same proportions of high and low achievers, as every other class in its grade and school. In addition, STEM classes will serve as many girls as boys.

Heterogeneous grouping will present challenges to teachers who may believe that having a narrower range of student abilities in classes is better. Therefore, the professional development and support that will be part of this project will be an important ingredient in the success of this policy. Teams of teachers and administrators working collaboratively with the support of the New Haven District Office resource staff will find the most appropriate methods and materials for the groups of students they work with. This will be discussed in the next section.

Assigning students of different racial, ethnic, social, and economic backgrounds to the same classes and making sure that they are in the same learning groups for most of the school day is only the beginning. Getting them to interact as they learn is the next step.

Cooperative Learning: Cooperative learning is a successful strategy to foster interactions among students of different racial, ethnic, and economic backgrounds and to improve student achievement. In cooperative learning, small teams, each consisting of students with different ability levels, engage in learning activities designed to improve their understanding and skills.

Research findings from more than 70 studies have found that cooperative learning improved relations among different racial/ethnic groups, increased motivation and improved attitudes that contribute to greater student achievement (Kohn, 1999), and improved relationships between students with disabilities and other classmates.

In stressing a 21st-century skill like collaboration, the creators of the Common Core standards were responding to the increasing recognition that the ability to work cooperatively is essential preparation for many types of work. The ELA standards include as key features "speaking and listening: flexible communication and collaboration," which teachers will address through structures for student-to-student conferring that are part of the district's Writing Workshop. The Common Core is explicit about the ways in which a standard such as "construct viable arguments and critique the reasoning of others" can be met through cooperative learning groups--in which "students in all grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments" (Standards for Mathematical Practice, #3).

At all four magnet schools, instruction will be inquiry-based, with students together to "solve" open-ended questions and design solutions to them. Collaborative projects, an important part of the curriculum, will teach students valuable skills, such as teamwork and communication, within a STEM context. Participation across all four schools in Engineering is Elementary, will require that students demonstrate the ability to interact with others on their team. In addition, as will be described in the next section, both science and math units will include STEM projects for students to work on collaboratively that will be developed collaboratively by classroom teachers, magnet resource teachers and professional development partners.

C) Quality of project design. (2) (ii) The Secretary determines the extent to which each magnet school for which funding is sought will improve student academic achievement for all students attending each magnet school…, including the manner and extent to which each magnet school program will increase student academic achievement in the instructional area or areas offered ..

Common Core State Standards (CCSS) and Next Generation Science Standards (NGSS):

Connecticut has fully embraced the CCSS in ELA/literacy and mathematics, which New Haven teachers are implementing. New Haven will, as the state anticipates, have its district literacy and math curricula fully aligned to the CCSS by 2013-2014, the magnet programs' first year. In 2014-2015, students will take new fully-aligned state assessments in ELA and math.

Although the Connecticut Department of Education will not adopt the Next Generation Science Standards (NGSS) until project year 2, New Haven will pilot NGSS in the four magnet schools during Year 1. The NGSS framework, which focuses on practices used by scientists and engineers, embeds ELA skills into these practices and is aligned with the CCSS for ELA.

New Haven will use its 21st Century Competencies as a foundation to integrate CCSS and NGSS content standards and performance skills into subject and grade level district-wide standards that would then help set individual learning targets for each student. New Haven's 21st Century Competencies rubric outlines six competencies: Problem Solving and Critical Thinking; Accessing and Analyzing Information; Collaboration and Communication; Creativity and Innovation; Initiative, Self-Direction and Accountability; and Citizenship and Responsibility.

Magnet Standards: Magnet and school staff will develop specific magnet standards that indicate what students will know and accomplish as a result of the school's magnet theme. As a result, when parents and/or students select a magnet school they will have a strong sense of what will be expected and what they will accomplish in the magnet program that goes beyond the basic

district or state standards. The development of specific magnet standards will be tied to the design and implementation of magnet curriculum. Magnet standards will also be aligned with and integrated into the required CCSS, NGSS, state, and local standards. The magnet schools will develop exit criteria based on their magnet standards.

English Language Arts (ELA): The magnet school teachers will make pedagogical shifts that, in aligning their curriculum materials and classroom instruction with the CCSS for ELA, will enhance students' learning of STEM content. Magnet school teachers who, for example, have long had students primarily read literary texts, will have to balance them with informational texts about STEM and other disciplines. Similarly, students in the magnet schools will learn to master STEM-specific vocabulary and build knowledge from STEM texts. The CCSS and NGSS overlap in numerous ways: for instance, in their emphasis on students' needs to synthesize complex information, make an assertion, and defend that claim in writing.

New Haven's Reading Workshop and Writing Workshop (grades 3-5), address all of the strands of the CCSS in ELA. The workshops incorporate mini-lessons to promote active reading or writing, independent reading or writing time (the heart of the workshop), and reflection, responding, and/or sharing. Students learn content-based vocabulary through reading informational texts and doing informational writing that builds on their knowledge of the chosen topic. The workshops support independent reading and writing and student choice of books and writing topics and approaches, while providing direct, explicit instruction, through mini-lessons and teacher/student conferences. Reading conferences with the teacher and conferring with the teacher or with peers about writing address the Common Core Speaking and Listening Standards, while providing time for students to get constructive and positive feedback and for teachers to model active discussions about literature and to provide individualized, diversified instruction to each reader that supports strategic

transfer from one text to another. Publishing (on a school "writing wall" or website) occurs when a completed text is reworked and edited to the satisfaction of the author.

Vocabulary, fluency and comprehension are emphasized. In addition, high quality non-fiction texts are used in every grade, including kindergarten. The magnet schools will have literacy coaches who will work with all PreK-8 teachers and paraprofessionals.

Mathematics: As part of the shift to the CCSS, New Haven is making a district-wide switch to a more rigorous curriculum, Singapore Math in which fewer topics are taught in greater depth with an expectation that each topic will be mastered by all students.

Teaching Singapore Math requires three instruction shifts. The first is focus, which requires teachers to teach what is in the curriculum and CCSS State Standards for mathematics and not teach anything not in the standards. Second is coherence, which refers to instruction that incorporates standards that students mastered the previous year while providing students with the essential knowledge required for mastery in subsequent years. Third, increased rigor refers to: ► fluency, also known as speed and accuracy; ► application of skills to problem solving situations; and ► conceptual understanding, so that students can make connections to big ideas.

Curriculum guides for grades K-8 will include a scope and sequence that outlines where the CCSS standards for each grade will be taught. It also highlights when to use specific best instructional practices. Also included are performance tasks and scoring rubrics. Students will engage in these assessment activities eight times per year. Common Formative Assessments will enable students, parents and teachers to receive data-based feedback concerning how students perform in comparison to all other students in the district in the same grade. Teachers will receive extensive professional development from district and outside experts.

Science: The district will pilot NGSS in the four magnet schools during the 2013-2014

school year, though the NGSS won't be adopted by the state until the following year. New Haven science specialists are revising the district science curriculum to bring it into alignment with NGSS, including, for example, revising a PreK-8 Science program that has been based on an interdisciplinary, inquiry-based approach in order to elevate engineering design to the same level as scientific inquiry. New Haven has already developed materials illustrating the ways in which the current curriculum is consistent with the NGSS and the ways it must still be aligned with NGSS.

Students in the New Haven magnet schools will be expected to master (on the appropriate developmental level) standards related to the three major aspects of science learning included in the NGSS: ► Disciplinary Core Ideas (critical science content); ► Science and Engineering Practices (behaviors that scientists employ to investigate and model scientific theories and processes utilized to design solutions to modern problems, and which strengthen the connections among STEM components in everyday experiences); and ► Cross Cutting Concepts (overarching ideas that bridge disciplinary boundaries, such as Cause and Effect). All students will work on a Science Fair Project--as a class project (grades PreK to 3), in a team of 2-4 students (grades 4-8), or as individual projects (grades 7-8)--that focuses on STEM.

Children in grades K-6 in the magnet schools will use *Science and Technology For Children (STC)*, a complete science program that was developed by the National Science Resource Center (NSRC), operated by the Smithsonian Institution and the National Academy of Sciences. With STC, students engage in investigation and discovery activities using everyday materials along with basic science equipment. All four magnet schools will implement Engineering is Elementary and create additional projects utilizing science topics and mathematics skills to solve engineering problems using the tools (technology) of engineers, scientists and mathematicians.

Social Studies: The New Haven Social Studies curriculum was developed by teams of

teachers from across the district working together to determine essential content and skills as well as 'big ideas' for historical study – essential questions that raise other important questions, have multiple responses, and serve as guidelines for the curriculum. The "curriculum" ensures that instruction is aligned with state standards and assessments by incorporating an inquiry-based approach with research-based instructional strategies drawn from Robert Marzano's *Classroom Instruction that Works* (2003). Grade specific teacher teams developed significant tasks aligned with an essential or 'power' standard for each teaching unit.

