Table of Contents -- New Haven Public Schools

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

New Haven, Connecticut is typical of many older cities. Once a thriving manufacturing center, it has lost jobs and white middle class residents to the suburbs. Its schools enroll students who are predominantly black (40%), Hispanic (42%) and poor. The surrounding suburban schools serve students who are mostly white (about 67%) and middle class. Compared with state averages, test scores of New Haven schools are low. Scores of suburban schools are high.

New Haven has long been in the forefront of Connecticut's school desegregation movement. In the 1960s and 1970s, it tried a variety of desegregation plans including the pairing and rezoning of schools. Each of these efforts failed as white enrollments declined and schools became racially isolated. New Haven then tried magnet schools. The results were very different.

New Haven opened four small magnet high schools in the 1980s. Although the white enrollment declines that began in the 1970s continued, especially at the middle school level, the white enrollments at the magnet high schools increased. Although the results were impressive, there were few resources to start additional magnet schools. Then, in 1996, everything changed.

Forced by the Connecticut Supreme Court's *Sheff v. O'Neill* decision to take action to remedy the racial and economic disparities and achievement gaps between urban and suburban schools, the state legislature enacted laws that offer urban and suburban students the opportunity to attend schools in each other's districts in an effort to reduce the racial isolation of all students. Urban and suburban districts alike are encouraged to develop magnet schools. While the State, under these statutes, provides 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 difficult for New Haven to develop magnet schools that are capable of attracting suburban students. However, the Magnet Schools Assistance Program changed that.

The Interdistrict Magnet Program Has Reduced Minority Group and Socioeconomic Isolation

With MSAP support, New Haven has developed 17 magnet schools since 2001: 5 schools in 2001, 2 in 2004, 4 in 2007, 2 in 2010 and 4 schools in 2013. Using the first year of operation as the baseline, 15 of the 17 have reduced minority group isolation (MGI) through the current school year and 13 of the 17 have reduced socioeconomic isolation through the current school year. In addition, every school is still operating as a magnet.

As a group, these 17 magnet schools served 6,790 students in their baseline years and 7,649 students in 2015-16. They are serving more minority students (mainly black and Hispanic students since the Asian student enrollment is about 2% districtwide) now than in the baseline years (6,305 vs 6,431), many more white students (485 in the baseline years and 1,153 in 2015-16). The baseline minority enrollment for these schools was 93%. For 2015-16, the minority enrollment is 84%. The baseline white enrollment was 7%. For 2015-16, it is 15%. The baseline enrollment of low income students for these schools was 72%. For 2015-16, enrollment of low income students is 51%.

The reduction of minority group and socioeconomic isolation in these schools has occurred because most have interdistrict programs that serve both New Haven and suburban students. Of the 7,649 students served by the 17 magnet schools developed since 2001, 2,662 (35%) are suburban students. Of the 1,153 white students currently enrolled in these schools, 651 (56%) live in a New Haven suburb. For 2015-16, the New Haven Public Schools serve 21,641 students. Of those, 2,662 (12%) are suburban students attending New Haven magnets. Of New Haven's 3,101 white students enrolled for 2015-16, 948 (30.6%) are suburban students attending

New Haven magnet schools. (These include students attending magnet schools opened prior to 2001.) Without MSAP support, these schools could not have been as successful.

Therefore, to remedy the racial/ethnic and socioeconomic segregation of its schools and improve achievement, the New Haven Public Schools propose four magnet schools to serve both New Haven and suburban students. The schools, their grades, racial/ethnic compositions and percentage of low income students are: ► _____ PreK-4) (**64% black**, 22% Hispanic, 12% white, 2 or more races 2%, other groups < 1%. **Low Income: 69.2%**); ► Roberto Clemente Leadership Academy for Global Awareness (K-8) (38% black, **57% Hispanic**, 4% white, other groups < 1%). **Low Income: 79.7%** ► John S. Martinez Sea and Sky STEM Magnet School (K-8) (10% black, **86% Hispanic**, 3% white, other groups < 1%. **Low Income: 68.9%**); ► Bishop Woods Architecture and Design Magnet School (K-8) (34% black, **49% Hispanic**, 4% Asian, 12% white, other groups < 1%. **Low Income: 59.6%**). All are Title I schools. Black students are isolated at West Rock. Hispanic students are isolated at Clemente, Martinez and Bishop Woods. (The isolated minority group and the percentage of low income students are in bold.) New Haven's percentage of low income students is 54%. Its suburbs' is 32%. Connecticut's is 37% statewide. Bishop Woods is a Review school, West Rock and Martinez are Focus schools and Clemente is a Turnaround school. These are the lowest categories in the Connecticut school classification system. All had proportions of students reaching levels 3 or 4 on the 2015 Smarter Balanced Assessment Consortium (SBAC) test for ELA that were lower than the New Haven average of 29% and the state average of 55.4%.

These are low performing, highly minority group isolated schools that serve high proportions of low income students. However, they are not different than other New Haven schools prior to magnet conversion or significant revision. Creating, or significantly revising a

magnet school in New Haven requires an entire school restructuring during which teachers receive intensive professional development and all curricula and instruction are revised and strengthened. The entire process is closely monitored.

The New Haven Public Schools are requesting approximately $11.7 million to implement its Magnet Schools Assistance Program (MSAP) at these four schools for each of the next three years. This will fund a Project Director, 8 Magnet School Resource Teachers, 4 Recruiters, extensive professional development (PD) for teachers and supplies and equipment to implement the magnet programs described in this application. New Haven could operate these schools without MSAP funds. It could not, however: ► Create four magnet schools with the power to attract suburban students. ► Develop improved curriculum units in all core academic subjects that are fully aligned with the Common Core State Standards (CCSS), the Next Generation Science Standards (NGSS) and Connecticut's new, inquiry based social studies standards. ► Improve instruction and academic support in core academic subjects using practices and reforms such as Readers' and Writers Workshop, inquiry, cooperative learning and RTi. ► Integrate the magnet themes and STEM projects into core curriculum areas as these schools are creating new units and lessons. ► Provide a minimum of 50 hours of professional development per teacher related to improving core academic instruction and 50 hours per teacher related to magnet theme development and integration. This professional development will include workshops, coaching and collaboration. ► Purchase the supplies and equipment needed to implement magnet programs that would compete with suburban schools.

A key to the successful development of these schools are the Magnet School Resource Teachers (MRTs). They will: ► Participate in and facilitate the writing of the curriculum materials for this project; ► Facilitate and guide PD planning and schedule PD; ► Train and

coach teachers and facilitate their collaboration on the grant activities; ► Teach demonstration lessons in magnet theme areas ► Help develop and implement recruitment plans.

The staff, PD and activities described in this proposal are needed to make each magnet school unique, reduce minority group and SES isolation, and improve curriculum, instruction and achievement. Therefore, the total cost of the MSAP program described in this application is $3,985,825 for year one, $3,923,457 for year two and $3,807,484 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;

New Haven Public Schools' (NHPS) 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.**

New Haven Public Schools are funded in large part by the City of New Haven, whose 2015-16 budget for its public schools is just over $180 million, a $3 million or 1.7% increase over the 2014-15 budget. Personnel expenses are projected to increase by $4.5 million and contracts and services will rise by $2.3 million in 2015-16, so increased funding will cover approximately half of the additional need. Since the 2009-2010 school year, the student population has increased from 19,947 to 21,699, an increase of 8.78%. However, the populations of English Language Learners and Special Education students have increased by 28.63% and 26.17%, respectively, during this time. Given the increased educational needs of students in these groups, the flat per-pupil funding over time provides inadequate resources to provide a

differentiated and needs-based program to all students.

State aid accounts for 83.5% of the revenue in the City of New Haven's education budget. The 2015-16 amount, $150,595,049 is $2,046,810, or 1% less than the $152,641,859 in state aid received in 2014-15. The Education Cost Sharing (ECS) formula established by the State of Connecticut is intended to cover the difference between what local districts can fund based on local revenue and the full cost of operating that district. However, Connecticut is unable to fully fund the ECS formula and has shifted to the use of "block grants" not based on the equitable funding formula. The fact that the State of Connecticut's contribution comprises a large proportion of New Haven's overall funding makes any decrease a point of concern. The $3 million increase in the overall budget for NHPS in 2015-2016, referenced above, is a result of increased funding from the City of New Haven and reflects the City's commitment to providing stable funding to local schools; however, the ability to compensate for decreases in state allocations is not guaranteed in the years ahead.

New Haven will receive approximately $58 million in federal grants this year, including Title I funding. NHPS is classified as a Priority School District by the Connecticut State Department of Education, indicating the need for improved academic outcomes, and therefore the district spends a larger proportion of local funds, in addition to state aid and Title I, on work to implement a rigorous core curriculum with an emphasis on reading, writing and mathematics. The majority of the federal funds allocated to New Haven are provided and targeted for specific purposes and cannot be used to develop and implement the magnet programs described in this application. Work with Education Resource Strategies validated the fact that NHPS is more dependent on grant funding than the average district, increasing the potential for variability from year to year and making the funding scenario in the district even more precarious.

New Haven has many fewer resources to spend on its pupils than the more 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, New Haven's largest employer and landlord, is tax exempt making it harder to raise revenues. The New Haven Public Schools cannot compete with suburban districts which have more supplies, equipment and resources. With a meager tax base and relatively 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 in New Haven has had MSAP support when it was first developed. Because over half of its schools are intensely segregated, defined as having 90-100% minority students, the district relies on the strategic use of magnet schools to promote the reduction of racial and socioeconomic isolation. NHPS has sustained 21 MSAP-funded magnet schools with local and state funds, while magnet schools without initial MSAP support have failed to attract suburban students because their programs could not compete with suburban schools. Since the most expensive period for a magnet is during its initial years, MSAP funding is a key component of the magnet conversion/significant revision process. Without MSAP support, the schools described in this proposal will be unable to implement their magnet themes with fidelity and will therefore struggle to sustain 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 (including indirect costs) is $3,985,825 for the first year, $3,923,457 for the second year, and $3,807,484 for the third year. New Haven currently spends about $9,942 per student (school budget and grant funds), an amount that remains less than

funding levels in 2010-11. Its state funding, which accounts for 83.5% of its operating budget has decreased by 1% from the 2014-15 budget. Therefore, the New Haven Public Schools do not have the resources to increase per pupil expenditures at the proposed magnet schools by 24% project year one, 23% project year two and 23% project year 3, the added costs of this project.

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 and white and middle class New Haven students to help reduce minority group isolation and increase socioeconomic integration. However, suburban magnet and neighborhood schools, some of which have STEM programs, compete for the same students that New Haven is trying to recruit.

Under the Open Choice Program, New Haven students can attend suburban schools that have declared openings. In addition, there is a suburban interdistrict magnet school that recruits New Haven students. These programs can exacerbate both racial and socioeconomic isolation in New Haven schools because the suburban schools attract middle class and white students from both New Haven and its suburbs. Therefore, New Haven schools need more complete and exciting programs to attract suburban students and retain their own.

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 is proposing to implement four magnet schools to serve New Haven and suburban students. These schools will be difficult to develop because they are currently highly minority group isolated Title I urban schools. The combined black and Hispanic population of each school exceeds 85%. The percentages of low income students are 80% (Clemente), 69% (West Rock and Martinez) and 60% (Bishop Woods). In addition, West Rock and Martinez are Connecticut Focus Schools (Title I school with one of its subgroups among the lowest performing in the State), Bishop Woods is a Review School (SPI less than 64) and Clemente is a Turnaround School (among the lowest performing schools in Connecticut).

The programs proposed for this project are complex and difficult to carry out unless there is ample support for professional development, curriculum development and improvement and appropriate equipment and materials. Without this support, the proposed magnet themes will be only partially implemented and have far less impact on student achievement or the reduction of minority group and socioeconomic isolation than intended.

Priority 4-Promoting Science, Technology, Engineering & Mathematics (STEM) Education.

(e) Supporting local or regional partnerships to give students access to real-world STEM experiences and to give educators access to high-quality STEM-related professional learning.

New Haven will provide students with increased access to rigorous, engaging coursework in STEM by developing a new STEM magnet school--the Bishop Woods Architecture and Design Magnet School (K-8)--and two significantly revised STEM magnets--John Martinez Sea and Sky STEM Magnet School (K-8) and West Rock STREAM Academy (Prek-4). These

schools will serve about 1,700 students who do not receive STEM coursework and will not receive the theme based STEM curricula proposed for these schools. These schools will provide authentic STEM experiences across multiple settings (e.g., school, State Parks, nature preserves, museums, an aquarium) and use partnerships to develop these learning opportunities.