The School Change Initiative and Professional Development: The key to student achievement is the teacher. Since launching its School Change Initiative in 2009, New Haven has developed and implemented a nationally recognized reform effort in collaboration with the district's teachers and administrators. A central pillar of this strategy, being supported, in part, by a federal Teacher Incentive Fund grant, is the educator evaluation and development systems**.** In all four magnet schools, an important focus of this initiative will be individualized teacher evaluation and coaching as well as individualized professional learning.

New Haven personalizes the learning of its teachers, not just its students. Through the New Haven teacher evaluation process, school administrators work collaboratively with each teacher to develop an annual individualized teacher learning plan. For teachers at the four magnet schools, this process will focus on student outcomes, including STEM outcomes, professional practices, and teacher learning goals. The teacher evaluation process is itself a form of professional learning. At the annual goal setting conference at the beginning of the school year, each teacher at a magnet school, along with an instructional manager, will select at least two STEM student-learning measures, in addition to other learning measures, develop rigorous goals for each and establish a personalized professional development plan. The end-of-year

evaluation conference includes a teacher self-assessment, a final rating in each area, a summative evaluation rating based on a matrix, and preliminary thinking on professional-focus development for the next year. The teacher learning plan that is an outgrowth of this process will be an important source of targeted, primarily job-embedded professional development that will improve the ability of each teacher to help improve student STEM learning.

Because New Haven emphasizes collaboration within schools, all teachers are expected to work with their colleagues to help identify instructional needs and resources to meet those needs, while magnet resource teachers, coaches and school administrators broker these needs with resources to help teachers improve their practice including formal workshops, and job-embedded professional development including coaching, lesson study and class visitations. This approach leads to a strong professional learning community in each school.

Another vehicle for training will be grade team meetings. During these collaborative planning sessions, which will take place during common planning times, teachers will learn how to develop curricula and STEM projects and align them with the CCSS and NGSS and infuse the magnet theme into units, lessons and projects. Team meetings will occur at least twice per month and will be facilitated by the magnet resources teachers.

By the end of each project year, magnet school teachers will receive at least 30 hours of professional development related to the systemic reforms listed in their school improvement plans and 30 hours directly related to their magnet theme. Magnet theme professional development, specific to each school is described later in this section and in *Priority 4*.

In addition to the project staff and outside consultants, the State Education Department will provide training related to CCSS and assessments. The Connecticut Accountability for Learning Initiative (CALI) provides professional development workshops focusing on data driven decision

making and effective teaching strategies.

Curriculum Mapping to Create Themed Curriculum: Trained by Dr. Heidi Hayes Jacobs, a nationally recognized educator known for her work in curriculum mapping and curriculum integration, teacher teams will be engaged in a continuous cycle of curriculum mapping, with each map providing an overview of each STEM or magnet theme unit's overarching goals, concepts, essential questions, content, skills, methods of assessment (including those associated with the CCSS, NGSS, and magnet standards), and lists of resources. As part of this planning process, teachers will: ► spiral curriculum concepts and skills to support deeper student understanding; ► integrate CCSS standards into each curriculum map; and ► develop rubrics and indicators that are likely to contribute to higher quality STEM and magnet-theme related projects.

Curriculum mapping will be essential to the magnet program's strategies for supporting teachers in making the pedagogical shifts that the CCSS and NGSS standards require. Once the curriculum map is developed for each subject, the units of study will be written. Each school will have a design team (teachers from each grade), guided by the magnet resource teachers, develop units and lesson plans for each curriculum component for the entire school. Units and lessons will be written by the design teams and by teachers during summer and after school curriculum development sessions and grade team meetings (common planning time). School and magnet staff will edit the units, which will be posted on the district's website so that all teachers in the magnet schools, as well as parents, can have easy access.

Each project year, developed units aligned to CCSS and NGSS and magnet standards, will be peer reviewed. Students will receive magnet theme instruction, including peer reviewed units, for at least 3 (year 1), 6 (year 2) and 10 (year 3) hours per week.

Differentiated Instruction: Empowering Teachers to Increase the Achievement of All Students

Differentiating instruction means creating multiple paths so that students of different abilities, interest or learning needs experience equally appropriate ways to absorb, use, develop and present concepts as a part of the daily learning process (Tomlinson, 1999, 2001, 2003). It allows students to take greater responsibility and ownership for their own learning, and provides opportunities for peer teaching and cooperative learning. In preparation for differentiating, the teacher diagnoses the difference in readiness, interests and learning styles of all students in the class. Differentiation begins by varying the content, processes or product for each group in the class. As the teacher becomes more proficient using these techniques, differentiation can occur at all 3 stages of the process. The essential curricula concepts will be the same for all students but the complexity of the content, learning activities and/or products will vary so that all students are challenged and no students are frustrated. Differentiated instruction supports CCSS pedagogical shifts in ELA and math by advocating "teaching up," rather than watering down.

Improving the Academic Achievement of Students in Need of Greater Assistance

Students who have not yet achieved proficiency on standardized tests will be given additional support. For example, for literacy, Response to Intervention (RTI) is used. RTI provides services and interventions to students who struggle with learning at increasing levels of intensity.

New Haven's first step to intervention is to assure that all students receive a high-quality instructional program (Tier I of RTI) with curricula aligned with state standards and clear benchmarks and grade level expectations. Staff closely monitors student progress at each stage of intervention and use this data to make decisions about the need for further instruction and/or intervention. Tier 2 includes more intensive, small group, targeted instruction. The level of support increases by reducing the teacher-to-student ratios. These groups are flexible with constant mobility.

Tier 3, includes even smaller groups, generally one to three students, with the instruction broken into more discrete instructional skills.

New Haven teachers and principals have been trained in Data-Driven Decision Making. All schools have data teams for every grade and content area, and all teachers meet for a minimum of 2 hours per month to analyze school and individual student data. In addition, magnet schools will use the following research-based programs to address various student literacy needs: ► The Mondo Bookshop: Readers' and Writers' Workshop (K-8). ► Modified Reading Recovery Intervention Program (gr. 1-2); ► Leveled Literacy Intervention (K-2► Intervention by Design (grades 3-5). ► Plugged In to Reading (gr. 3-8). ► Wilson Reading System (gr. 6-8 students with decoding and spelling difficulties); ► Achieve 3000 (gr. 6-8 students with comprehension difficulties); and ► System 44 (gr. 4-8).

English Language Learners (ELLs): The magnet schools will include English language learners in all magnet activities as well as strong ESL/bilingual education programs that reflect the State Department of Education's English Language Learner Framework. The magnet schools' integrated theme-based curriculum and the integration of literacy learning into all content areas that is fundamental to the CCSS will provide ELLs with multiple opportunities for stimulating language input as they master challenging content. The magnet schools will coordinate instruction by bilingual, ESL and regular classroom teachers and train bilingual and ESL teachers to fully support all magnet activities.

In 2010, New Haven implemented Individualized Language Development Profiles to provide guidance to all classroom teachers on the specific learning needs of ELLs and provided professional development to enable teachers to implement a more personalized ELL learning experience. Additional professional development will include: ► focus on mathematical (or

scientific) discourse practices (e.g., explaining, conjecturing), rather than on a simplified view of language ► use, beginning in the early grades, of science as a motivator to encourage ELLs to learn both content knowledge and skills and academic language in subjects that require specialized vocabulary, sentence syntax, and academic discourse.

The Unique Programs of the Magnet Schools

In addition to the previously described core curriculum, each magnet school will have features not shared with other New Haven schools. All four schools will use Engineering is Elementary, Robolab and have Discovery Room/Labs for STEM projects, demonstrations and experiments to supplement Science and Technology for Children (STC) Kits. All will have teacher created units, aligned with Common Core State Standards (CCSS) and Next Generation Science Standards (NGSS) that integrate the school's specific magnet theme with science, mathematics, engineering and technology. Each of these units will include a STEM project. Extensive professional development will support the creation of these units and projects.

Engineering is Elementary (EiE), is a research-based, standards-driven, and classroom-tested curriculum that integrates engineering and technology concepts and skills with elementary science topics. Students solve hands-on engineering design challenges working in teams to apply their knowledge of science and mathematics and use their inquiry and problem-solving skills. Through EIE, students engage in the engineering design process, apply science and math to engineering problems and understand the central role of materials and their properties in engineering solutions. EiE includes 20 units tied to 20 science topics taught in elementary schools. Five units are most appropriate for grades 1 and 2. Fifteen units are most appropriate for grades 3-5. By the end of the 5th grade, all students, will have experienced all 20 units. Each unit represents between 6 and 8 hours of classroom time. Professional development will be provided by the Boston Museum of Science.

EIE is just the beginning for the four magnet schools. Working with the Connecticut Science Center, the Center for Technology and School Change and the magnet resource teachers, classroom teachers will create STEM units, lessons and projects that integrate their magnet theme, the CCSS and the NGSS, are project based, use the 5E model of Inquiry and the engineering design process.