Project schools will use local partners to develop authentic STEM learning opportunists inside of school and extend them outside of school. Each partner institution will develop activities for students that will be integrated with interdisciplinary STEM units and provide students with authentic STEM experiences tied to their school's magnet theme at their institution (e.g, observing marine environments and how they can be created in an aquarium at Mystic Aquarium), in the field (e.g., studying freshwater ecosystems at a state park and comparing them with marine environments on Long Island Sound) in the magnet school (e.g., setting up and maintaining freshwater and marine ecosystems in classroom aquaria). Partner institutions will also create activities for families, aligned with the activities for students at their institution (e.g., hands-on, touch tank experiences with marine animals at the Mystic Aquarium), at home (e.g., projects students and family members can do together to reinforce what students are learning in school), and school (e.g., family science meetings where students present projects or work on projects with their families.) In addition, partner institutions will provide teachers with specific STEM content professional development (e.g., freshwater and marine ecosystems, water testing, astronomy, design thinking, aeronautics) that is connected to the units that they are enhancing with the types of authentic STEM experiences described above. School specific examples are given below. Each magnet school will have a unique magnet theme that differentiates it from other schools in and around New Haven.

John S. Martinez Sea and Sky STEM School (K-8): Students will explore the hydrosphere (both freshwater and marine environments), atmosphere and space through STEM learning experiences using project-based learning, the engineering design cycle, the NGSS and a thematic, interdisciplinary approach. Outdoor learning capitalizing on the school's proximity to West Rock Ridge State Park, the Mill River and Long Island Sound (Lighthouse Point Park, Long Wharf Nature Preserve, Sound School Pier) will be integrated into STEM projects and provide real-world testing grounds for marine, freshwater and atmospheric studies. In addition to school based units, projects, experiments and magnet related experiences, students will also be exposed to the theme through extensive field trips to Mystic Aquarium, The Sound School Regional Aquaculture School, the Yale Leitner Observatory and Planetarium, Tweed New Haven Airport, the Coast Guard Academy, the Groton Submarine Base, Woods Hole Oceanographic Institute and the New England Air Museum. Quarterly topics related to each magnet theme component (e.g., the effects of air and water pollution; ship design, navigation technology and exploration; the history and future of flight; astronomy and navigation) will be aligned with the NGSS for each grade to help connect what students learn in core academic subjects to interdisciplinary magnet STEM units. Students will apply what they learn during hands-on, inquiry based lessons to STEM projects.

To begin the year, students will visit the Yale Leitner Family Observatory and Planetarium and receive an introduction to astronomy and space science, see the Earth via NASA's real time video, and based on their grade level, speak with astronomers and space scientists. They will also visit the Mystic Aquarium to receive an introduction to marine and freshwater studies by touring the different aquatic environments that are vividly presented at the aquarium. A third introductory visit will be made to the New England Air Museum to introduce

students to aeronautics. Students will explore the museum's collection of over 100 aircraft, sit in cockpits of historic aircraft, meet pilots and aviation engineers as they are introduced to the principals of flight and the history of aviation.

The staff of all three museums will work with the magnet resource teachers on these introductory units and the professional development teachers need to teach these units. This will set the pattern for the three years of the grant. These three institutions will be major providers of content professional development that will support the development and implementation of theme based units and projects. Visits to these museums will support specific units and projects.

John S. Martinez (JSM) students will study all NGSS disciplinary core ideas but go further and deeper in their studies using topics related to the magnet theme. Each interdisciplinary STEM unit will culminate in a magnet theme related STEM project. For example, as first and second graders study organism growth and development, they will focus on organisms that live in the air and water. Their projects will include designing and setting up aquaria to reflect local fresh water and marine environments and designing ways to study the growth and development of local organisms. This will be supported by trips to the Mystic Aquarium where aquarium staff will discuss the differences between marine and freshwater environments and show students how their tanks are set up and maintained. Students from The Sound School Regional Aquaculture School, a New Haven high school that specializes in aquaculture and marine trades, will assist students as they set up tanks in their classrooms. In **Language Arts**, they will use nonfiction texts, and visit the beluga whale exhibit at the Mystic Aquarium, to identify characteristics among whales while creating a bar graph depicting the presence of traits in parents and offspring in whale populations in **Math**. This research will result in the development of a family tree in **Science** showing how characteristics might develop within

a whale pod and demonstrating how traits are passed from parent to child. In **Social Studies**, students will map the migration of a pod as seasonal conditions change.

Partners including the Mystic Aquarium, the Sound School, the Leitner Family Observatory and Planetarium at Yale and the New England Air Museum will help develop additional authentic STEM learning experiences both in and outside of school and provide professional development to support those experiences and the units they are integrated with.

West Rock STREAM Academy (WRSA) (Prek-4): Students will explore the connections between the arts and sciences through interdisciplinary, thematic units that include hands-on STEM projects that focus on the natural world.

Students will use the language, tools and methodologies of STEM professionals and published authors as they conduct scientific investigations and engineering challenges in the school's Discovery Room/Makerspace and around their school, as well as using nearby West Rock Ridge State Park (Connecticut's second largest), the West River Open Space area, Pond Lily Nature Preserve (a 14 acre ecosystem of wetlands, forests, and streams), the Yale Marsh Botanical Garden and the Audubon Center Bent of the River to extend their STEM investigations of nature to "outdoor classrooms". In each interdisciplinary STREAM unit, students will develop and work on a STEM project, read magnet theme related fiction and non-fiction texts, publish a writing piece related to their STEM project and participate in creative and visual arts.

WRSA students will learn experientially outside as well as inside the school. For example, Kindergarten students will explore the essential question, "Why are trees important?" They will learn tree vocabulary, read books about trees, investigate how different parts of trees can be used, and study local trees. During "leaf walks" on school grounds and neighboring State parks, they will use observations to describe patterns; collect, count and categorize leaves;

describe their colors, shapes and textures; and make leaf rubbings and collages of “leaf people”. Students will visit the Marsh Botanical Garden before the trip to be introduced to the purpose of leaves and other tree and plant structures. Marsh staff will also support this unit with content professional development for teachers. The unit will include an investigation of the foods trees provide as students learn that plants are an important food for animals; students will visit an apple orchard, describe different apples using all their senses, make graphs about apples, eat apples and applesauce, and make apple prints. The class will publish a book about what they learned about local trees and leaves. Scientists from the Yale School of Forestry will visit to share their knowledge of trees and writing with students as part of the unit’s publishing celebration. Marsh Botanical Gardens staff will help students with projects such as "How can we grow plants indoors?" Grade 4 students will explore, “Why are there rocks in our neighborhood?” Students will participate in a “rock walk” outside the school and in one of the nearby State Parks where students will note their observations about rocks in their STEM notebooks. Partner Peabody Museum of Natural History will introduce students to the vocabulary of rocks, minerals and fossils as well as local geology; students will make observations of museum specimens using scientific vocabulary. As a culminating activity, students will hike to investigate sedimentary, igneous and metamorphic rocks in West Rock Ridge State Park with a guide from the Peabody Museum. Before that, they will have visited Frederic Church’s *West Rock* painting (New Britain Museum); on the hike, they compare what they see to Church's painting and sketch or take photos and plan their own artwork inspired by views of New Haven and Long Island Sound.

Partnerships with the Yale Peabody Museum of Natural History, Yale Marsh Botanical Gardens, The Audubon Society of Connecticut and the Yale School of Forestry will help

teachers and MRTs develop authentic STEM learning experiences in and outside of school that are coordinated with units they are developing and teaching. Two consultant experts in STEM related to studying the natural world (e.g., faculty or graduate students from Yale School of Forestry), will assist teachers integrate the natural world into units and provide content PD. The Yale Peabody Museum of Natural History, The Audubon Society of Connecticut and Marsh Botanical Gardens will provide PD on magnet theme content.

Bishop Woods Architecture and Design Magnet School (K-8) Students will explore built environments--their school, their communities, and the City of New Haven--and the natural world, as they learn STEM and social studies through interdisciplinary magnet theme units and hands-on projects that identify and solve authentic problems through the lenses of planning, engineering, design and building. Each unit will have a STEM-related Design Challenge that incorporates engineering and design in the natural world (e.g., animal habitats) and human world (e.g., architecture, city planning). Bishop Woods students will study all NGSS disciplinary core ideas, and go deeper in topics related to the magnet theme.

For example, when Grade 2 students study biodiversity and animal habitats (NGSS DCI LS4.D), they will learn about birds' nesting places and collect materials to make their own birds nests after guided walks through the Audubon Center Bent of the River. The Audubon Center staff will also support the unit with content professional development, unit development support and assist in the development of projects and field experiences. Partner Eli Whitney Museum and Workshop will engage students in building a birdhouse as they learn about measurement, adapt houses to species, and site the house for temperature and security. The unit's Design Challenge will be to build and test a birdhouse roof that will keep birds cool in the sun. Students will decide on materials and roof color, and then test the temperature of the birdhouses under a

heat lamp—redesigning their birdhouse if necessary.

Grade 6 students will study ancient Rome, learning about the influence of the Roman built environment on today's architecture and engineering including Roman advances in material sciences (cement, concrete, brick-and-mortar masonry) and engineering (arches, aqueducts). Students will study the roles of water in the growth of ancient and modern cities (e.g., New Haven) and its role in shaping local topography. With assistance from partner the South Central Connecticut Regional Water Authority, students will visit the _____

learn how New Haven gets its water and protects its quality. This unit's Design Challenge will be to build and test an aqueduct that uses gravity to carry 2 liters of water. Students will present their work at Roundtables that include Regional Water Authority engineers.

Bishop Woods staff will introduce planning and design thinking each year through a "Getting to Know Our Community" unit that sets the stage for each year's learning. One year might focus on the materials of the built environment; students might sketch, make rubbings, and take photos of building materials and pay attention to how materials used inside the classroom affect sound levels and comfort. Another year, students might inventory the uses of buildings in the neighborhood and how space in the school is apportioned. Students will be exposed to the theme through field trips to new and old buildings in New Haven--David Ingalls Hockey Rink, Yale Art Gallery, Yale Center for Engineering Innovation and Design, M. Armstrong Company and Carriage Factory, and City Hall. They will visit architects' offices; explore residential communities (public housing, apartment buildings, Beaver Hills Historic District); learn about the built environment by walking on and around bridges, overpasses and parkland; and be introduced to the world of civil engineering and design through visits to the Yale Center for Engineering & Design and the Yale School of Architecture. Programs from partner Eli Whitney

Museum and Workshop will engage students in building projects at the museum and at school. Examples of projects include building birdhouses and bird feeders; rubber band cars and battery-powered buggies; and micro-architectures and bridges. Eli Whitney Museum workshops allow students to work on hands-on STEM projects at the museum because they have tools, materials and expertise that most classrooms lack. As part of the partnership with Bishop Woods, it will help design the school's Makerspace so that projects that begin in the museum or are modeled in the museum can be completed or built in school. Part of the museum's professional development for teachers will be to give teachers the skills and knowledge to create hands-on STEM projects for their students and how to build them using the Makerspace tools.

Partnerships with the Eli Whitney Museum and Workshop, Yale School of Architecture, the Yale Center for Engineering Innovation and Design (YCEID), The Audubon Society of Connecticut, and the South Central Connecticut Regional Water Authority will help teachers and MRTs develop authentic STEM learning experiences in and outside of school and will provide PD on magnet theme content that are coordinated with units teachers are developing and teaching. Two consultants, one to support STEM (implementation and enrichment of NGSS), the other to support planning and design and its integration into interdisciplinary units and design challenges (e.g., faculty or graduate students from Yale School of Architecture or YCEID), will also provide content PD supporting units, projects and design challenges.

Inquiry, NGSS, STEM Projects, Technology, PBL and Unit Development PD

Working with the Connecticut Science Center, the Center for Technology and School Change (Columbia University, Teachers College) and the magnet resource teachers (MRTs), classroom teachers will create units and lessons that integrate their unique magnet theme into interdisciplinary magnet theme units aligned with the CCSS, the NGSS and Connecticut social

studies standards, are project based (PBL) and use Inquiry. STEM units will use the engineering design process. Every unit will include a project focused on the STEM related magnet theme.

The Connecticut Science Center (CSC) will provide professional development in inquiry, science content and the NGSS. The Institute for Inquiry will deepen teachers' understanding of how to use inquiry in the classroom and model its application to science and other subjects. During the Institute's 43 hours of professional development each year, teachers will learn the inquiry-based skills needed to develop and modify NGSS units and, for Clemente NGSS and social studies units, and teach inquiry based lessons. Science content will be taught in the context of learning about and engaging in inquiry. As with all PD that will support the activities of this grant, there will be the main workshops (provided by CSC) and then school follow-up coaching (by the Magnet Resource Teachers--MRTs) and collaboration (facilitated by the MRTs) for an additional 15 hours. In school follow-up will include the teaching of additional science content, the modeling of inquiry in science (and social studies for Clemente) and other subjects, demonstration lessons and unit and lesson development. The emphasis for all PD activities is to support and improve what teachers are actually doing in their classrooms.

To be better prepared to support teachers, all magnet resource teachers (MRTs) and middle grades science teachers will take the intensive Next Generation Science Exemplar Learning System (NGSX) course. It uses a blended PD model combining in-person study groups with a web-based environment. NGSX is organized into learning pathways that combine first-hand science investigations, videotaped expert commentary and classroom case studies along with facilitated individual, small group and whole group discussions.