The Center for Technology and School Change (CTSC) at Teachers College, Columbia University will provide professional development for all four magnet schools in which teachers will design and implement STEM projects that integrate science, math, engineering and technology concepts. As students work on these projects, they will learn to think like STEM professionals in the way they approach problems and plan solutions for those problems. They will apply the conceptual and procedural skills they have learned in their mathematics and science lessons, incorporating the technologies used by professionals in SETM areas and using the engineering design cycle: ask, imagine, plan, create and improve. CTSC professional development will increase teachers' knowledge and skills in four key areas: 1) core math and science content and concepts based on the CCSS in Math and NGSS; 2) the design of interactive, student-centered STEM projects and learning environments; 3) use of state of the art, real world technology to enhance math and science; 4) use of formative assessment and data analysis to better understand student knowledge and skills.

The Connecticut Science Center (CSC) will collaborate with school and district staff to design Discovery Rooms/Laboratory's in each magnet school and will also provide professional development in inquiry (5E Model) and project based learning (PBL) as well as science content and the NGSS. The Institute for Inquiry deepens teacher's understanding of inquiry in the classroom and models the concept's application to science and other subjects. Participants will learn the inquiry-based skills needed to meet the objectives of Connecticut's new science framework and the NGSS. An addition focus will be how teachers can utilize the new Discovery Rooms for STEM projects.

Intel Math provides 80 hours of professional development in mathematics, co-facilitated by a practicing mathematician and a mathematics educator. It strengthens the mathematics content training of elementary school teachers and places emphasis on deepening the teacher participants' understanding of core K-8 mathematics concepts. It will be used for all four magnet schools.

STC training will not only show teachers how to use these science materials, but also strengthen science content knowledge and explore the following topics: Integrating Literacy Strategies into Science Instruction; Getting Started with the Next Generation Science Framework; STEM and the Next Generation Framework; Engineering in the Classroom: Opportunities for Integrating Across Your Curriculum; Implementing STEM in Your Classroom with STC.

The Yale Office of New Haven and State Affairs, at Yale University, will help the magnet program develop a speakers bureau of local STEM professionals, including Yale faculty and graduate students, to provide mentoring and career awareness for both teachers and students. These "scientists and engineers in residence" will help teachers with STEM project development, curriculum unit STEM integration and implementation, and speak to students. The *Robolab* curriculum, developed by the Tufts University Center for Engineering Education and Outreach, introduces primary school pupils to the world of Control Technology. Tufts will assign an engineer to mentor teachers as they engage students in *Robolab* activities.

Each school will have a STEM Discovery Room/Laboratory where students will explore STEM concepts through hands-on learning and exploring. The lab will house materials for Robolab, Engineering is Elementary, laboratory experiments and STEM projects.

Although the schools will have similar professional development, they will have very different curricula. Celentano's focus will be Biotechnology, Health and Medicine. Quinnipiac's Real World Math will explore STEM through the use mathematics in six real world themes. The

21st Century Communications Magnet and Lab School will explore STEM through the lens of communications. The Montessori School integrates Montessori pedagogy with STEM.

Celentano Biotech, Health and Medical Magnet School (Grades PreK-8)

To prepare students for future explorations in medical, health, biotechnology and related STEM professions, this program will stimulate and challenge students through an interdisciplinary introduction to medical arts while integrating rigorous hands-on opportunities to explore medicine, health, biotechnology, science and STEM.

Theme Description: The theme of the medical arts – medicine, health, and biotechnology – will be integrated into all subjects. Students in grades 3-8 will develop and present several "case studies" or projects each year. They will use inquiry, the engineering design process and project based learning. Through these projects, students will define a problem and formulate a question in the area of medicine, health, biotechnology, or the environment; conduct background research using CCSS-aligned literacy skills for reading informational texts and writing non-fiction; collect and analyze data using CCSS-aligned mathematics skills; and communicate results and present conclusions using a variety of media. Partners from the community (e.g., students from STEM oriented magnet high schools) would be involved as mentors and facilitators for students. Professionals from the fields of medicine, biotechnology, and public health will visit classrooms to speak with students about their work. Younger students will be introduced to the prerequisite skills needed to solve and present case studies and projects in the course of exploring the medical arts though interdisciplinary units and lessons, and will solve developmentally appropriate theme related problems. Engineering is Elementary will be used in grades 1-5 to supplement teacher created units that will integrate medical arts with the core curriculum. Grades 6-8 will focus on more complex year-long case studies. Eighth graders

will do a capstone project related to the magnet theme that will include all elements of STEM.

A technology/medical lab/Discovery Room will provide early tactile experiences (for the early grades), a fully equipped laboratory for all grades, and hands on technology such as interactive whiteboards and online simulations using iPads. Field trips to local hospitals, research labs and museums will complement units of study.

Examples of how the magnet theme might be developed within the subject areas:

In social studies, students will focus on the impact of diseases and medical issues on human, animal and plant populations throughout history. As they study world civilizations, they will look at the impact of advances in medical technology (drinking water, refrigeration, sanitation, food safety, nutrition, xray machines, etc.) and study cause and effect relationships. They would read nonfiction articles and books about the changes in human health over the ages.

In science, students will spend time on investigations involving health, medicine and biotechnology. For example, students will study, in life science, particular organisms (e.g., butterflies, mice, fish, FAST plants), in depth, using a variety of resources and tools to examine their health over time. Students will read and write nonfiction and fiction with a focus on gathering information related to medicine and health and use the it as the basis for their long term case studies or projects. In physical science, they will not only study the chemistry of life processes and functions, they will also examine the technology of medical inventions, using x-rays as the basis for understanding light, for example, and pacemakers for understanding electricity. Specific biotechnology units would come from published materials (such as BioScience Training Academy, BioEd online) and from curriculum development with partners.

In mathematics, students would use examples from health and medicine to examine data and numbers. For example, they may calculate their total energy use per week in caloric input

and output in seventh grade science, and then use their pre-algebra skills to conduct statistical analysis and display graphs of their data. In a lower grade math class involving number sense, they may simply keep track of positive and negative changes in health of their family as related to a factor such as temperature. A key feature of the school will be a combined technology/ medical lab providing essential early tactile experiences as well as hands on technology such as interactive whiteboards and online simulations.

Professional Development --The following were previously described: Connecticut Science Center, Boston Museum of Science; Intel Math ; Center for Technology and School Change at Teachers College, Columbia University; Yale Office of New Haven and State Affairs; Tufts Center for Engineering Education and Outreach; STC training. In addition, Yale University New Haven Hospital will assist in customizing professional development on medical careers for all teachers. The CURE (Connecticut United for Research Excellence) will provide partnerships and mentoring from local biotechnology firms at Science Park and other locations.

Quinnipiac Real World Math STEM School (K-4)

The Real World Math STEM School will serve to inspire a love of mathematics through "worlds of math" thematic units that incorporate mathematics, science, engineering, technology, and the arts with a special focus on applications and problem solving.

Theme Description: Each world will be presented in an interdisciplinary unit, for each grade, which will be aligned with CCSS in mathematics and English and NGSS, will focus on a real-life application of mathematical concepts. Throughout, students will read relevant fiction and informational texts, write about their project activities, and integrate the arts and technology. The worlds of math to be explored will be:

The Constructed World: In the constructed world, children will use Engineering is Elementary

(EiE), previously described, which fosters engineering and technological literacy.

The Financial World: In the financial world, lessons based on *The National Standards in K-12 Personal Finance Education,* which delineate the personal finance knowledge and skills students should possess, will be integrated with STEM. The ultimate goal is that students develop responsibility for their personal economic wellbeing. Following the Common Core Standards, the school will use the University of Minnesota's *Youth in Money* curriculum that emphasizes the use of activities around children's literature to promote financial literacy. Some examples include: Students in grades K and 1 will learn about U.S. Money. They will create their own money system, have jobs in the classroom to earn class money and have a class bank for savings. They will determine how much of their class money to save and how much to spend. Students in grades 2 and 3 will learn about costs and budgeting by creating a budget for food or for the materials needed for their projects. They will start banking and will work with actual bank partners to set up bank accounts. Students in grade 4 will study other monetary systems and will compare the value of U.S. money to that of money in other countries. They will learn about investing and will engage in the Stock Market Game and read books related to the Finance Theme such as the *Money Savvy Kids Club Series*.

The Geographic World: In the Geographic World, students will study interdisciplinary Social Studies and Technology lessons focused on math applications of maps and globes. To jumpstart these lessons and activities, the *Google Maps and Google Earth: Math Maps* curriculum will be used. *Math Maps* will be a great way for students to see examples of mathematics in the real world. Teachers will have access to the *Math Maps* curriculum to integrate these interdisciplinary activities effectively. Higher level thinking skills, such as analysis, synthesis, and creativity are encouraged as well as technology skills and social learning.