The Center for Technology and School Change (CTSC) at Teachers College, Columbia University will provide all classroom teachers with professional development on curriculum

mapping, developing magnet theme STEM units that use project based learning (PBL) and include authentic projects that integrate science, math, engineering and technology and solve real world problems. All magnet units will be interdisciplinary and include STEM subjects, social studies and English language arts. This PD will also help teachers use of state of the art, real world technology to enhance math and science and improve the use of formative assessments to improve instruction. CTSC will help each school develop a quality rubric for magnet units that will be used for the peer review of units.

The Yale Office of New Haven and State Affairs, Yale University, will help develop a speakers' bureau of local STEM or Social Science (for Clemente) professionals, including Yale faculty and graduate students, to provide professional development and mentoring for both teachers and students. They will facilitate the partnerships with Yale schools such as the Yale School of Engineering and Applied Science and the Yale Center for Engineering Innovation and Design (YCEID). These "scientists and engineers in residence" (2 per school) will help teachers with STEM project development, STEM integration and implementation, and speak to students.

Recognizing that professional development to build the capacity of teachers to create magnet units will take time, each school will immerse teachers and students in STEM activities from the very start by using selected district created NGSS aligned units, Engineering is Elementary (EiE) units, and GEMS units that will be supplemented and expanded to integrate them with the magnet theme of each school. This will be done with the support of the MRTs and professional development from the Connecticut Science Center which is a certified Engineering is Elementary professional development partner. As the year progresses, teachers and MRTs will modify the units more extensively and will produce their own STEM units that are integrated with the magnet theme by the end of project year one and then throughout the grant

period. The middle grades will use the same strategy but use grade appropriate units created by the Connecticut Science Center instead of EiE units. (EiE, a research-based curriculum, engages students in the engineering design process, applying science and math to engineering problems.)

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 STEM magnet 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.

Partner organizations will provide magnet theme content professional development and help develop authentic STEM experiences.

Priority 5-Supporting Strategies for which there is Evidence of Promise. Projects that propose a process, product, strategy, or practice supported by evidence of promise.

Citation: Bifulco, R., Cobb, C. D., & Bell, C. (2009). Can interdistrict choice boost student achievement? The case of Connecticut's interdistrict magnet school program. Educational Evaluation and Policy Analysis, 31(4), 323–345. **Rating: Meets WWC group design standards without reservations.** Reviewed using: Single Study Review Protocol.

Citation Outcomes: 1) The outcomes in the study presented and how those outcomes are statistically significant. The paper contains two components. An experimental and a quasi-experimental study. The most relevant outcome and the WWC rating relates to the experimental study which found that students who attended two interdistrict magnet schools in Connecticut had higher test scores in reading and math than students who attended non-magnet schools in the same region of the state. These results were positive and statistically significant for eighth grade

students. The effect sizes were .138 for math and .278 for reading. (See Bufulco, p. 335).

2) How the outcomes in the evidence relate to the outcomes in your project:

The outcomes for the study were higher state test scores in mathematics and reading for students attending magnet schools when compared with similar students attending non-magnet schools. New Haven is proposing magnet schools with the same characteristics as the study schools (please see below) serving similar populations of students and is expecting that by the end of the project period, reading (ELA) and math test scores of magnet students, on state tests, will be higher than students in non-magnet schools as determined by a quasi-experimental study.

Relevance to the Proposed Project: The experimental component of Bifulco et al., focused on two Connecticut interdistrict magnet schools operated by the Capitol Region Education Council (CREC) in Hartford, Connecticut, about 45 minutes north of New Haven. Connecticut, with its statewide support for magnet schools, provides a unique context within which to examine the results of this research and its applicability to the proposed New Haven schools. The schools included in the study serve students from a city, Hartford, and its surrounding suburbs. The New Haven magnet schools proposed in this grant application also draw students from a city, New Haven, and its surrounding suburbs. New Haven students, like those of Hartford, are mainly African-American and Hispanic. (New Haven: 40% Black, 42% Hispanic, 14% White, 2% Asian. Hartford: 31% Black, 53% Hispanic, 11% White, 3% Asian.) The suburban communities surrounding both cities are predominantly white and middle class. Both districts serve large numbers of low income students. The two CREC magnet schools in the study serve students in grades 6-8 and in grades 6-12. The statistically significant results in reading and math were for grade 8 students. The New Haven schools in this proposal serve students in grades K-8 (2 schools), PreK-4 and K-4. Because of New Haven's historic success

with magnet schools that serve students from New Haven and its surrounding suburbs at all levels of schooling (elementary, middle and high school), we believe that the study is relevant to all schools. However, it may be most directly relevant to schools with middle school grades.

This research is especially important for this project because it evaluated interdistrict magnet programs in Connecticut, the same model used by the schools in this proposal. The intervention, in both Hartford and New Haven, is to implement a magnet school, as defined by Connecticut statues and regulations. The attributes of these schools include: ► As with MSAP schools, Connecticut interdistrict magnet schools must develop a special curriculum that is capable of attracting substantial numbers of students of different racial backgrounds. That means that the curriculum of the school must be unique for its city or region (e.g., for the students who are eligible to apply to the school). ► They are designed to have more racially/ethnically diverse populations than the schools that students previously attended. That usually means reducing the minority group isolation of one or more groups of students in the magnet school. ► They serve students from a city and its surrounding suburbs. ► Students are selected through a random lottery that does not use race as a selection factor. ► There are no academic selection criteria. ► An important goal is to improve students' academic achievement.

We believe that Bifulco et al., provides evidence of promise for this magnet model.

The foundation of a magnet school is its special curriculum that is capable of attracting students from different racial/ethnic backgrounds. Therefore, the logic model component that is supported by the intervention is the output Quality Magnet Curriculum, which is the special curriculum capable of attracting students from different racial and ethnic backgrounds. (Please see this project's logic model on page 110.)

As with most magnet school studies, test scores were important outcomes of Bifulco et al.

They studied two schools using an experimental design and then performed a larger study (many more schools and students) using a quasi-experimental design because it was difficult to obtain carefully matched random samples for the larger number of schools. The experimental study used student selection lottery winners as the treatment group and students who applied to a school but were not selected in the lottery as the comparison group, which was not possible for the larger group of magnet schools. With that said, Bifulco et al., (2009) found that the quasi-experimental design study, which controlled for student demographics and prior achievement, and drew comparison students from the same district, produced results of comparable reliability to the experimental approach.

As evidenced in a recent, meta-analysis of five MSAP evaluations by the Center for Research on Evaluation, Standards, and Student Testing (CRESST) at UCLA, the fidelity of implementation of the proposed plan is an essential component of successful magnet schools. As such, the New Haven magnet program will utilize a robust evaluation plan, described in detail later in this proposal, to ensure that all activities are implemented as designed. Noting the methods utilized by Bifulco, et al., a quasi-experimental design that meets the What Works Clearinghouse standards will be used to examine test scores of grades 3 through 8 students in the New Haven magnet schools. The study will be performed by the CRESST Center. Dr. Joan Herman will be the principal investigator and Dr. Jia Wang will be the co-principal investigator and project director. The UCLA team has many years of experience conducting similar studies of magnet schools (e.g., CREC-Hartford, Los Angeles), charter schools (e.g., Green Dot) and studies that were used in I3 validation and scale up grants (e.g., Literacy Design Collaborative).

The evaluation questions for this study are: 1. How did students attending the magnet schools participating in this grant perform on state tests in relation to matched students at non-

magnet comparison schools in New Haven?

2. How did different subgroups of students attending these magnet schools perform in relation to matched students at non-magnet comparison schools in New Haven?

The expectation is that students at the magnet schools will have statistically significant higher test scores. (Please see performance measures in the evaluation section.)

We believe that there is evidence of promise that students who attend Connecticut magnet schools that serve urban and suburban students will have statistically higher test scores than similar (i.e., carefully matched) students who attend non-magnet schools in the same region. The schools in Bifulco et al., have similar characteristics and serve similar populations to the New Haven schools proposed in this application. The intervention, presenting students with a high quality magnet curriculum capable of attracting students from different racial and ethnic backgrounds, and allowing students who attend or would attend non-magnet schools to apply and enroll, is the same. The study supports this project's logic model output Quality Magnet Curriculum and Instruction and the Outcome higher test scores as determined by a quasi-experimental study of ELA/Literacy, mathematics and science test scores.

The Notice Inviting Applications stated that up to two research studies can be identified for review for the purpose of meeting this priority. Therefore, we offer a second citation.

Citation: **Granger**, E. M., Bevis, T. H., Saka, Y., & Southerland, S. A. (2010, March). Large scale, randomized cluster design study of the relative effectiveness of reform-based and traditional/verification curricula in supporting student science learning. Paper presented at the annual meeting of the National Association for Research in Science Teaching, Philadelphia, PA.

Rating: Meets WWC group design standards without reservations

Reviewed using: Science Evidence Review Protocol. **Reviewed in**: Intervention Report: Great

Explorations in Math and Science® (GEMS®) Space Science Sequence (Released June 2012)

Citation Outcomes: 1) The outcomes in the study presented and how those outcomes are statistically significant. This study explores the relationship between reform-based curriculum and the development of students' knowledge of and attitudes toward space science. The effectiveness of the GEMS Space Science Curriculum Sequence was compared to the effectiveness of more traditional curriculum in supporting 4th and 5th grade students' learning of and attitudes toward space science. Students in the classrooms in which GEMS was employed demonstrated a statistically significant increase in space science content knowledge. The effect size was .17. The sample size was 2,594 students. Students in classrooms in which traditional curriculum was employed did not show these increases.

2) How the outcomes in the evidence relate to the outcomes in your project: This curriculum will be used in the John S. Martinez (JSM) Sea and Sky STEM Magnet School. The study showed an increase in science knowledge (specifically space science knowledge). JSM is a STEM school and it is hoped that by the end of the project students' science scores will be higher than students in non-magnet schools. We are not intending to test only for space science knowledge as the study did but for science more generally. We intend to use all 24 GEMS Space Science units in 4th grade, the only elementary school grade that the State tests for science. It is expected that 4th grade science scores of JSM students will be higher than similar non-magnet students. This will be determined in a quasi-experimental study performed by the CRESST at UCLA at the end of the third project year. Fidelity of implementation of the curriculum and instructional methods will be determined through teacher interviews and classroom observations, unit analysis by project staff and evaluators, documentation of peer reviews of units and examination of the intended curriculum documents.

Relevance to the project: The GEMS® Space Science Sequence for grades 3–5 introduces students to fundamental concepts in space science using the solar system as the foundation. Students investigate size and scale relative to distance, the Earth's shape and gravity, how the Earth moves, and moon phases and eclipses. The activities in the curriculum target core space science concepts. Students explore the role of models and evidence in science. Working in small groups, students are encouraged to evaluate alternative explanations, use evidence to support them, and critique the merits of an explanation. Educators may implement all the units in a single grade during one school year or teach individual units in consecutive grades over two or three years. Not all of the units in a sequence must be taught—each can stand alone, if necessary.

The magnet curriculum at JSM Sea and Sky Magnet will include the study of space science. Activities for students will include visits to the Yale Leitner Family Observatory and Planetarium to study astronomy and space science, see the Earth via NASA's real time video, and speak with astronomers and space scientists. Partners including the the Leitner Family Observatory and Planetarium at Yale will help teachers develop additional authentic STEM learning experiences both in and outside of school and provide professional development to support those experiences and the units they are integrated with.

Therefore, GEMS® Space Science Sequence for grades 3–5, the intervention used in the study, will be a good fit for this magnet school supplementing teacher created units. The use of GEMS® Space Science Sequence supports the logic model output Quality Magnet Instruction (a high quality curriculum that is capable of attracting students from different racial/ethnic and socioeconomic backgrounds) for JSM as well as the long term outcome of increased science achievement as measured by the fourth grade State science test and determined by a quasi-experimental study that meets the What Works Clearinghouse design standards. (Please see

performance measures 4.9 and 4.10.)

To make its implementation close to that described in the study, teaches will undergo approximately 28 hours of professional development, from the Connecticut Science Center, to support their use of this curriculum. It will be structured as all PD in this project is, as workshops with in-school follow-up coaching.

The relevancy of Granger et al., to this project is broader than this one excellent group of 24 space science units. One of the concerns of the research team was to investigate the effectiveness of reform-minded practices (in this case inquiry) in the teaching of science. The GEMS Space Science was chosen for the study "because it employs an inductive approach to teaching and embodies some of the qualities of the reform-based approach to science teaching as described in the *National Science Education Standards* (NRC, 1996), *Inquiry and the National Science Education Standards* (NRC, 2000)" "In answer to the central question, 'Does the use of reform-based curriculum in combination with professional development support student science learning?' our work indicates that well-designed, reform-based curricula in combination with teacher professional development around that curriculum had positive and statistically significant influences on student achievement in the content area (space science), in their knowledge about models and evidence, and in their views of science inquiry as a result of instruction.