The Physical World: In the physical world, math will be integrated with science, engineering and technology as teachers present interdisciplinary lessons for grades K-4 around chemistry, physics and motion. For example, K-4 students will use a hands-on approach to learn basic physics concepts through interdisciplinary units on how forces affect motion. Mathematics will be integrated as students complete projects around see-saws, race cars, marbles, falling dominoes, levers and pulleys, friction, and gravity. While kindergarten and 1st grade students learn about, measure and build simple machines, circuits to activate fiber optic lighting and radios, 2nd and 3rd grade students are building model cars to race and learning the laws of motion and physics. They are studying the playground and how things work and are building Ferris Wheels and Roller Coasters in the school's Discovery Room/Lab. In fourth grade the students will design a playground and make a prototype using their STEM skills.

Many mathematical concepts are involved in the study of chemistry include balancing equations, measurement, sorting, and comparing 2 and3-dimensional shapes and solids. Chemistry will be hands-on and include topics, by grade, such as: K - crystals; grade1 - bubbles; grade 2 - chemical reactions; grade 3 - bases and acids; and grade 4 - slime.

The Creative World: In the creative world, art and music teachers will incorporate science and mathematics into their lessons, implementing joint projects with regular classroom teachers. Each project will be supported by a 2 week artist residency. Topics include 2 and 3 dimensional shapes and solids, angles, perspective, light and sound waves, musical measures, tempo and pitch. This will be supported by the Design Connections Partnership **(**DCP).

World of the Future: World of the future encompasses mathematical activities integrated with the *Robolab* curriculum. Children will first build their invention, create a program for it using ROBOLAB, a programming language, and download their program using an infrared transmitter.

Their creation will interact with its environment. Third and fourth graders will learn about securing their inventions through patents using the U.S. Patent Office curriculum.

Professional Development: The following were previously described: Connecticut Science Center, Boston Museum of Science; Intel Math ; Center for Technology and School Change at Teachers College, Columbia University; Yale Office of New Haven and State Affairs; Tufts Center for Engineering Education and Outreach; STC training. In addition, The Design Connections Partnership **(**including the Architecture Resource Center, Yale University, the New Haven Planning Department, and the New Haven Museum & Historical Society) will provide training and mentorships for teachers showing them how to use architecture and design as problem-solving tools allowing students to apply math and science they have learned.

The 21st Century Communications Magnet and Lab School (K-4)

In this lab school for the Southern Connecticut State University's (SCSU) School of Education teacher preparation program, 21st Century Global Communications will serve as the integrating context for the study of Science, Technology, Engineering and Mathematics (STEM). Students will study communication's impact on science and history through school-wide themes.

The first will be Communications Inventions and Ideas in which students will study the great communications inventions from writing implements, to the printing press, to the telegraph and telephone, to the computer and the Internet. For example, in their engineering programs, kindergarten students will start with string telephones and then design circuits. In grades 3 and 4, students will design and develop a telegraph system, will learn Morse Code and will learn about the science of GPS systems through STEM projects. The second school wide theme will be How We Communicate. Integrated with the English language Arts and with science, math and the arts, students will study both verbal and written communication. The third school wide theme will be

How Communications has Changed the World. This theme will relate to social studies and to how the science of communications has changed the way we live. The fourth school wide theme will be The Future of Communications. Students will use their knowledge of engineering, technology, science and math to explore the communications of the future at all grade levels. At the end of each theme, students will exhibit or present a project.

A unique feature of this school will be that students will be exposed to four languages and their associated cultures through an exploratory program through second grade. Students will then select one of the languages as a focus of study during third and fourth grades. The four languages offered will be Spanish, Chinese, Arabic, and American Sign Language.

The magnet theme will be integrated with core subjects through units within their four school wide themes with a major focus on literacy and STEM subjects. In addition to the integrated themes, the school will offer a STEM Discovery program for primary students (K-2) through the Discovery/Room Lab, where students will explore science, math and engineering concepts through hands-on learning and exploring. Students in grades 1-5 will learn through the previously described Engineering is Elementary Program. During a once a week period, Communications and/ STEM related mini-courses involving STEM projects will be taught.

Professional Development: The following were previously described: Connecticut Science Center, Boston Museum of Science; Intel Math ; Center for Technology and School Change at Teachers College, Columbia University; Yale Office of New Haven and State Affairs; Tufts Center for Engineering Education and Outreach; STC training. In addition, because this is a laboratory school for Southern Connecticut State University, there will be many opportunities for professional development for teachers. The SCSU faculty is expert in core pedagogical and content knowledge including science and mathematics as well as communication, technology

and problem based learning. They will supplement the previously described professional development by supporting teachers in the creation of STEM/Communications units. All magnet school teachers will be trained in the principles of Universal Design for Learning (UDL) so that they can harness the power of the school's state-of-the-art technology. The school will serve as a laboratory for SCSU undergraduate and graduate students preparing to become teachers, particularly in urban schools. The school will be an incubator for studying best practices.

New Haven Montessori Magnet School (Grades PreK-6)

The New Haven Montessori Magnet School will offer a Montessori program for primary through middle school students with a special focus on STEM. Students will be actively engaged in hands-on learning, a key factor in Montessori and STEM learning. The specialized Montessori curriculum integrates the study of science, math, geography, history, English, art and music and if implemented through this proposal will also integrate engineering and technology geared to the development of the child. The first year of the MSAP grant will be a planning and training year for the Montessori program. The school will begin with four and five year olds, in 2014-15, and then increase by one age level each year. Therefore, two age levels will be implemented during the three year grant period. Other age levels will be implemented by the New Haven Public Schools, with local funding, after the grant period is over.

Montessori schools are divided into multi-age classrooms. Their *prepared environments* introduce an uninterrupted series of learning passages, a continuum. A Montessori classroom is designed to enable children to explore qualities of materials through various tasks which induce thinking about relationships, and encourage interaction of students to build social relationships through cooperative learning. The logical sequential nature of the prepared environment provides orderly structures that guide discovery, so important in the STEM areas.

Montessori Primary Program (ages 4-6): For this age group, five distinct areas constitute the prepared environment. *Practical Life* enhances the development of task organization and cognitive order through self care, care of the environment, exercise of grace and courtesy, and coordination of the physical environment. Language Arts include oral language development, written expression, reading, the study of grammar, creative dramatics, and children's literature. Basic skills in writing and reading are developed through the use of sandpaper letters, alphabet cut-out and various presentations allowing children to link sounds and letter symbols and to express their thoughts through writing. *Cultural* exposes the child to basics in geography, history, and life sciences, music, art and movement education are part of the integrated curriculum. At the New Haven Montessori School where STEM is a key ingredient of the magnet theme, there will be a focus on the areas of *Sensorial,* which will enable the child to order, classify and describe sensory impressions in relation to characteristics such as length, width, temperature, mass and color and *Mathematics,* which makes use of world-renowned manipulative materials to enable children to internalize the concepts of number, symbol, sequence and operations. *Engineering* will be an additional prepared environment through the Discovery Room/Lab and will integrate the math, engineering, technology and science learning through STEM manipulative materials developed specifically for this program at the Hartford Science Center. Through the use of hands-on science and engineering materials, students will see how math and science is interrelated through engineering.

Montessori Lower and Upper Elementary Program (ages 6-9 -and ages 9-11) (grades 1-3 and 4-6): The lower elementary program offers a continuum built on the preschool experience. The environment reflects a new stage of development and offers integration of language, science, geography, history and the arts. Use of timelines, pictures, charts, and other

visual aids will provide a linguistic and visual overview of the first principles of each discipline. Mathematics will be presented with concrete materials that simultaneously reveal arithmetic, geometric and algebraic correlations. Emphasis is on open-ended research and in-depth study using primary and secondary sources as well as the latest technology. Field work will make use of community resources such as the Connecticut Science Center.

The school will align the Common Core ELA and Mathematics Standards and the integrated approach to STEM in the Next Generation Science Standards with Montessori curriculum and instructional practice. Children will interact with the hands-on science and engineering materials in the Discovery Lab and students in the Lower and Upper Elementary levels will interact with the problem in Engineering is Elementary.

Teachers will use differentiated instruction and cooperative learning strategies as integral to Montessori teaching and will provide scaffolding for students in need of supportive instruction. Support will be provided for English language learners and children with disabilities.

Professional Development: The following were previously described: Connecticut Science Center, Boston Museum of Science; Intel Math ; Center for Technology and School Change at Teachers College, Columbia University; Yale Office of New Haven and State Affairs; Tufts Center for Engineering Education and Outreach; STC training. In addition, teachers will be trained by **The Montessori Training Center of New England** an Association Montessori International training center. This intensive training will take place during the planning year (project year 1). Training, a three year process, will involve teachers in after school, Saturday, and summer professional development. Teachers will also be supported by on-site coaching. Upon successful completion of the training, teachers will be awarded AMI diploma. (After the three year grant cycle, the New Haven Public Schools will support this school with local funds.)

C) Quality of project design. (2) The Secretary determines the extent to which each magnet school for which funding is sought will: **(iii)** Encourage greater parental decisionmaking and involvement

The meaningful involvement of parents in the education of their children is not only desirable but necessary in supporting academic achievement. As the MSAP Center confirmed in the March 2011 edition of the Magnet Compass, "Current research on family engagement clearly indicates a high correlation between family and community involvement and student academic achievement. Additionally, studies have shown that this correlation persists despite students' economic or racial and ethnic backgrounds."

Magnet Schools Parents' Program

Every magnet school is required to develop a Parent Involvement Plan, as part of its School Improvement Plan, which must describe objectives and activities to address the five areas, in italics, that follow. After each area are descriptions of how district resources help each school better meet the needs of their parents. Schools use district initiatives as springboards for school based activities.

The basic obligations of parents *refer to the responsibilities of families to ensure children's health and safety; to the parenting and child rearing skills needed to prepare children for school; to the continual need to supervise, discipline, and guide children at each level.* ► The new Citywide Library of Workshops, part of Parent University, will be a collection of citywide workshops for parents offered by agencies, schools, foundations, organizations etc., so that parents learn about all the services and workshops offered throughout New Haven. Each magnet school will have similar workshops to insure that this information is available to their parents. ► The five state-funded Family Resource Centers in New Haven, each in a different neighborhood, provide parents and students with services and workshops; part of their focus is young families. Each magnet school will hold joint parent activities with the center closest to their school. ► A key element of the New

Haven School Change Initiative, Boost! complements improvements in schools by "wrapping around" the school day with supports and services that have been shown to contribute to academic success. A partnership with the City of New Haven and United Way of Greater New Haven, Boost! brokers connections between schools, community-based providers, and public agencies to support children's overall development. Each magnet school will be part of this initiative.

The basic obligations of schools *refer to the communications from school to home about school programs and children's progress.* ► The student handbook and the parent handbook, distributed to all families through the school orientation process, include detailed descriptions of relevant policies. ► Each school will communicate to parents about the changes in their child's curriculum as a result of the CCSS and the NGSS through school based workshops, newsletters and presentations during parent-teacher conference days. ► The district website includes details on significant processes, such as student registration, which have been adjusted and updated with parent input. ► New Haven facilitates at least two in-person parent-teacher conferences per year and track attendance. Parents may also, at any time, request a meeting with a teacher or principal. ► Magnet staff will work with the Bilingual/ESL Supervisor to translate all materials into the languages that are spoken by the parents in the district. ► Each school will familiarize parents with the Parent Portal, launched in January 2013, which gives parents access to real-time information about their child's progress, including student attendance, assessment scores, disciplinary activity, and weekly homework assignments. ► Detailed information is available for each school, including state assessment results, item-by-item responses from teachers, students and parents on the Learning Environment Survey, and district-wide teacher ratings. The district works to make access to this data easy, giving students, parents, and educators anytime access to school computer labs or to community resources (for example, through partnerships with local libraries). ►Each school will

conduct awareness campaigns to renew parent understanding of the information available to them. To ensure equitable access to digital resources, each school will provide technical support that is tailored to the needs of their parents. In cooperation with the New Haven Public Library, each school will offer a number of hands-on technical training sessions to facilitate access to and understanding of the district's student information systems. Since not all families have computers, the district has partnered with the New Haven Public Library to offer access to computers, internet, learning content and other technology.

Parent involvement at school *refers to parent volunteers who assist teachers, administrators, and children in classrooms or in other areas of the school.* Parents will work in the school as classroom assistants or tutors or in other capacities determined by the school based management team at each school. Parents will be active participants in each school's recruitment process: in focus groups that help shape decisions about school branding, logo, and materials, and as ambassadors for the school at magnet school fairs and open houses. Parents will help with the summertime Kindergarten Canvass which involves a door-to-door canvass to visit incoming kindergarten students and their families, answer questions, distribute books, welcome NHPS families, introduce new parents to the school system, and provide all parents with tools to help their children succeed in school.

Parent involvement in learning activities at home *refers to parent-initiated activities or child-initiated requests for help, and ideas or instructions from teachers for parents to monitor or assist their own children at home on learning activities that are coordinated with the children's class work*, In addition to parent conferences and Parent University, various parent activities at each magnet school will both familiarize parents with their child's school activities and illustrate ways for them to support their child's learning, especially in literacy and STEM subjects. Among these are: ► Parent Inquiry Nights; ► Exploration and Innovation Nights; ► Family Math, Family Science,

Family Engineering, and Family Literacy Nights.

Parent involvement in governance and advocacy *refers to parents' taking decision-making roles in the PTA/PTO, advisory councils, or other committees or groups at the school, district, or state level.*

► Parent leadership training by the magnet resource teachers will support parents in developing the understanding and skills to play an active role in school and district governance bodies. ► Parents are members of each School Planning and Management Team, Personnel Selection Committee, and both the district recruitment team and each school-based recruitment team—all groups that make important decisions about the functioning of the schools and their magnet programs. ► They provide invaluable input through membership in the Parent-Teacher Associations. ► Public board meetings happen twice a month, with policy discussion and the active participation of parents in every meeting. ► New Haven's Citywide Parent Leadership Team meets once a month, with district participation, to discuss key policy issues of interest to parents.

The Parent Involvement Plan for each magnet school will address each of the five areas described above with activities in each of the categories. The plan must clearly explain how all aspects of the specific school program will be communicated to parents. Finally, the plan must include components to make it easier for parents who do not live near the magnet school to become fully involved in the life of the school.

There must be both staff training and parent training for each of the five categories listed above. Professional development for all administrative, pedagogical, counseling, and other school-based employees related to communicating with and collaborating with parents (as educational partners; as members of school governance and other teams) and to engaging families of diverse backgrounds will be incorporated into each magnet school's professional development activities as part of the school's professional development plan. Staff training will

be facilitated by the magnet resource teachers and the New Haven resource staff.

(d) Budget and resources. **(1)** The adequacy of the facilities that the applicant plans to use.

Each of the magnet school facilities are more than adequate to accommodate the students enrolled in the buildings, as well as the proposed specialized magnet instructional programs. Each building has sufficient capacity to accept the numbers of students needed to achieve its desegregation goals. Wireless Internet, is available for each classroom in order to support interactive white board technology, computers, student technology response systems and other grant activities. Each school will add a Discovery Room/Laboratory supported by grant funds, to implement many of the science and engineering activities described in this proposal. These rooms will allow New Haven to better align each school's magnet program with emerging science and engineering practices contained within the National Research Council's Framework for K-12 Science Education (Next Generation Science Standards) as students engage in STEM lessons, activities and projects. The STEM Discovery Rooms will also incorporate STEM-related career elements that connect to student activities and the curriculum and that provide platforms for instructional use by teachers. A brief discussion of the facilities of each proposed magnet school follows.

The Celentano Biotech, Health and Medical Magnet School (PreK-8) is in the Prospect Hill neighborhood of New Haven, within walking distance to Prospect Gardens Park. The three-floor, 86,986 sq. ft. complex is comprised of a main building (80,602 sq. ft.) and an attached, smaller building (6,384 sq. ft.). The small building houses a special education room, a life skills classroom and kitchen, computer room, teacher work areas and offices. The main building houses the school's twenty-four classrooms, which are located on the outside walls of each of the three floors. A large, centrally located gymnasium with amble storage and girls and boys locker areas is positioned on the first floor. The building also boasts a two-floor library, music room with a stage, computer

/technology room with server room, a cafeteria with an accompanying kitchen and an art room. The large, dedicated science classroom is well-suited to support the school's medical theme. The science classroom will be converted to a lab, and a STEM Discovery Room will be added.

The Quinnipiac Real World Math STEM School (K-4) will be housed in the current two-floor Quinnipiac School. The school is located at the end of a cul de sac in a residential area. The building features a large, centrally-located library that serves as the heart of the school. Fourteen large classrooms are divided between the two floors. Further, each classroom is large enough to house SMART Tables, with 42" LCD multi-touch interactive screens to support students' collaborative math instruction, problem-solving and data analysis. The large classroom sizes will also support the development of a STEM Discovery Room/Laboratory. The school also houses multiple offices, storage spaces and a guidance suite.

The New Haven Montessori Magnet School (PreK-6) will be located in the Fair Haven Heights neighborhood of New Haven on the east bank of the Quinnipiac River. The proposed school's facility is currently vacant and has ten large classrooms on three floors. Each classroom is appropriately sized for multi-aged instruction and two of the classrooms are adjoining, allowing for additional mixed grade collaboration. Further, each classroom is large enough to accommodate multiple small student clusters for small group instruction. The facility also has a large playroom area, multiple workrooms and ample storage in order to house Montessori practical skills materials, as well as other Montessori manipulative materials that support mathematics, language acquisition, and science development as well as development of the senses. The building's design supports Montessori education methods, facilitating students' movement and activity, and individual development through exploration.