Furthermore, this influence remained positive and statistically significant for student knowledge about models and evidence and their views of science inquiry five months' post instruction, in this regard, this aspect of our findings are congruent with those of Blanchard et al. (2010), Wilson et al. (2009), and Lynch et al. (2005)."

During the course of this project, three STEM elementary schools will be developed. By the end of the project, most of the NGSS standards will be implemented. By the third year of the

project, after extensive professional development, teachers will have the expertise to create their own units that utilize inquiry as well as use the best of the units that have been commercially produced and have been proven to be effective. Therefore, Granger et al is especially relevant to the project because it is focused on teaching science through inquiry a major project focus.

Invitational Priority… projects that propose to increase racial integration by taking into account socioeconomic diversity in designing and implementing magnet school programs.

To further reduce the racial, ethnic and socioeconomic isolation of the magnet schools described in this proposal, New Haven will introduce an additional factor into its selection process. In addition, to accepting applications and enrolling suburban students (which reduces both racial/ethnic and socioeconomic isolation), New Haven will use socioeconomic status as a weighting factor in its lottery for magnet school seats for New Haven students in order to enhance its intra-district integration strategies. This will increase the chances of students who are not eligible for free and reduced lunch of being selected for one of the magnet schools. To maximize the impact this weighting factor, New Haven will contract with Richard Kahlenberg, a senior fellow at The Century Foundation and a noted authority on socioeconomic integration, to help it design a socioeconomic integration plan.

Mr. Kahlenberg will assist New Haven in designing the socioeconomic integration components of the district's proposed magnet schools program and will help the district communicate with the public about the value of economically integrated schooling. Drawing on his work in other school districts (Pasadena, Chicago and Charlotte-Mecklenburg), Mr. Kahlenberg will make recommendations about the optimal balance of low-income and more advantaged students in schools given local demographic realities. He will also make recommendations about the most reliable metrics for assessing students' socioeconomic status

that goes beyond simple reference to eligibility for the federal subsidized lunch program. Because public buy-in is critical to successful implementation of a socioeconomic integration policy, Mr. Kahlenberg will also help prepare a report about the merits of economic school integration and its use in other districts.

(a) Desegregation. … **(1)** The effectiveness of its plan to recruit students from different social, economic, ethnic, and racial backgrounds into the magnet schools.

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 inter-district transfer programs that have become important school reforms in Connecticut.

To remedy the racial/ethnic and socioeconomic segregation of its schools and improve achievement, the New Haven Public Schools propose four magnet schools to serve both New Haven and suburban students. Students from 23 suburban school districts, with a total of 53,500 students in elementary and middle school grades, of which 67% are white, and 69% are middle and upper middle class, can transfer to New Haven magnet schools, through the Interdistrict Magnet School or Open Choice Programs, to reduce minority group isolation. 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, suburban students will transfer to West Rock under the Interdistrict Magnet Program, and to the three other schools under Open Choice. Per capita state aid 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. Because the majority of the students that these schools will serve live in New Haven, another program goal is to recruit greater numbers of white students from schools that are above the district average for white students and middle class students from schools with the greatest number of students who do not qualify for free and reduced lunch. Here is how New Haven and suburban students will be recruited.

The Recruitment Team – Key to the success of the recruitment process for the four proposed magnet schools are the existing relationships between the District and parents, educators, administrators, and the communities. Because New Haven currently has 26 magnet schools, it has procedures and systems in place that will support recruitment efforts at the four new magnets. The project recruitment team, with overall responsibility for planning, directing, and coordinating recruitment activities at the project and school levels, will consist of the Project Director, the Recruitment Coordinator, and 3 Recruitment Specialists. Working closely with each school's stakeholders, the project recruitment team will support the development of a "brand" and an associated marketing and recruitment plan for that school. The project staff will work with the district Supervisor of Bilingual/ESL Programs to translate all materials into the languages that are spoken in the district to ensure equal access for all families. The project director will coordinate the activities of the project recruitment team with the district recruitment staff responsible for non-MSAP supported schools.

The school recruitment team for each proposed magnet will consist of the principal, the school's parent coordinator, and magnet resource teachers and will be guided by the school's School Planning and Management Team (SPMT). Also critical to the recruitment process will be each school's Parent-Teacher Association, which will actively recruit parents for the magnet school's program. Further, the Project Director and recruitment staff will use the district's parent

involvement program, including the various parent workshops conducted at the district and school levels and parent newsletters and bulletins (in electronic and print versions) to inform parents of all activities at the four proposed schools.

The Recruitment Plan 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 to offer assistance to those who need it. This plan combines 21st-century mediums and approaches to branding and marketing with traditional media and face-to-face communication. As a result, it will engage a broad range of New Haven and suburban 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, input from and decision-making at the school level will be essential to the design and implementation of open houses, magnet fairs, branding, staffing of recruitment events, and the creation of media and other materials. Both district and school materials will reflect the individual voice of each school.

If the grant is funded, work will begin immediately on developing and implementing project-wide and school-specific recruitment plans. Each will include clear timelines, staffing, activity descriptions, and target neighborhoods and feeder schools. All school plans will be approved by the Project Director and project 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 – Recruitment activities will be driven by the use of data. Every month, project and school staffs 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, attendance at open houses and magnet fairs, and the number of hits on the district magnet web site. 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, gender, socioeconomic status and geographic location. Adjustments to the plan will be made quickly during the recruitment period (e.g., more open houses, direct mailings, recruitment booths at suburban malls, community meetings in specific neighborhoods or towns) to ensure a large and diverse applicant pool.

Project and school staffs will choose recruitment strategies after soliciting input from New Haven and suburban parents and students, and New Haven staff. Focus groups will play a valuable role in providing feedback that will strengthen all recruitment strategies and make clear to parents that the magnet schools welcome their involvement.

The project 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 project and school recruitment teams to examine the successes of the magnet schools in reducing minority group isolation and suggest areas for improvement. Schools that do not reach their recruitment goals and desegregation objectives will, with the assistance of the Project Director and district recruitment team, either modify their 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 parents either by public transportation or highways. It will house the Recruitment Coordinator, three Recruitment Specialists, and the Project Director.

The Recruitment Coordinator will lead recruitment activities and the development and implementation of recruitment plans and will supervise the Recruitment Specialists who will have intimate knowledge of New Haven and its various neighborhoods, its suburban communities and New Haven's magnet school programs. They will be able to present the magnet

programs to families and students 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. They will learn at the center how to access the project website at home or public library where they can share it with other family members, learn about specific magnet programs, and 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 (i.e., 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, emails and telephone calls to provide support and invite parents to events at the proposed magnet schools. A particularly important task will be giving individual and group guidance to parents who need assistance navigating the application process and selecting the school that best fits their child's needs, interests and aspirations.

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, at feeder schools in the suburban towns where interest in New Haven magnet schools has traditionally been high, and at public libraries in New Haven and surrounding communities.

Magnet Recruitment Training -- The Recruitment Coordinator and Project Director will provide training that will enable school staff and parents on the school-based recruitment teams to describe the magnet program in clear, compelling, and consistent ways and will support these

teams in developing a magnet school brand and recruitment plan. Training sessions will also engage school staff in developing an "elevator speech" articulating the highlights of each school and prepare them to respond to common questions during open houses and school tours. Finally, guidance counselors at each site will be trained in the application process and how best to supply prospective families with the information necessary to select their school of choice.

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, including information on the school's theme, upcoming dates and events, and contact information for teachers and staff.

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

Direct Mail as a Tool*:* After the magnet program begins, the project recruitment staff will send periodic mailings to its target groups, including suburban families, to inform prospective applicants and follow-up with families who have expressed interest in specific schools by attending open houses or magnet fairs.

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, and contact information for the schools and Recruitment Center. The *New Haven Register*, the city's major newspaper, will be used to maximum advantage (e.g., editorial, advertising, etc.) and the district will send press releases to and

advertise in smaller community newspapers such as *New Haven Living, La Voz (Spanish), CT Parent Magazine*, Shoreline (covering 11 towns) and *New Haven Magazine*. These smaller periodicals maintain wide circulation locally and are closer to the "heartbeat" of the local community than the larger *Register*. New Haven will also run announcements of magnet events on local TV and radio stations and will produce 30- and 60-second magnet commercials to run on local TV stations, with a link to the magnet website on each TV station's page. The longer commercial will also air at New Haven and suburban movie theaters along with the coming attractions. Both commercials will be accessible 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, photos of school activities, messages from school leadership, and links and videos related to the school choice process. Twitter will also be especially useful for sending out short program notes, updates on school events, and links to thematic content. Finally, school staff will be encouraged to promote their magnet schools by creating a LinkedIn profile of professional information about themselves.

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. Magnet staff will follow up with personalized emails and will also send parents email blasts (along with information via U.S. mail) about upcoming events, new school selection information, and application deadlines. Magnet staff will email each school's electronic, multi-color, and clearly branded newsletter to all parents during 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 who will answer questions about their programs and invite prospective families to their open houses. Each school's booth will reflect its magnet theme and will have a prominent sign or banner that contains both the school name and its brightly colored logo; flyers listing open house dates; image-rich student work that describes and models the STEM themes and educational objectives of each magnet schools; and a PowerPoint that runs on a loop with information about the school and pictures of engaging, rigorous student activities.

Reaching Out to Pre-Kindergarten 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, in New Haven and its suburbs, including private pre-k programs, will be provided with magnet school literature to share with the families that they serve. Finally, postcards will be mailed to pre-kindergarten students prior to the application period providing relevant student ID numbers and encouraging each family to apply.

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 to welcome potential families to the school site. The school-based recruitment team, in consultation with the project director and recruitment coordinator, will plan school tours, including the role of the tour guide, the route, content (e.g., a short presentation or performance, a PowerPoint presentation, etc.) and the things to highlight. Tours will be conducted by project and school staff and parent volunteers in English, Spanish, and other languages, as needed. Each tour will include parent representatives from both New

Haven and suburban towns. Parents of students who already attend a school can speak about the programs persuasively and with passion.

Open Houses will also serve as an opportunity to solicit real-time feedback from parents on recruitment materials and their impressions of the schools. Finally, each magnet school will, before and after the Fairs, allow prospective students in 3rd grade and up the opportunity to shadow a current student for a day to promote informed decisions as families apply to schools.

Linkages With The Community: Since parents have strong ties to their respective religious communities, churches, synagogues, and mosques in various New Haven neighborhoods and suburban towns will be engaged as key partners and will serve as sites for focus groups and meeting places where parents can be presented with brochures and hand-outs. All public libraries in New Haven and targeted suburban communities will have hard copies of the resource materials found at the recruitment center. District recruitment staff will train library staff so that they will be familiar with the magnet program and able to guide parents in using library computers to access the project website with its wide range of recruitment information. Furthermore, Recruitment Specialists will set up temporary mobile information centers at supermarkets, malls and other locations to disseminate materials and applications.

Local bus advertising will help the wider community learn about the magnet program. Billboards will be placed along highways to capture suburban audiences and street banners in English and Spanish will advertise the Citywide Magnet Fair and the Interdistrict Magnet Fair in both New Haven and suburban neighborhoods.

Focused Recruitment: New Haven magnet schools have been successful in attracting both New Haven and suburban students. However, new and newly revised magnet schools can attract applicants who, as a group, are demographically similar to the students who already attend

the school. Therefore, the proportion of students in various racial, ethnic and socioeconomic groups in the actual school enrollments and applicant pools can be similar. Focused recruitment then becomes an important strategy. Past experience and the weekly analysis of applications during the recruitment period help the recruitment team determine how many of the activities described above should be more heavily concentrated in New Haven feeder schools and neighborhoods and suburban towns to attract students from groups that might be underrepresented in the applicant pools for each of the proposed schools. For example, magnet school ads may run more often in some suburban movie theaters. Recruitment specialists might set up tables in the lobbies of suburban theaters especially when family oriented movies are being shown. Bus advertisements might be put on suburban routes in neighborhoods and towns where families have shown past interest in New Haven magnets. Prekindergarten programs that serve the children of Yale faculty members might receive additional visits from recruiters. The goal of the focused recruitment is to try to tailor strategies and use resources to achieve applicant pools for each school that would more effectively reduce minority group isolation and promote socioeconomic integration. For new or newly revised magnets that often means increasing activities in suburban towns and middle class New Haven neighborhoods. The purpose is to meet program goals while serving diverse groups of New Haven and suburban students.

(a) Desegregation.: **(2)** How it will foster interaction among students of different social, economic, ethnic and racial backgrounds in classroom activities, extracurricular activities, or other activities in the magnet schools.

Increasing Interaction among Students from Different Backgrounds

A variety of strategies, including interdistrict programs, recruitment, developing exemplary magnet programs and improving student academic achievement at each proposed site will

combine to reduce minority group and socioeconomic isolation. Once students from diverse backgrounds attend schools together, there should be strategies to insure that they learn together.