The 21st Century Communications Magnet and Lab School (K-4) will be housed in a

two-floor building located a few blocks away from downtown New Haven, near Southern Connecticut State University (SCSU). The school's twenty-one classrooms are dispersed between both floors and each classroom features large spaces, many with storage areas and sinks. In addition, the first floor has several spaces that complement the school's Global Communications theme including a large, open common area, an exhibit area designed to share student projects, a library, and a multipurpose room with a stage. The building's computer room and reading resource room on the second floor are also well-suited to provide the technology framework to support 21st Century teaching and learning. In addition, the school's administrative offices and conference areas will provide space for visiting partners from SCSU.

(d) Budget and resources. **(2)** The adequacy of equipment and supplies that applicant plans to use

The budget for equipment and supplies to fully develop and implement this project is adequate and cost efficient and will enable the District and each of the schools to and attain all performance measures. The requested funds will not supplant any local funds supporting the magnet program. New Haven will purchase all supplies and equipment needed to implement the required curricula for all students. The grant proposal requests only those supplies and equipment specifically needed to implement the magnet theme discussed in this proposal. New Haven will not decrease the funds normally spent on supplies, equipment, computers, software, textbooks, library books, etc. Per capita local allocations for these items will be the same in magnet and non-magnet schools.

This proposal concentrates on equipment, supplies and materials to establish the new magnet programs. These schools are costly to set-up because of equipment and supplies required for Montessori and STEM programs and the STEM Discovery Room/Labs. Extensive professional development provided by eight exemplary, nationally recognized professional development organizations will insure that supplies and equipment will be used as described in this proposal.

All four magnet schools will use: Science and Technology for Children (STC) Kits, Engineering is Elementary, and Robolab and have Discovery Room/Labs for STEM projects, demonstrations and experiments. All will have teacher created units aligned with CCSS and NGSS that integrate the school's specific magnet theme with science, mathematics, engineering and technology. Each of these units will include a STEM project.

Requested supplies and equipment enable the implementation of these programs, projects and units, and equip the Discovery Room/Lab. Some examples are: **Celentano Biotech, Health and The Medical Magnet School.** The theme will be integrated into all subjects. Students will develop and present several "case studies" or projects each year using inquiry, the engineering design process and project based learning. Younger students will be introduced to the prerequisite skills needed to solve and present case studies or projects. A technology/medical lab/Discovery Room will provide early tactile experiences (for the early grades), a fully equipped laboratory for all grades, and hands on technology such as interactive smart tables whiteboards and online simulations using iPads and computers. Science equipment will enable experiments, demonstrations and projects. Students at **Quinnipiac Real World Math STEM School** will study "worlds of math". In the Constructed World, children will use Engineering is Elementary and teacher created science and math units to solve problems. In the Financial World, lessons based on *The National Standard of K-12 Personal Finance Education* will be integrated with STEM. In the Geographic World, students will apply math in interdisciplinary lessons integrated with Social Studies and Technology using maps and globes. In the Physical World, teachers present chemistry and physics units in a STEM context. The World of the Future encompasses mathematical activities integrated with *Robolab*. Supplies and equipment include white boards, smart tables, iPad lab, science equipment, robotics equipment and Discovery

Room/Lab.

The New Haven Montessori Magnet School - Supplies and materials needed to support the Montessori teaching pedagogy including Montessori furniture, materials and supplies as well as much of the science and STEM supplies and equipment needed for the common STEM activities for all schools will be purchased. This school will also have a STEM Discovery Room/Lab.

21st Century Global Communications Magnet and Lab School. 21st Century Global Communications will serve as the integrating context for the study of Science, Technology, Engineering and Mathematics. The school will need the same equipment as other schools for EiE, RoboLab, Discovery Room, and for STEM projects including Smart Tables, iPad Learning Labs, and Interactive Whiteboards.

(d) Budget and resources. **(3)** The adequacy and reasonableness of the budget for the project…

This project represents a comprehensive plan for the start-up of four new magnet schools. The budget is reasonable and adequate to achieve the ambitious objectives of the project. Three of these schools will have a strong level of implementation in year 1 of the grant while the Montessori School, will use year 1 to plan and will fully implement in project year 2. The STEM and Montessori themes require substantial amounts of specialized equipment and supplies. In addition, New Haven has chosen to work with nine nationally recognized professional development organizations to ensure that the programs in these schools are exemplary. These organizations are: Connecticut Science Center, Boston Museum of Science; Intel Math ; Center for Technology and School Change at Teachers College, Columbia University; Yale Office of New Haven and State Affairs; Tufts Center for Engineering Education and Outreach; STC training, Dr. Heidi Hayes Jacobs. Montessori training will be supplied by The Montessori Training Center of New England. The total three year cost, for all four schools, of the professional development from these

organizations is $1,380,100. Considering the scope and extent of this professional development, described in both *Priority 4* and *Quality of Project Design*, we believe this total cost, as well as the individual annual cost of each of the providers is reasonable considering the high quality. The three year cost of the equipment and supplies for the four schools, is $1,408,700 and $1,016,475 respectively. These expenses were explained in the last section. These expenses are reasonable considering that the magnet themes include STEM and Montessori.

The requested budget (direct costs) for the project is $3,593,846 for the first year, $3,734,906 for the second year, and $3,535,555 for the third year of the project. The project will reach 1,228 students in the first year and over 1,522 students by year 3 by which time Montessori Magnet School will have been added. Therefore, the per-pupil cost of starting up these magnet schools is approximately $2,926 for the first year. Increases in student enrollment in subsequent years will cause the per-pupil cost will go down to $2,600 for project year 2 and $2,323 for project year 3. In addition, the following is an explanation of specific budget items in addition to supplies, equipment and professional development. **Personnel Costs:** The District is requesting salaries and benefits for a Project Director, 1 Recruitment Coordinator and 3 Recruitment Specialists, and 8 (7 during the first year since Montessori will be in planning) Magnet Resource Teachers. All positions are full-time (100% of their time will be spent on MSAP activities) positions. These positions were described in the *Quality of Personnel* section of this proposal.

The **Project Director** will oversee the entire Magnet School Project, coordinating all project activities, monitoring full implementation, and reporting on the progress of the project to the Superintendent, the Board of Education and the community. The **Recruitment Coordinator and Specialists** assist in the production of marketing materials, work with principals and district staff to ensure coordination of school- and district-level recruitment activities, work with parents and

organize and manage district-level magnet recruiting activities. The **Magnet Resource Teachers** ► Participate in the writing of the curriculum materials that will be prepared for this project; ► Help implement the new magnet curricula by training and coaching school staff; ► Teach demonstration lessons, for classroom teachers, in magnet theme areas; ► Facilitate collaborative team meetings for teachers; ► Support and facilitate curriculum alignment; ►Help in the development and implementation school recruitment plans. The District is also requesting funds to pay teachers hourly **stipends for professional development, and curriculum development and alignment**. These activities will take place after regular school hours. Teachers need professional development to carry out the new, innovative magnet themes and the curriculum that will be developed.

Funds will also be allocated for the District to **contract** for the services of an **outside evaluator** to provide an independent evaluation of the magnet project and to provide the District with both formative and summative evaluation. The contractor has many years of experience evaluating Magnet Schools Assistance Programs, as well as other educational programs.

Thus, the budget for this project is reasonable as it covers all areas related to the objectives of the project. It includes only personnel, equipment, supplies, travel and contractual costs related to the start-up costs of the four magnet schools. After the three years of funding the District will assume the costs of maintaining the project.

(e) Evaluation Plan…the evaluation plan for the project – (1) Includes methods that are appropriate to the project; (2) Will determine how successful the project is in meeting its intended outcomes, including its goals for desegregating its students and increasing student achievement; and (3) Includes methods that are objective and that will produce data that are quantifiable.

This evaluation, spanning the three years of this project, will assist school staffs and district personnel to modify and improve project performance and produce information needed by the United States Department of Education to properly evaluate project effectiveness.

Data Collection: This evaluation will draw on a wide variety of data to provide substance and context for both formative and summative reports. Quantitative, extant data (e.g. enrollment information, standardized test results) will be used in conjunction with questionnaire, interview and observation data, as well with qualitative data (e.g. school improvement plans, curriculum materials, professional development records) to ensure a thorough and balanced evaluation.

The contractor will develop a complete set of data collection instruments (including surveys, document requests, and walkthrough, observation and interview protocols) designed to provide sufficient information to address objectives and performance measures and supplement extant data. However, **extant data will be used whenever possible** to lessen the burden on school based and project staff. The data to be collected will include: **Student achievement, demographic, enrollment and other data:** The contractor will collect standardized test score data (e.g., school and grade level reading, mathematics, writing, science data) needed to address performance measures related to student academic achievement. Enrollment data disaggregated by race/ethnicity collected by the district will indicate the extent to which each school and the project succeeds in meeting desegregation related performance measures including reducing minority group isolation. Applicant pool, student selection and student enrollment data will help

explain the extent to which the reduction in minority group isolation performance measures were attained and help determine how performance in this area can be improved.

Document requests: The contractor will request documentation from magnet school teachers and MSAP staff to help determine the quality and extent of MSAP implementation. Examples include: ► **descriptions of and dosage** (amount of program delivered) **for** units and courses that present the magnet theme to students; and student recruitment, teacher professional development, parent involvement and planning activities (including an implementation plan); ► **schedules** of school based magnet staff; ► School improvement plans; **Observation and interview data** will be collected, during three annual visits to each magnet school, by trained evaluators with extensive experience as magnet school practitioners. During each visit, the visitor will conduct a walkthrough, observe lessons, and interview teachers, administrators, students and parents.

Surveys will be administered annually to all magnet school teachers, a sample of magnet school students and teachers and students at comparison schools. Drawing on its twenty year history of MSAP and regular and rigorous evaluations, American Education Solutions has developed survey items and scales with its survey consultant, Dr. David Silver, a senior researcher at U.C.L.A.'s CRESST Center, and currently, Dr. Jia Wang, a senior researcher at CRESST. *These survey items are directly related to the purposes of the MSAP and the objectives and performance measures of this proposal*. Validated survey items and scales measure constructs including school climate, instructional leadership, professional development hours (formal, collaborative and coaching) and effectiveness, student engagement and motivation, student academic commitment and expectations, student and teacher perceptions of intergroup relations and magnet theme implementation, standards based instruction and systemic reform

implementation and parent involvement as well as magnet and professional development dosage.

Formative Evaluation and Reporting: The evaluation contractor will aid in the continual improvement of the project through formative evaluation, an examination of implementation that returns information to project, school and district staff to help them improve program performance. Formative evaluation includes the study of program fidelity (the degree to which a program is implemented as designed) and reach (the proportion of the target group that participates). Components of fidelity include: ► adherence – the degree to which the program adheres to its goals, plans, activities, timeline; ► dosage – the amount of program delivered; ► quality – the quality of program activities and services; • responsiveness of participants to program activities; ► program differentiation – unique features when compared to non-magnets.

Formative Evaluation Reporting: Data will be collected, as available, and analyzed and recommendations discussed with the project director and school staff throughout the year. **Five formative evaluation reports** will be written by evaluators each school year:

Reduction of Minority Group Isolation (MGI) Report: Demographic and enrollment data will be compared with applicant pool, student selection and other data from the previous school year and with performance measures. By November, discussions related to the attainment or partial attainment of performance measures related to the reduction of MGI will help the district and magnet schools modify recruitment strategies and activities to attain better results. (Were MGI outcome targets attained? Was MGI reduced? By how much? Why?)

This report is updated in late spring when new applicant pool and student selection data is analyzed and compared with school enrollment data to determine the success of these activities and create plans of action to improve results, if necessary. Measures of fidelity include adherence to the implementation plan, recruitment plans and student selection criteria and

procedures; and dosage, the "amount" of recruitment. Quality and responsiveness will be determined by changes in school enrollments, especially for entry grades, and the size and diversity of applicant pools. Differentiation will examine if unique program features were implemented and adequately described to the target audience. This report not only informs the district about its successes in meeting desegregation performance measures (1.1-1.5) but also explores reasons for progress or lack of sufficient progress and possible remedies.

Site Visit Reports, described above, are opportunities to feed back data related to the development and implementation of the magnet theme. After each of three annual site visits, a report will be written by the site visitor and submitted within ten days. It will summarize the findings of the visit and include recommendations for improvement. Site visitors will discuss recommendations with school and MSAP staff during each visit. **Documentation Reviews,** included in all three site visit reports, will summarize descriptive and quantitative data related to magnet curricula, systemic reforms, parent activities and professional development, and report on: adherence (e.g., activities implemented on schedule), dosage (e.g., the amount of time students, teachers and parents are exposed to grant activities such as magnet units and courses, professional development and parent activities), quality (e.g., peer reviews of magnet related units). The combined site visit report/documentation review summarizes how much progress has been made towards attaining performance measures especially those related to magnet theme and systemic reform implementation (2.1, 3.1), professional development (5.1-5.2) and fidelity of implementation. The reports, distributed to and discussed with school staff three times each year, helps them to understand if they are on track to attain the intended outcomes of the project, including performance measures and if not, why and how the project activities can be improved.

Survey Reports will include item by item results for each school, summaries of survey construct

results for each school, and, for years two and three, comparisons between current and the previous year's results. Trends (e.g., relationship between magnet implementation and student engagement and motivation, between professional development dosage and impact) are explored.

Summative Evaluation and Reporting: The evaluation contractor will determine the extent to which annual objectives and performance measures are attained. Data sources were described above. The evaluation contractor will collect and analyze the data, prepare two annual performance reports and one final report summarizing findings, and discuss the results with district and magnet school staffs. The following section summarizes the means through which evaluators will assess the attainment of performance measures (PM) which are listed the *Plan of Operations* section of this application and summarized below**:**

PM 1.1-1.8 Reduction of minority group isolation (MGI) at each magnet meets annual (1.1-1.4) and project targets (1.5-1.8). **PM 1.9** Each magnet school will receive at least 100 applications **Assessment:** School enrollment data, disaggregated by race/ethnicity will be used to determine the degree of attainment of 1.1-1.8. Applicant pool and student selection data will be used to determine if 1.9 was attained and explore how performance can be improved for all measures.

PM 2.1: Each School Improvement Plan will include activities and objectives supporting the adoption of high standards for all students and systemic reforms coordinated with MSAP activities. **Assessment:** Success will be determined through inspection of each school's plan. Implementation success will be measured by performance measure 3.1.

PM 3.1: All magnet school students will receive magnet theme instruction coordinated with systemic reforms for at least 3 (year 1), 6 (year 2) and 10 (year 3) hours per week.

Assessment: Success will be determined through unit plan analysis and confirmed with surveys,

interviews, and walkthroughs. Units and lessons will be peer reviewed to determine quality. Responsiveness will be determined by surveys which assess student engagement and motivation, academic commitment and expectations, student and teacher perceptions of school climate.

PM 4.1-4.3: State proficiency standards (SPI goals) will be met for each school's total enrollment in: **4.1** reading; **4.2** mathematics; **4.3** writing; **4.4** science; and the SPI goals combining all subjects for: **4.5** entire school enrollment and each subgroup. **4.6-4.7** At each magnet, the percent of students from major racial and ethnic subgroups who score proficient will increase each year in **4.6** reading. **4.7** mathematics. **4.8** Writing. **Assessment:** All students are tested in April of each school year. Data is analyzed by the State Education Department and will be presented in the Annual Performance Reports in tabular form, highlighting the performance targets and how each magnet school – both in aggregate and by subgroups – performed in relation to these targets.

PM 4.9: In each magnet school, 75% of students will master the magnet curriculum.

Assessment: School and magnet staffs will develop, by the end of year one, methods to assess student mastery of magnet curricula. Project director and evaluator will approve methods.

PM 5: Magnet school teachers will receive 30 hours of professional development related to **5.1:** systemic reforms and **5.2:** 30 hours related to magnet theme development and implementation.

Assessment: **(5.1, 5.2)** Magnet staff will collect professional development data including the type of training, the number of hours provided and the number and names of teachers involved. Quality will be determined through survey analysis and interviews, walkthroughs, etc.

PM 6.1: At least 75% (yr. 1), 85% (yr. 2) and 95% (yr. 3) classes (elementary) or STEM classes (secondary), will reflect their grade's enrollment for each racial/ethnic group and males and females by ±15 percentage points. **Assessment:** Success will be determined through analysis of

class enrollments disaggregated by race/ethnicity and gender. **PM 6.2:** There will be an increase in parent participation at each magnet school each year. **Assessment:** Workshop materials, attendance records and parent interviews will determine parent participation and satisfaction.

Annual Evaluation Schedule: ► Initial meeting with project and district staff (Week 1); ► Refine data collection instruments and plan; refine analysis plan; (Weeks 1-3); Collect data (Throughout year): Enrollment data (Week 5); Site visits including interviews and observations (Weeks 10, 22, 34); applicant pool data (Week 28); Dosage data (ongoing); Surveys administered (Week 34); Survey results reported (Week 38); Documents collected (e.g. units integrated with magnet theme - Weeks 9, 21, 33); ► Formative evaluation including discussion of recommendations (Weeks 3-40); MGI Report (Week 10) MGI/Applicant Pool Update (Week 31); Site Visit-Document Review Reports (Weeks 12, 24, 36); ► Analyze and process summative data (Weeks 34-36); ► Prepare Annual Performance Report (Weeks 36-37); ► Submit report to school District (Week 38). Week 1 is the week the project begins each year.

Rigorous Evaluation of Magnet School Assistance Program

The rigorous evaluation design proposed below (please see appendix for a more detailed version) will be carried out by researchers at UCLA's Center for Research on Evaluation, Standards, and Student Testing (CRESST). The goal of this design is to measure MSAP impact on student achievement with the statistical rigor of a high-quality quasi-experimental design, but to do so with attention to limitations of available data and sample sizes, and to do it on a scale that is reasonable within the current funding structure.