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 70% (yr. 1), 75% (yr. 2) and 80% (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 backgrounds is to put them in the same classes, avoiding the use of "ability" as the sole criteria for organizing classes. Therefore, every magnet school class will have nearly the same racial/ethnic composition as every other class in its grade. In addition, STEM classes will serve as many girls as boys.

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 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. Cooperative learning strategies have been extensively researched and have been shown to improve student achievement for a

wide variety of subjects for grades kindergarten through high school, when properly implemented. It has been used to promote reading and writing achievement, conceptual understanding in science problem solving in mathematics and higher-order thinking and learning.

At all four magnet schools, instruction will be inquiry-based, bringing 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.

Cooperative learning will be used throughout the school day. When part of an established model such as Readers' and Writers' Workshop, small groups will be used and structured as specified by that model. At other times, cooperative learning groups will be set up and facilitated by teachers and incorporate the features that successful cooperative learning approaches have in common (e.g., setting of group goals, diverse interdependent teams, teaching communications and problem solving skills). Professional development (PD) will help teachers understand the best cooperative learning approaches and how to implement them in their classrooms. For example, cooperative learning strategies that can be used during STEM project work will be part of the PD form the Center for Technology and School Change.

After School Programs: Each school will have an after school program funded either from 21st Century Community Development Program funds or state funds. After school STEM activities will be developed jointly by a school's teachers, partners (e.g, Mystic Aquarium, Eli Whitney Museum) and the magnet resource teachers and will be related to the theme of each school. All after school STEM activities will be project based, and require students to work together in the same way they would during the school day. After school STEM activities will be taught by teachers from each school. The creation of after school projects will be part of the contract with the partners for each school. To ensure that all parents are aware of after school

activities, they will be described during every parent activity, described on the website of each school, and be part of the normal communication that the school has with its families. Transportation will be provided by the district. Attendance will be taken to ensure that students from all racial, ethnic and socioeconomic groups will take part. The goal is for after school activity participants to reflect the racial, ethnic and socioeconomic diversity of its school. If the enrollment of an after school program does not reflect the racial/ethnic and gender diversity of the school, the project staff will focus on the reasons and work to ameliorate them (e.g., better communication with families, activities to engage a broader range of students).

Informal Science: As described in the STEM priority section, each partner will also create family activities for students and family members to engage in at home and at the partner institutions. Each school will hold family days to get families started on these projects and to bring families with different backgrounds together in school and at partner institutions. For example, having family evenings or Saturday activities in school (time to be determined by each School Planning and Management Team) four times each year and then to have follow-up family activities at partner institutions, would help families from different backgrounds to get to know each other within the context of school and outside of school.

***(a) Desegregation.* (3)** How it will ensure equal access and treatment for…participants who have been traditionally underrepresented in courses or activities offered as part of the magnet school, e.g., women and girls in math, 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.)

Equity and Excellence for all New Haven Schools and Students:

New Haven 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 become highly engaged in high quality educational activities in mathematics, science, engineering and technology from the beginning of their schooling, so they will have the confidence in their abilities and learning potential to fully develop their interests in STEM subjects. It is also essential that students from underrepresented groups be given opportunities, early in their schooling, to apply their own knowledge and experiences as they learn the prerequisites that they need, and that students from high socioeconomic backgrounds generally bring to schools, to enroll and be successful in advanced STEM courses 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 possible. 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, including them as fully as possible into each school's magnet program. All of New Haven magnet schools will be accessible to students with physical disabilities. ELLs will receive the supports necessary for equitable and successful inclusion in all of the STEM activities with the general student population.

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. ELLs will receive the supports necessary for equitable and successful inclusion in all of the STEM activities with the general student population.

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 and culturally responsive instruction, cooperative learning, heterogeneous classes, and intense professional development: (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; and, (4) recognize students' own resources for learning as well as their academic

needs. To guarantee these important strategies are fully implemented, this project has performance measures that insure all students will be treated equitably by receiving the supports they need in order to 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, improve cross-cultural communication and interracial understanding, every magnet school teacher will receive training from the Equity Assistance Center at Brown University, a program of the University's Educational Alliance. For example, to respond with cultural competence to the needs of students from different cultural and linguistic backgrounds, sessions will draw on the center's training modules on cultural competence, including publications such as : *Leading with Diversity: Cultural Competencies for Teacher Preparation and Professional Development* (Trumbull & Pacheco, 2005, updated in 2015) and *The Teacher's Guide to Diversity: Building a Knowledge Base* (Trumbull & Pacheco, 2005, updated in 2015). *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. The center's training modules include: 1) building teachers' cultural awareness of their own culture and the cultures of their students; 2) developing teachers' knowledge of the importance of knowing students' language proficiency levels and differentiating instruction to address the linguistic needs of each student; 3) increasing teachers' capacity to provide high-level, challenging, culturally relevant instruction that recognize students assets and needs; 4) creating classroom assessments that are equitable and valid for all students; and 5) engaging with families and communities as partners in students' education; 6) addressing disparities in discipline and access to rigorous instruction.

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*. The Equity Center at Brown will assist in the identification of research based resources and tools to develop activities related to STEM , gender equity, and the diversity of the students, including their linguistic, cultural, ethnic and racial backgrounds

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, and community partners, 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 and how they achieved success in the STEM fields.

(a) Desegregation. **(4)** The effectiveness of all other desegregation strategies proposed by the applicant for the elimination, reduction, or prevention of minority group isolation in elementary schools and secondary schools with substantial proportions of minority students.

To remedy the racial/ethnic and socioeconomic segregation of its schools and improve achievement, the New Haven Public Schools propose four magnet schools to serve both New Haven and suburban students. Students from 23 suburban school districts, with a total of 53,500 students in elementary and middle school grades, of which 67% are white and 31% come from low income homes, are eligible to apply and transfer to New Haven magnet schools, through the Interdistrict Magnet School or Open Choice Programs, to reduce minority group and socioeconomic isolation. This project will build on New Haven's outstanding record of success with magnet schools. A major activity that has already been described is the extensive recruitment campaign that New Haven will implement for these four magnet schools if this grant is funded. Students from both New Haven and its suburbs will be recruited. Past efforts for other similar schools have been very successful.

As previously described, since 2001, New Haven has developed 17 magnet schools with MSAP support: 5 schools in 2001, 2 in 2004, 4 in 2007, 2 in 2010 and 4 schools in 2013. Using the first year of operation as the baseline, 15 of the 17 have reduced minority group isolation (MGI) through the current school year and 13 of the 17 have reduced socioeconomic isolation through the current school year. In addition, every school is still operating as a magnet.

As a group, these 17 magnet schools served 6,790 students in their baseline years and

7,649 students in 2015-16. They are serving more minority students (mainly black and Hispanic students) now than in the baseline years (6,305 vs 6,431), many more white students (485 in the baseline years and 1,153 in 2015-16). The baseline minority enrollment for these schools was 93%. For 2015-16, the minority enrollment is 84%. The baseline white enrollment was 7%. For 2015-16, it is 15%. The baseline enrollment of low income students for these schools was 72%. For 2015-16, enrollment of low income students is 51%. Of the 17 schools, 7 reduced MGI by 10 percentage points or more; 3 reduced MGI between 5 and 10 percentage points; 5 reduced MGI by up to 5 percentage points. The greatest reduction was 19.3 percentage points. Of the 17 schools, 3 reduced socioeconomic status (SES) isolation by 30 percentage points or more, 3 reduced SES isolation between 20 and 30 percentage points; 5 reduced it between 10 and 20 percentage points; and 2 by less than 5 percentage points.

Of these 17 schools, 13 have been operating as magnet schools for more than three years. Of these 13 schools, four are among the ten best performing New Haven schools on the most recent Smarter Balanced Assessment Consortium (SBAC) ELA/Literacy Test. (Four others in the top ten are magnet schools that were established prior to 2001.) Nine of the thirteen are among the top twenty best performing schools on the SBAC ELA test.

The reduction of minority group and socioeconomic isolation in these schools has occurred because most have interdistrict programs that serve both New Haven and suburban students. Of the 7,649 students served by the 17 magnet schools that have been developed since 2001, 2,662 (35%) are suburban students. Of the 1,153 white students currently enrolled in these schools, 651 (56%) live in a New Haven suburb. For 2015-16, the New Haven Public Schools serve 21,641 students. Of those, 2,662 (12%) are suburban students attending New Haven magnets. Of New Haven's, 3,101 white students enrolled for the 2015-16 school year, 948

(30.6%) are suburban students attending New Haven magnet schools. (These include students attending magnet schools opened prior to 2001.) Without MSAP support, these schools could not have been as successful.

Reducing Minority Group Isolation Increases SES Integration

There are 16 New Haven schools in which the combined percentage of black and Hispanic students is lower than the combined districtwide average of black and Hispanic students. These are the most racially/ethnically diverse schools in New Haven. Fourteen are magnet schools which reduced the isolation of either black or Hispanic students. The other two are schools that serve middle class, predominantly white neighborhoods. What is striking is that these are also the schools that have the lowest poverty percentages (proportion of low income students). The 5 most diverse schools (proportion of black and Hispanic students is 64% or less) are also the 5 schools with the lowest poverty percentages (below 30%). Among the 10 most diverse schools (proportion of black and Hispanic students is 77% or less) are 8 with poverty percentages less than 40%. Among the 16 most diverse schools (proportion of black and Hispanic students is 84% or less), 13 have poverty percentages less than 50%. Only one of these schools receives Title I funds. For New Haven, reducing MGI reduces concentrations of poverty.

Weighted Lottery for Student Selection: To further reduce the racial, ethnic and socioeconomic isolation of the magnet schools described in this proposal, New Haven will introduce an additional factor into its selection process. In addition, to accepting applications and enrolling suburban students (which reduces both racial/ethnic and socioeconomic isolation) New Haven will use socioeconomic status as a weighting factor in its lottery for magnet school seats. This will increase the chances of New Haven students who are not eligible for free and reduced lunch and attend economically diverse schools to have greater chances of being selected

for one of the magnet schools. To maximize the impact this weighting factor, New Haven will contract with Richard Kahlenberg, a noted authority on socioeconomic integration, to help design a socioeconomic integration plan that will include a weighting factor for socioeconomic status which will increase both SES and racial/ethnic integration. Currently, New Haven uses eligibility for free and reduced lunch to determine the socioeconomic status of students. However, for its SES integration plan and its lottery weighting factor based on socioeconomic status, it will adopt additional or other factors or use additional or different data that will improve the accuracy of the determination of socioeconomic status.

Focused recruitment strategies to insure that applicant pools for each school will have compositions that will result in the reduction of minority group and socioeconomic isolation were discussed in the Desegregation Recruitment section of this proposal. A benchmark (logic model short term outcome) related to the applicant pool is: *For each magnet school's applicant pool, the proportions of students in the isolated groups for that school are at least 10 percentage points less than actual current enrollment for that school.*

Retaining students who are selected to magnet schools: Three important statistics for the recruitment team and each magnet school are the composition (race/ethnicity, SES and location) of the applicant pool, the pool of students who applied and were selected, and the group of students who applied and enrolled. A pattern that sometimes emerges, especially for new or newly revised magnets, is that the proportion of white, suburban students and students living in middle class areas of New Haven is greater in the applicant pool than in the group of students who apply and enroll. Therefore, there are strategies that project and school staff will implement to help retain students who have been selected for each school.

Once placement lists are created, families are notified by the recruitment/placement staff

(district level) and lists are given to each school to enable outreach. Magnet resource teachers contact parents to set-up a school visit for them and their child including shadowing a current student during part of the school day. Magnet resource teachers give families their contact information and urge them to ask questions and visit the school. Magnet resource teachers will work during parts of the summer to continue this outreach including meetings with families and school tours. By the end of the first year, each school will implement a family day that includes one of their partner institutions (e.g., the Yale Leitner Planetarium) at the school and at the institution to give new students and families a better idea of the magnet curriculum of each school and emphasize the importance of authentic activities related to the magnet themes both in and out of school. There will be at least two school orientations over the summer to share information as well as give families opportunities to meet school staff and each other.

Each magnet school will have a welcome to new families social night in September of each school year where parents have the opportunity to meet other new and current families as well as teachers and staff. There will also be a meet the teacher night in early fall of each year. The websites of each school will be redesigned to include information about the new magnet theme curricula, what students are currently studying, projects and field work that students engaged in, and a section on activities for families both in school and at partner institutions that are tied to the magnet theme of the school.

Theme Selection: Magnet themes were selected by looking at the overall configuration of magnet schools in New Haven (current themes at various levels of schooling), the number of applications that current magnets receive, themes that teachers and the principal at each school were enthusiastic about and parent surveys. While New Haven has two STEM high schools and a STEM middle school, it has few STEM elementary schools. The last one developed,

Celentano Biotech, Health and Medical Magnet School had over 600 applications for its second applicant pool, illustrating that STEM is a popular elementary school theme.

Because principal and teacher buy-in are so important when implementing a magnet theme input from schools staffs is important. In addition, teachers and principals know the interests of their parents. Since all teachers and principals live either in New Haven or in surrounding suburbs, they have a good idea what types of themes might also attract suburban families. Planning meetings with schools began in June, 2015. Parent surveys were also an important part of the theme selection process. An effective method that is both economically feasible and extremely helpful is to survey the Citywide Parent Team (CPT) which consists of parents from each school. Its purpose is to provide input to the district. This is an open group, every school is represented but the CPT encourages participation from all parents interested in becoming more involved with both individual schools and the school district. The 138 parents who were surveyed have students in magnet and nonmangnet elementary schools in New Haven. Of these parents, 61% had pre-kindergarten or kindergarten students in school (the entry grades for the proposed magnet schools), 30% were Black, 32% Hispanic, 27% white and 10% were in other categories including unknown. (New Haven has few Asian students.) The most popular themes among all parents were STEAM and Technology and Design. Hispanic parents also liked Community Studies and Global Awareness, Black parents also liked Global Awareness and Air and Space. White parents also liked Global Awareness and Marine Biology. Overall, 82% of Hispanic parents, 85% of Black parents and 86% of white parents would choose one of these programs for their child. The themes selected and described in this proposal have the enthusiastic support of parents, teachers and principals as well as the Superintendent.

In summary, minority group and socioeconomic isolation will be reduced at each

proposed magnet school by attracting white and middle class students from New Haven and New Haven's suburban communities. Themes were chosen that parents from all racial and ethnic groups, from New Haven and New Haven's suburbs were excited about. The principals and the staffs of the four proposed magnet schools are also excited about the themes that were selected. Finally, because New Haven is a relatively compact city and borders on many of its suburban communities, traveling to these schools will be relatively easy. It is anticipated that for most students, the bus ride will be no greater than 45 minutes and for many it will be less than 30.

The magnet schools described in this proposal will serve students from New Haven and its surrounding suburbs and reduce minority group and socioeconomic isolation just as previous New Haven magnet schools have done.

(b) Quality of project design. …1) the manner and extent to which the magnet school program will improve student academic achievement for all students attending each magnet school program, including the manner and extent to which each magnets school program will increase student academic achievement in the instructional area or areas offered by the school.

Of the 18 New Haven magnet schools serving grades kindergarten through 8, most (14) were neighborhood schools that were converted to magnets. That is because New Haven's conversion magnet schools usually attained three key objectives. (1) They reduced the isolation of Hispanic and black students by attracting white students. (2) They reduced the percentage of low income students (increased socioeconomic integration) by attracting middle class students. (3) They increased academic achievement for all students. Over time, a set of best practices evolved that worked regardless of the magnet theme that was being developed. These formed the basis of a logic model and a theory of action that the activities of this proposal are based on. Research and high quality evaluations have helped New Haven confirm and refine the model.

The logic model and theory of action will be fully described in part 4 of this Quality of Project Design section. However, it is important to understand the model prior to reading about the grant activities that will increase academic achievement. (Please see the logic model graphic on page 110.) Core logic mode activities include:

Improvement of Curriculum, Instruction and Student Academic Supports: During this activity, teachers will develop or revise, over the three years of the project, all core academic subject units and strengthen how they are taught, supported by professional development (PD) (at least 50 hours per teacher per year).

Magnet Theme Development and Integration: The goal is to develop and integrate the magnet theme with the units created through the Curriculum and Instruction Improvement process (above). (This may occur after core academic units are written/revised or as part of the same process depending on school based decisions made by the principal and the school planning team.) Schools may also decide to create magnet classes that are not integrated with core academic subjects (separate or discrete magnet classes) to supplement integrated magnet units. The PD supporting this component (at least 50 hours per teacher per year) will include curriculum mapping, unit development/enhancement, NGSS implementation, inquiry learning, the development of authentic STEM projects and the creation of magnet standards.

Professional Development (PD) will include formal workshops with follow-up coaching by magnet resource teachers, professional development providers, district resource staff or instructional coaches, partner institution staff and teacher collaboration (e.g., PLCs, facilitated unit development, intervisitations with feedback and discussion, peer reviews of units).

The result of these activities will be: **Quality Magnet Curriculum and Instruction--** high quality, peer reviewed units that integrate the magnet theme with core academic subjects

(for at least 3, 6 and 10 hours per week, for all students, by the end of years 1, 2 and 3 respectively) and use new and improved instructional practices.

Curriculum, Instruction and Student Academic Support

Science and STEM: Connecticut adopted the Next Generation Science Standards (NGSS) on November 4, 2015. While the previous standards separated content from process, the NGSS integrate content with science/engineering practices and essential broad ideas, a major change called 3-Dementional Learning. Students learn content (Disciplinary Core Ideas) by applying science and engineering practices--asking questions and defining problems; developing and using models; planning and carrying out investigations; analyzing and interpreting data; using mathematics; constructing explanations and designing solutions; using data/evidence to support conclusions; obtaining, evaluating and communicating information--to that content as they use cross cutting concepts--patters; cause and effect; scale, proportion and quantity; systems and models; energy and matter: flows, cycles and conservation; structure and function; stability and change--to deepen their understanding of the natural world.

NGSS will be implemented in Connecticut schools during the three years of this MSAP cycle. Therefore, to create unique magnet themes, the STEM schools in this project will: ► Create magnet curricula that will deepen STEM learning as defined by NGSS (i.e., offer enrichment that supplements and complements NGSS). ► Integrate STEM with core academic subjects and provide students with opportunities to learn science, mathematics and engineering by addressing problems that have real-world applications. ► Have more resources available to teach STEM enrichment that is above and beyond what is offered in other schools that are adopting NGSS. ► Teachers who are prepared to teach to the NGSS and the STEM enrichment that will supplement and complement the curricula based on NGSS.

Because the New Haven K-5 core science curriculum currently uses the Science and Technology for Children (STC) program which has not transitioned to NGSS, the New Haven schools will use the Carolina Building Blocks of Science investigations which explicitly address NGSS 3-dimensional teaching and learning and were aligned to Common Core Standards. These kits will be supplemented with an online visual learning component that integrates engineering and technology (e.g., Carolina's TigTag program). These materials will be a beginning and building blocks which teachers may use to construct STEM units with the help of expert professional development partners as described later in this section.

Mathematics: As part of the shift to the CCSS, New Haven made a district-wide switch to a more rigorous curriculum, Singapore Math, in which topics are taught in greater depth. Common Formative Assessments enable students, parents and teachers to receive data-based feedback concerning how students perform. Curriculum guides for grades K-8 include a scope and sequence that outlines where the CCSS standards for each grade will be taught. They also highlight when to use specific best instructional practices. Also included are performance tasks and scoring rubrics. These guides will be updated and aligned with NGSS under the supervision of the district supervisors of mathematics and science.

English Language Arts (ELA): The pedagogical shifts that teachers made in aligning their curriculum materials and classroom instruction with the CCSS for ELA, have enhanced students' learning of science and math content. Since CCSS adoption, teachers, who for example, long had students primarily read literary texts, balance them with informational texts about STEM and other disciplines. Considering the many ways that NGSS and CCSS overlap--for instance, in their emphasis on students' needs to synthesize complex information, make an assertion, and defend that claim in writing--this process will continue as interdisciplinary magnet units are

created. Students in the magnet schools will learn to master STEM-specific vocabulary and build knowledge from STEM texts including texts that focus on their specific magnet theme.

New Haven's Reading Workshop and Writing Workshop (grades K-8), 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 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. Publishing (on a school "writing wall" or website) occurs when a completed text is reworked and edited to the satisfaction of the author. High quality non-fiction texts directly connected to the magnet theme of each school will be used in every grade, including kindergarten. The magnet schools will have literacy coaches who will work with all PreK-8 teachers and paraprofessionals and will work closely with the school based magnet resource teachers who will be part of staff for this project.

The Social Studies curriculum is driven by recommendations made by the National Council on the Social Studies in their College, Career and Civic Life Framework (C3). The C3 Inquiry Arc is designed to support students as they develop questions and plan inquiries; apply disciplinary concepts and tools; evaluate sources and use evidence; and communicate conclusions and take informed action. Instructional strategies drawn from Marzano, Marzano, and Pickering's "Classroom Instruction that Works" (2003), will support New Haven teachers as they move from

a traditional didactic approach to the use of these inquiry-driven practices to promote active learning. The Social Studies program will serve as the vehicle by which students connect historical events to the present day and analyze diverse STEM issues in meaningful ways. The curriculum is designed to be hands on and conceptually based, with a focus on high-interest and relevance as students are taught to read for meaning and apply what they have learned. The use of driving questions and sustained inquiry within the C3 model will align to the broader project-based approach proposed for each magnet school and the use of primary source documents to drive student learning will lend further authenticity to magnet instruction

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

Differentiating instruction means creating multiple paths so that students of different abilities, interests or learning needs experience equally appropriate ways to absorb, use and develop 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 varies the content, processes or product for each group in the class. 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 "teaching up," rather than watering down.

Improving the Academic Achievement of Students in Need of Greater Assistance

When needed, students will be given additional academic support. For example, for literacy, Response to Intervention (RtI) is used. (Please note that studies that meet the What Works Clearinghouse evidence standards have shown that RtI is an effective strategy for

improving both English language arts and mathematics skills of students.) 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 ensure that all students receive a high-quality instructional program in their core instruction (Tier I) with curricula aligned to CCSS 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 instruction provides remediation on skills not mastered, three to five times a week, through 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 instruction includes even smaller groups, generally one to three students, with the instruction broken into more discrete instructional skills that is delivered daily for 30-45 minutes.

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 student literacy needs: ► Reading Recovery Intervention Program (gr. 1-2); ► Leveled Literacy Intervention (K-2); ► Plugged Into Reading (gr. 3-8). ► Wilson Reading System (gr. 6-8 for students with decoding and spelling difficulties); ► Achieve 3000 (gr. 6-8 students with comprehension difficulties), ► System 44 (gr. 4-8), Read 180 (gr. 5-12); and ► Lexia Core 5 (gr. K-5).

English Learners (ELs): The magnet schools will include English learners in all magnet activities as well as strong ESL/bilingual education programs that reflect the Connecticut's English Learners Proficiency Standards. The magnet schools' theme-based curricula and the integration of literacy learning into all content areas that is fundamental to the CCSS will provide

ELs 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.

Individualized Language Development Profiles, for every English Learner, provides guidance to classroom teachers on the specific learning needs of ELs. Professional development will be provided so that teachers can implement a more personalized EL 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 ELs to learn both, through sheltered instruction, content knowledge and skills including academic language in subjects that require specialized vocabulary, sentence syntax, and academic discourse. All bilingual and EL teachers will fully participate in all MSAP project professional development.

School Improvement Planning: New Haven's school improvement process identifies school strengths and weaknesses and develops a plan to remediate the weaknesses. Using an inquiry process to examine data to identify and prioritize needs, the process develops strategic objectives that drive a set of strategic initiatives and actions that lead to improved student learning. The resulting School Improvement Plan (SIP) measures progress and impact against collaboratively-identified benchmarks. The School Planning and Management Team (SPMT) of each school develops the plan in consultation with the district (Directors of Instruction and Curriculum and Instruction Supervisors). Each plan must be approved by the district. The results are evaluated by the district each year. Much of the professional development (PD) related to curriculum and instruction improvement (a logic model component) is related to the findings of the school improvement process. What the MSAP project adds to this process is an even more intense

focus on curriculum and instruction at the classroom level, additional PD (50 hours per year per teacher for core academic subject improvement and 50 hours for magnet theme development and integration—logic model components) and resources focused on curriculum and instruction improvement, and the creation of a high interest (magnet theme) curriculum (a logic model component). An important part of the New Haven conversion magnet model is revising all core academic subject units and how they are taught while teachers receive intensive PD.

Common Planning Time (180 minutes/week): During these collaborative sessions, teachers will learn how to develop STEM (or Inquiry Social Studies for Clemente) units and projects and align them with the CCSS, NGSS and state standards. Magnet Resource Teachers (MRTs) will facilitate and help structure these sessions. This time will also be used for curriculum mapping, unit development and magnet integration. In addition to project staff and consultants, the State Education Department and New Haven's Curriculum and Instruction Department will provide core academic subject training as determined by each school's improvement process and plan.

Magnet Theme Development and Integration: Each magnet school will have a unique magnet theme, described below, that differentiates it from other schools in and around New Haven.

Working with the Connecticut Science Center, the Center for Technology and School Change and the magnet resource teachers, classroom teachers will create units and lessons that integrate their unique magnet theme into interdisciplinary magnet theme units aligned with the CCSS, the NGSS and Connecticut social studies standards, are project based and use inquiry. STEM units will use the engineering design process. Every unit will include a project focused on a magnet theme related STEM or social studies (for Clemente) topic.