The goal of the rigorous evaluation is to measure Magnet Schools Assistance Program (MSAP) impact on student achievement. Using a statistically rigorous, high-quality quasi-experimental design, we examine two broad questions: (1) How did students attending target MSAP

schools perform on state tests in relation to matched students at comparison schools in the same district? (2) How did *different subgroups* of students attending these MSAP schools perform in relation to matched students at comparison schools in the same district?

This evaluation strives to bolster the current body of research with instrumentation and analytic methodology aligned directly with the priorities and selection criteria of the Magnet Schools Assistance Program. We will select comparison schools within the district based on how closely they match the characteristics of MSAP supported schools in the year prior to magnet implementation using hierarchical cluster analysis. Specifically, the comparison school selection will take into consideration the grade span of the school, school size based on enrollment, school racial composition (i.e., percentage of Black and Hispanic students), the percentage of ELL students and the percentage of NSLP participants.

To identify comparison students, the research team will first restrict the pool of MSAP and comparison students to those that had achievement outcomes for each outcome year and may also limit the students to be at the same MSAP or comparison schools for a period of time. A covariate balancing propensity score will then be computed for the eligible comparison students. Students from each comparison sample will be matched to MSAP students with similar propensity scores using a technique known as radius matching (Huber, Lechner, & Wunsch, 2010).

Our research will examine the effect of MSAP implementation by comparing outcomes of students in MSAP schools to the counterfactual condition of how they would have fared if they had not been a part of the MSAP program. This effect is known in the literature as the average treatment effect on the treated (ATT). We will use regression analysis to examine this effect for each student's achievement outcomes. Specifically, we will examine the effect of prior student achievement on each student's achievement outcome (i.e., standardized tests). In other words, controlling for prior

achievement in both the matching model and the analysis model increases the robustness of the estimates. The average treatment effect on the treated (ATT) effect is determined from the size and direction of the magnet effect coefficient. A counterfactual estimate can then be obtained by subtracting the ATT effect from the average observed score of an MSAP population in an outcome year. This counterfactual represents an estimate of how these students may have fared if they had not been a part of the MSAP program and had instead attended a control school.

The combination of the rigorous evaluation described above with data from surveys developed by CRESST and AES, and the evaluation site visits and documentation and data reviews by AES provides districts with additional insight into the extent and quality of their MSAP implementation as well as the value the MSAP program has added to its schools.

(f) Commitment and capacity. **(1)** … applicant is likely to continue the magnet school activities after assistance…is no longer available **(2) (i)** Is committed to the magnet schools project

New Haven is not a newcomer to magnet schools. Connecticut's first was established here thirty-five years ago. The proposed project will build on the district's outstanding record of success with the magnet schools model. New Haven has 21 magnet schools. Since 2001-2002, 13 of those schools reduced minority group isolation.

New Haven has been in the forefront of Connecticut's school desegregation movement. Beginning in 1963, it has implemented a variety of desegregation plans to both decrease minority group isolation and increase racial and ethnic diversity for all students by pairing schools, rezoning, encouraging voluntary transfers, and creating magnet schools. Until the mid-1990's, each move had been met with white flight. This cycle of the implementation of a desegregation strategy followed by white enrollment declines has been ameliorated through the use of magnet schools.

There are two themes running through New Haven's desegregation history: ► New Haven

has a commitment to desegregation that has transcended both School Board changes and district administrations. ► There has been substantial white resistance to every desegregation strategy attempted by the New Haven Public Schools, with the exception of magnet schools.

New Haven's Commitment to Desegregation

The New Haven Board of Education has a long history of desegregating its schools. In spite of widespread white resistance to virtually every initiative that has been attempted since 1963, the New Haven schools are more integrated than those of any other large Connecticut city. This is a direct result of successful magnet schools and a commitment to desegregation that has transcended school board and school administration changes over the years. Magnet schools attract white and minority youngsters and successfully educate all students regardless of their racial, ethnic, or economic background. New Haven was the first Connecticut city to establish magnet schools, and has succeeded, in many ways, where others have failed.

New Haven's Commitment Of Resources After Federal Funds Are No Longer Available

Of New Haven's 21 magnet schools, 18 received support from the Magnet Schools Assistance Program for initial development or expansion. Of those, 17 are currently being supported totally by local funds. For next year, all 21 will be supported by local funds.

New Haven has been operating magnet schools for 35 years. Throughout most of that time, they have been totally supported by local funds. There has never been a period of time that any one of them has not operated as a magnet. New Haven is requesting Magnet Schools Assistance Program funds to develop four magnet schools that will serve both New Haven and suburban students. After federal funds are no longer available, these programs will be continued with local (city and state) funds just as all other New Haven magnet schools have been.

The activities described in this application will build the capacity of the New Haven Public

Schools to continue its magnet schools after federal funds are no longer available just as New Haven has done with previously established magnet schools for thirty-five years.

(f) Commitment and capacity. (2) The Secretary determines the extent to which the applicant – (ii) Has identified other resources to continue support for the magnet school activities when assistance under this program is no longer available.

New Haven is requesting funds to increase its capacity to carry on project activities after federal funds are no longer available. Using MSAP funds, the New Haven Public Schools will create rigorous and engaging curricula for the four new magnet schools described in this application. Two have STEM themes, one has a communications theme and teaches STEM subjects including engineering, and one is New Haven's first Montessori School which will also teach STEM subjects. Some of the more important capacity building activities include professional development of all teachers to strengthen their content knowledge of mathematics and science as well as engineering and inquiry. Specific professional development activities are included in the *Quality of Project Design* and *Priority 4*.

Magnet Schools Assistance Program funds will be used for these capacity building features which will enable the district to continue all of the magnet schools that are described in this proposal after federal funds are no longer available just as New Haven has done with previously established magnet schools. The best assurance that this will occur is to look at New Haven's history. Every magnet school that has been established has been supported with local funds, most for more than a decade. Some have been supported by local funds for more than 35 years.

The New Haven Public Schools will pay for the costs of continuing the magnet schools and their themes, curricula revisions and rewriting, and the staff training necessary to support these initiatives with local tax levy and state funds. It will do this because these are the elements that its

School Board believes all schools need to be successful for a diverse population of students, and belongs in all schools. That has been its commitment to magnet schools for the last thirty years. Besides using local funds to carry on magnet school activities described above after federal funds are no longer available, the New Haven Public Schools will use State Funds.

To assure the sustainability of programs established as a result of the legislation that resulted from the 1996 *Sheff* decision, magnet schools that serve both urban and suburban students receive payments in excess of the regular education cost sharing grant. Therefore, New Haven will receive Connecticut state funds to support the sustainability of these schools. In addition, the state will pay for all transportation costs.

State funds, while not sufficient for urban areas such as New Haven to start magnets to compete with suburban schools, are sufficient to maintain programs once they are on solid footing. The need at this time for New Haven is for seed money to start its new magnet schools. Once this is accomplished, state and local funds are sufficient to continue the programs.

In addition to state magnet funds, and per capita state aid for students discussed above, New Haven receives over $6 million in Connecticut State Priority School Aid. These funds are targeted for poor urban districts to support programs for students with low reading and mathematics scores. Because New Haven has chosen only highly minority isolated schools as magnet schools for this application, part of the priority schools money can and will be used to carry-on the magnet programs in these schools after federal funds are no longer available.

Federal and Foundation Grants, and Competitive Grants

The New Haven Public Schools are confident that they will be able to offer a high level of continued support to the magnet schools described in this proposal because of their outstanding record in pursuing competitive federal, and foundation grants. The district is currently administering

over $10 million in competitive grant programs that support directly, or indirectly existing magnet school programs. The success of the district's outside fund raising makes it possible to plan for the gradual assumption of project costs, after the district's capacity to continue its magnet schools project has been adequately strengthened by Magnet Schools Assistance Program support.

Sustainability Planning: The project director will coordinate the development, starting in the project's first year, of a detailed plan for program sustainability that will continue to support each magnet school. The director will lead a sustainability planning team that includes representative of all stakeholders (e.g., principals, magnet staff, school staff, parents, district and community.

The team will: ► prioritize the project strategies and activities they want to sustain (e.g., outreach, marketing, instructional); ► determine the project's fiscal and other needs; ► identify the resources available to meet those needs and the resource gaps; and ► identify fiscal and other resources that would help sustain specific program activities.

The sustainability planning team will, based on the priorities and resources identified, develop a multi-year sustainability plan. The plan will include: ► the rationales for sustaining the project; ► a timeline; ► specific actions/tasks (e.g., building partnerships; identifying new funding sources; improving use of existing resources); ► personnel and other planning resources; ► clearly defined individual and group responsibilities; and ► reasonable benchmarks to assess progress. As needed, the team will bring additional partners into the process. Implementation of the sustainability plan will include regular reviews by the team.