Recognizing that professional development that will build the capacity of teachers to create these units will take some time, each school will immerse teachers and students in STEM

activities from the very start by using selected district created NGSS, Engineering is Elementary or GEMS Space Science units that will be supplemented and expanded to integrate them with the magnet theme of each school. This will be done with the support of the MRTs and the Connecticut Science Center which is a certified Engineering is Elementary professional development partner. Its staff has extensive experience offering science and inquiry professional development to teachers throughout Connecticut. As the year progresses, teachers and MRTs will modify the units more extensively and will finally be ready to produce their own STEM units that are integrated with the magnet theme and aligned with the NGSS. These teacher created units will be developed by the end of project year one and then throughout the grant period. The middle grades will use the same strategy but use grade appropriate units created units created by the Connecticut Science Center and the district instead of EiE or GEMS units.

Professional Development Providers for Magnet Integration and Unit Development

The Connecticut Science Center (CSC) will provide professional development in inquiry, science content and the NGSS. The Center for Technology and School Change (CTSC) at Teachers College, Columbia University will provide all STEM classroom teachers with professional development on curriculum mapping, developing magnet theme STEM units, that use project based learning and include authentic projects that integrate science, math, engineering and technology and solve real world problems. CTSC will help each STEM school develop a quality rubric for magnet units that will be used for peer review of units. The Buck Institute for Education (BIE) will provide all teachers at Roberto Clemente Leadership Academy for Global Awareness with professional development on curriculum mapping, developing interdisciplinary magnet theme units that use project based learning (PBL) and include authentic projects that integrate the global awareness theme to solve real world problems. The Yale Office

of New Haven and State Affairs, at Yale University, will help the magnet program develop a speakers' bureau of local STEM or Social Science (Clemente) professionals, including Yale faculty and graduate students, to provide professional development and mentoring for both teachers and students. This was described in the STEM Priority section. Partner Institutions for each school will offer additional content professional development. Professional development was described in the STEM Priority section of this grant and will be described further in the professional development section of the Quality of Project Design.

Makerspaces: Students at West Rock and Bishop Woods will have the opportunity to engage in hands-on learning in Makerspaces. Each Makerspace will be furnished with movable work stations to support collaboration, as well as white boards and work benches that allow students to design, construct, and test their creations in order to meaningfully engage in project-based units of study. The room will be stocked with durable tools and equipment and the consumable supplies necessary for each project. Work in the Makerspaces will be a direct extension of the project-based units being developed at each school. Students will be guided through the discovery process by teachers who will act as project managers to facilitate collaboration and learning for all students. Makerspace learning experiences will be designed by MRTs, the Connecticut Science Center and the Center for Technology and School Change.

The schools will have very different curricula.

Students will explore the "sea and sky" from the depths of Earth's oceans to the most distant points in our universe through STEM learning experiences using project-based learning, the engineering design cycle, the NGSS and a thematic interdisciplinary approach.

Theme Description: Students will work on STEM projects to solve real-world problems related

to the hydrosphere (both freshwater and marine environments), atmosphere and space. John S. Martinez (JSM) is designed around an inviting courtyard for outdoor learning where students will fly model airplanes and drones, study animals and plants in a freshwater pond and gather for classes. Outdoor learning capitalizing on the school's proximity to West Rock Ridge State Park, the Mill River and Long Island Sound (Lighthouse Point Park, Long Wharf Nature Preserve, Sound School Pier) will be integrated into STEM projects and provide real-world testing grounds for marine, freshwater and atmospheric studies.

Quarterly topics related to each magnet theme component (e.g., the effects of air and water pollution; ship design, navigation technology and exploration; the history and future of flight; astronomy and navigation) will be aligned with the NGSS for each grade to help connect what students learn in core academic subjects to interdisciplinary magnet STEM units. Students will apply what they learn during hands-on, inquiry based lessons to STEM projects that focus on questions such as: How do humans interact with the hydrosphere, atmosphere and space? How do we use them? How do we move through them? How do we affect them? How do they affect us? What problems can we solve? How can we design a solution?

Students will also be exposed to the theme through extensive field trips to the Mystic Aquarium, The Sound School Regional Aquaculture School, the Yale Leitner Observatory, Tweed New Haven Airport, the Coast Guard Academy, the Groton Submarine Base, Woods Hole Oceanographic Institute and the New England Air museum.

To begin the year, students will visit the Yale Leitner Family Observatory and Planetarium and receive an introduction to astronomy and space science, see the Earth via NASA's real time video, and based on their grade level, speak with astronomers and space scientists. They will also visit the Mystic Aquarium to receive an introduction to marine and

freshwater studies by touring the different aquatic environments that are vividly presented at the aquarium. A third introductory visit will be made to the New England Air Museum to introduce students to aeronautics. Students will explore the museum's collection of over 100 aircraft, sit in cockpits of historic aircraft, meet pilots and aviation engineers as they are introduced to the principals of flight and the history of aviation.

The staff of all three museums will work with the magnet resource teachers on these introductory units and the professional development teachers need to teach these units. This will set the pattern for the three years of the grant. These three institutions will be major providers of content professional development that will support the development and implementation of theme based units and projects. Visits to these museums will support specific units and projects.

JSM students will study all NGSS disciplinary core ideas but go further and deeper in their studies using topics related to the magnet theme. Each interdisciplinary STEM unit will culminate in a magnet theme related STEM project. For example, as first and second graders study organism growth and development, they will focus on organisms that live in the air and water. Their projects will include designing and setting up aquaria to reflect local fresh water and marine environments and designing ways to study the growth and development of local organisms. This will be supported by trips to the Mystic Aquarium where aquarium staff will discuss the differences between marine and freshwater environments and show students how their tanks are set up and maintained. Students from The Sound School Regional Aquaculture School, a New Haven high school that specializes in aquaculture and marine trades, will assist students as they set up tanks in their classrooms. In **Language Arts**, they will use nonfiction texts, and visit the beluga whale exhibit at the Mystic Aquarium, to identify characteristics among whales while creating a bar graph depicting the presence of traits in parents and offspring

in whale populations in **Math**. This research will result in the development of a family tree in **Science** showing how characteristics might develop within a whale pod and demonstrating how traits are passed from parent to child. In **Social Studies**, students will map the migration of a pod as seasonal conditions change.

Third through fifth graders will continue to study the interactions between organisms and water with watershed and river system studies, ecological studies, and more complex global weather studies. As students examine the effects of environmental changes, both manmade and natural, on living things, STEM projects will focus on lessening those effects through designing solutions (e.g., wastewater treatment, prevention of chemical contamination of rivers). Students will also study the impact of shipping lanes and air travel on local ecosystems and industries (e.g., fishing). After studying motion and force, STEM projects will focus on the technology and engineering of sea and sky travel as students design and build vehicles for specific purposes. These units will be supported (PD, trips, unit design support) by the Mystic Aquarium, the New England Air Museum and the Yale Leitner Observatory and Planetarium.

Sixth through eighth grade students will study computer design and coding, as well as aerodynamics and electronics. Their in-depth analysis of interactions of ecosystems, earth movements and climate change and their effects will lead to STEM projects to minimize the impact of natural disasters on New Haven, a coastal city. Students might begin in **Math** by compiling data and conducting a scatterplot analysis of storms by category and year. During **Social Studies**, they will evaluate the geographic features that contribute to disastrous hurricanes before designing a building in **Science** that can withstand hurricane forces, building a prototype, and testing their structure. The culminating task will include a PowerPoint presentation, developed in **Language Arts**, in which students present their results, citing evidence.

As described in Competitive Priority 5, the GEMS® Space Science Sequence will be used with 4th graders. These units introduce students to fundamental concepts in space science using the solar system as the foundation. A research study that meets the What Works Clearinghouse evidence standard showed a statistically significant increase in space science knowledge among students who were taught using these units.

Students in all grades will keep STEM journals to write about projects, trips and topics that they study. All classrooms will become mini-aquatics labs with aquaria reflecting local freshwater and marine environments and equipment to study them. A Discovery Room/Aquatics Lab will provide a hands-on environment for students where they will have the resources to apply their learning while performing experiments and building and refining models for STEM projects. The room will be equipped with engineering supplies, an interactive whiteboard, iPads, computers, aquaria and aquaria supplies and materials for experiments.

Professional Development (PD): The following were previously described: Connecticut Science Center, Center for Technology and School Change, Columbia University, and the Yale Office of New Haven and State Affairs. **Additional PD from Partners:** JSM will contract with two STEM expert consultants (STEM faculty or graduate students from Yale), for additional STEM content PD. The Mystic Aquarium and Sound School staffs will provide PD related to hydrosphere studies; The Yale Leitner Observatory and Planetarium and the New England Air Museum for aeronautics and space science. Partners will also help develop authentic STEM learning experiences both in and outside of school. (Please see Competitive Priority 4.)

West Rock STREAM Academy (PK-4)

Students will become confident authors, readers/writers, and problem-solvers as they explore the connections between the arts and sciences through interdisciplinary thematic units

and hands-on STEM learning experiences that focus on the natural world. By combining science, technology, engineering, mathematics and the arts, with rigorous writing and literacy instruction (STREAM-STEM, Reading, Arts), students will learn to think and act like scientists, engineers and authors and be prepared for success in the middle grades and beyond.

Theme Description: West Rock STREAM Authors Academy (WRSA) students will use the language, tools and methodologies of STEM professionals and published authors as they conduct scientific investigations and engineering challenges in the school's Discovery Room/Makerspace as well as the natural environment in and around their school using nearby West Rock Ridge State Park (Connecticut's second largest), the West River Open Space area, Pond Lily Nature Preserve (a 14 acre ecosystem of wetlands, forests, and streams), the Yale Marsh Botanical Garden and the Audubon Center Bent of the River to extend their STEM investigations of nature to "outdoor classrooms". In each interdisciplinary STREAM unit, students will develop and work on a STEM project, read magnet theme related fiction and non-fiction texts and publish a writing piece related to their STEM project. They will also participate in a range of creative and visual arts including music and dance instruction.

Students will be exposed to the magnet theme through thematic, interdisciplinary STEM units developed by teachers with project support as well as units adapted (e.g., Engineering is Elementary) for the theme. Students will write across the curriculum and will use writers notebooks that guide them in expository writing in STEM to record their procedures, data, observations, wonderings, and hunches; to explain their work; and write about their trips outside the school. WRSA students will publish books, booklets, essays, informational pieces, narratives, opinion/argument pieces, and stories as well as digital pieces such as narrated animations, blogs, videos, and Wikis. Student writing will be collected and published.

To help students learn about being authors, published authors will share their craft with students as part of the interdisciplinary units. Visiting authors will represent not only children's fiction but also non-fiction and include scientists, inventors, designers, engineers and architects including those who write on digital platforms. The school will renovate and upgrade the Publishing/Digital Arts Room as well as establish a STEM Lab/Makerspace/Discovery Room where students will conduct experiments and build engineering projects.

WRSA students will learn experientially outside as well as inside the school. For example, Kindergarten students will explore the essential question, "Why are trees important?" They will learn tree vocabulary, read books about trees, investigate how different parts of trees can be used, and study local trees. During "leaf walks" on school grounds and neighboring parks they will use observations to describe patterns; collect, count and categorize leaves; describe their colors, shapes and textures; and make leaf rubbings and collages of "leaf people". Students will visit the Marsh Botanical Gardens before the trip to be introduced to the purpose of leaves, other tree and plant structures. Marsh staff will also support this unit with content professional development for teachers. The unit will include an investigation of the foods trees provide as students learn that plants are an important food for animals; students will visit an apple orchard, describe different apples using all their senses, make graphs about apples, eat apples and applesauce, and make apple prints. The class will publish a book about what they learned about local trees and leaves. Scientists from the Yale School of Forestry will visit to share their knowledge of trees and writing with students as part of the unit's publishing celebration. Marsh Botanical Gardens staff will help students with projects such as "How can we grow plants indoors?" Grade 1 students will investigate, "What is sound?" by reading books like *Sounds All Around, All about Sound* and *Listening Walk;* documenting in their notebooks the natural and

man-made sounds they hear on listening walks outside school; doing hands-on activities that explore properties of volume and pitch using the EIE unit *Sounds Like Fun;* and creating musical instruments as a STEM project. Partner Music in Schools will perform at the publishing/project celebration, bringing percussion instruments for the children to try. Grade 4 students will explore, "Why are there rocks in our neighborhood?" There will be a shared class reading on rocks, and a robust classroom library with leveled fiction and non-fiction books on rocks, minerals, the rock cycle, and fossils. Students will participate in a "rock walk" outside the school where students will note their observations about rocks in their STEM notebooks. Partner Peabody Museum of Natural History will introduce students to the vocabulary of rocks, minerals and fossils as well as local geology; students will make observations of museum specimens using the scientific vocabulary. They will replicate rocks as an engineering challenge (EIE unit *Solid as a Rock*). As a culminating activity, students will hike to investigate sedimentary, igneous and metamorphic rocks in West Rock Ridge State Park. Before that, they will have visited Frederic Church's *West Rock* painting (New Britain Museum); on the hike, they compare what they see to Church's painting and sketch or take photos and plan their own artwork inspired by views of New Haven and Long Island Sound.

Partners: In addition to arts integration into interdisciplinary STEM units described above, students will experience the arts through visits from teaching artists (Yale Music In Schools initiative) and performances by TheaterWorks, to enable students to see books come to life as theatrical productions. Partnerships with the Yale Peabody Museum of Natural History, Yale Marsh Botanical Gardens, The Audubon Society of Connecticut and the Yale School of Forestry will help teachers and MRTs develop authentic STEM learning experiences in and outside of school that are coordinated with units they are developing and teaching.

Professional Development (PD): The following will be described in Quality of Project Design (3) beginning on page 89: Connecticut Science Center, Columbia University Center for Technology and School Change, and the Yale Office of New Haven and State Affairs.

Additional PD: Two consultants, arts educator and an environmental expert (Yale faculty or graduate students), will assist teachers integrate the arts and natural world into units. The Yale Peabody Museum of Natural History, The Marsh Botanical Gardens, The Audubon Society of Connecticut and the Yale School of Forestry will provide PD on magnet theme content.

Bishop Woods Architecture and Design Magnet School (K-8)

Students will see themselves as planners and designers with the confidence that they can create a more desirable future and the knowledge and tools necessary for building that future. The exploration of the built environment, in addition to the natural world, will be their springboard to a deeper understanding of STEM and social studies and how they are connected.

Theme Description: Students will explore built environments—their school, their communities, and the City of New Haven— and the natural world, as they learn STEM and social studies through interdisciplinary magnet theme units and hands-on projects that identify and solve authentic problems through the lenses of planning, engineering, design and building.

Each unit will have a STEM-related Design Challenge that incorporates engineering and design in the natural world (e.g., animal habitats) and human world (e.g., architecture, city planning). Students will apply what they learn during inquiry-driven projects that focus on authentic questions such as "How do animals (including humans) build structures that protect them and keep them warm and cool?" or "What should we consider as we design a multi-generational recreation center?" Students will explore planning issues such as transportation access, the sometimes competing needs for residential, commercial, and public spaces and

environmental impact and learn design vocabulary such as testing and prototyping.

Bishop Woods staff will introduce planning and design thinking each year through a "Getting to Know Our Community" unit that sets the stage for the year's learning. The unit, which will change each year, will engage students in learning about the built environment around the school through scavenger hunts and within the school through using design thinking to enhance the classroom and school environment using IDEO's *Design Thinking for Educators* toolkit. One year might focus on the materials of the built environment; students might sketch, make rubbings, and take photos of building materials and pay attention to how materials used inside the classroom affect the noise and comfort. Another year might inventory the uses of buildings in the neighborhood and how space in the school is apportioned. Students will be exposed to the theme through field trips to new and old buildings in New Haven—David Ingalls Hockey Rink, Yale Art Gallery, Yale Center for Engineering Innovation and Design, M. Armstrong Company and Carriage Factory, and City Hall. They will visit architects' offices; explore residential communities (public housing, apartment buildings, Beaver Hills Historic District); learn about the built environment by walking on and around bridges, overpasses and parkland; and be introduced to the world of civil engineering and design through visits to the Yale Center for Engineering & Design and Yale School of Architecture. Programs from partner Eli Whitney Museum and Workshop will engage students in building projects at the museum and at the school. Examples of projects include building birdhouses and bird feeders; rubber band cars and battery-powered buggies; and micro-architectures and bridges.

Bishop Woods students will study all NGSS disciplinary core ideas, and go deeper in topics related to the magnet theme. Each interdisciplinary unit will culminate in an inquiry-based Design Challenge, tying units to NGSS (STEM), the Connecticut Social Studies Framework, and

the Connecticut Core Standards for reading, writing, speaking and listening and mathematics.

For example, when grade 2 students study biodiversity and animal habitats (NGSS DCI LS4.D), they will learn about birds' nesting places and collect materials to make their own birds nests after guided walks through the Audubon Center Bent of the River. The Audubon Center staff will also support the unit with content professional development, unit development support and assist in the development of projects and field experiences. Partner Eli Whitney Museum and Workshop will engage students in building a birdhouse while as they learn about measurement, adapt houses to species, and site the house for temperature and security. The unit's Design Challenge will be to build and test a birdhouse roof that will keep birds cool in the sun (NGSS DCI ETS1.B; Cross-cutting concepts and Science & Engineering Practices 2-LS2-2). Students will decide on materials and roof color, and then test the temperature of the birdhouses under a heat lamp—redesigning their birdhouse if necessary.

Grade 6 students will study ancient Rome, focusing on the influence of the Roman built environment on today's architecture, engineering and planning. Students will learn about Roman advances in material sciences (cement, concrete, brick-and-mortar masonry) and engineering (arches, aqueducts); and how Roman buildings reflected its culture. Students will focus on the roles of water in earth's surface processes (NGSS CDI ESS2.C) and in the growth of ancient and modern cities (e.g., New Haven). With assistance from partner the South Central Connecticut Regional Water Authority, students will learn how New Haven gets and its water and protects its quality. This unit's Design Challenge will be to build and test an aqueduct that uses gravity to carry 2 liters of water (NGSS DCI ETS1.B, ETS1.C). Students will present their work at Roundtables (see below) that include engineers from the Regional Water Authority.

Grade 8 students will complete two semester-long Capstone Design Challenges. First,

guided by teachers and community members, groups of students will imagine, research, design, and build cities of the future that show a solution to a citywide sustainability issue. To do this, they will use all the science, math, engineering and design knowledge they have acquired over their time at Bishop Woods. They will design with computers; build scale models; conduct research; and write and present. Winners of a school-wide competition judged by planners, architects, and engineers will advance to partner Future City's New England regional competition held each January. In the second half of the year, students will work with community mentors to select a community or city problem to address. Examples include renovating the children's area of a local library; designing an enhanced visitor experience at Bishop Woods Bird Sanctuary; expanding the school's play area to meet the needs of all students; creating a proposal to start a Farmer's Market in the neighborhood to address its lack of grocery options; and designing for better pedestrian and bike flow in their neighborhood. Students will present their work at a special Roundtable (see below).

Making thinking, reflection, and work products public is an important part of the design and engineering process as well as Connecticut Core Anchor Standards for speaking and listening. Classes in grades 3-8 will host Roundtables twice a year, during which students share their work and learning from Design Challenges with teachers, families, and community members. Professionals from magnet-related fields will attend the year's second Roundtable for Grades 5-7, providing outsider insights into planning, design, and engineering. Grade 8 Roundtables will focus on capstone projects along and will include city planners, engineers, and architects. All Roundtables will be accompanied by protocols to prepare students, guide participants, and help students reflect on their learning after the experience. In addition, Bishop Woods will host quarterly Design Festivals that showcase student work and provide learning

opportunities for families and the community around STEM themes.

Students in all grades will use the dedicated STEM/Makerspace Design Lab for hands-on units on architecture, urban planning, design, and two units adapted from Engineering is Elementary. The STEM/Makerspace Design Lab will provide a creative environment with the resources necessary for building, innovation, and testing. The room will be equipped with whiteboards, laptops, computer assisted design stations, a 3D printer, work surfaces, and supplies that students will use to enact the design cycle up to prototyping. Professionals from engineering, architecture, industrial design, science, and technology, along with student mentors from New Haven STEM high schools, will enhance classroom experiences through in-school and off-site collaborations. For example, students will select an area of the school that needs enhancement or expansion (e.g. the outdoor play area, the cafeteria, the library). Working in teams and their mentors, they will come up with a proposal and create a model. Architects from JCJ—the firm that designed Bishop Woods—will visit and share their design process with students; they will also judge student proposals for enhancing the school. We will invite partners such as CT Pre-Engineering Program (CPEP) to provide afterschool programming in the Design Lab.

Programs from partner Eli Whitney Museum and Workshop will engage students in building projects at the museum and at the school. Examples of projects include building birdhouses and bird feeders; rubber band cars and battery-powered buggies; and micro-architectures and bridges. Eli Whitney Museum workshops allow students to work on hands-on STEM projects at the museum because they have tools, materials and expertise that most classrooms lack. As part of the partnership with Bishop Woods, they will help design the school's Makerspace so that projects that begin in the museums or are modeled in the museum can be completed or built in school. Part of the museum's professional development for teachers

will be to give teachers the skills and knowledge to create hands-on STEM projects for their students and how to build them using the Makerspace tools.

Partners: Eli Whitney Museum; CT Pre-Engineering Program (CPEP); South Central Connecticut Regional Water Authority; Yale School of Architecture, the Audubon Society.

Professional Development (PD)/Partnerships: The following will be described Quality of Project Design (3): Connecticut Science Center, Center for Technology and School Change, , and the Yale Office of New Haven and State Affairs. **Additional PD:** A consultant to support STEM and one to support planning and design, Eli Whitney Museum and Workshop, Yale School of Architecture, the Yale Center for Engineering Innovation and Design, The Audubon Society of Connecticut, and South Central Connecticut Regional Water Authority.

Roberto Clemente Leadership Academy for Global Awareness (Grades K-8)

The Roberto Clemente Academy will prepare students to become responsible local and global citizens and leaders through an interdisciplinary, project-based approach to the social sciences emphasizing global awareness, cultural diversity and social justice themes. The magnet theme will draw on the diverse backgrounds of its students, promote collaboration in designing innovative solutions, and facilitate student activism to enact meaningful civic reform. The school's name and program honors the memory of Roberto Clemente, a baseball star and humanitarian, who died in a plane crash while

Magnet Theme Description: Clemente's magnet curriculum will expand the study of the four disciplines outlined in the Connecticut Social Studies Frameworks--Civics, Economics, Geography, and History--by integrating global awareness (i.e., the study of other nations and cultures to bring about greater understanding), social justice, and cultural diversity. Magnet theme units will engage students in sustained inquiry into past and current world issues as they

seek to answer key questions such as: How do people live in different parts of the world? What is the value of diversity? What is an individual's role in promoting equality and justice?

Each year, students at each grade level will adopt a country and study its government, politics, economics, geography, history, diversity, and social justice issues and examine New Haven in the same ways. Students will learn about the world, in part, by learning about each other, through their own experiences and those of their families, many of whom have immigrated from different countries. The diversity component of the school's theme will help students understand that all people are equal and that their similarities far outweigh their differences. A Global and Community Awareness Fair will showcase inquiry projects at the end of each year.

Students will form a school government, elect a president, vice president, and student council, and develop a constitution to promote good citizenship and facilitate discussions about leadership. They will work with staff volunteers and elected officials from local government, including the New Haven Mayor's Office and City Council, to implement an authentic governance structure. Middle school students will take part in the Discovering Justice Mock Trial Program and will serve as judges for a student court which will model respectful discourse and resolve differences among students in constructive ways. Students will study the roles and responsibilities of leaders, beginning in kindergarten, as they are introduced to government and politics. In addition, each grade level will partner with a local, non-profit agency (e.g., the American Red Cross, Yale-New Haven Children's Hospital, the Connecticut Food Bank) to help others and understand the importance of social action. Students will develop leadership abilities and character traits including social and personal responsibility, empathy, sympathy and integrity as they identify and find solutions to local and world problems and seek ways to help others.

Field trips, related to magnet units, will include visits to local historical sites and

museums such as the Five Mile Light (Revolutionary War site), Eli Whitney Museum (Industrial Revolution); Fort Nathan Hale (Revolutionary and Civil War site), Nathan Hale Homestead, New Haven Green Historic District (Puritan settlement), Yale University Campus, Mystic Seaport (18th century reconstruction), Schooner Amistad (1839 slave revolt), New Haven Museum and Historical Society and Mashantucket Pequot Museum (Native American studies).

Utilizing the C3 Inquiry Arc established by the National Council on the Social Studies, teachers will guide students as they engage in the four discrete dimensions of inquiry: developing questions and planning inquiries; applying disciplinary concepts and tools; evaluating sources and using evidence; and communicating conclusions and taking informed action. The case study model, in which students examine actual worldwide issues, will be used to support a sustained and in-depth exploration, or inquiry project, on specific topics in each unit. The use of historical fiction and primary source non-fiction texts will emphasize disciplinary literacy in all units. Examples of the thematic, interdisciplinary, inquiry approach that will be used follows:

As second graders study economics, they will examine which goods are produced locally and which are imported. Key questions will include: How do individual and group decisions influence the way we live and what we buy? How does scarcity affect what is available in stores? What causes scarcity? As a component of this unit, food scarcity in different parts of the world will also be studied. As students study biodiversity, ecology and the conditions plants need to grow in **Science,** they will evaluate how climate, consumption, and pollution can affect the populations of different animals and plants and design solutions to prevent scarcity (increase the supply or decrease the demand). An interdisciplinary inquiry project (STEM, Social Studies) might examine the usefulness of supply side solutions here and in another country, research ways of producing more food, and study the conditions needed as they grow tomatoes hydroponically.

Another project might look at demand side solutions (e.g., substituting for scarce foods) and their usefulness here and in another country. In **Math**, students will calculate the financial impact of economies of scale on local groceries and national supermarket chains and study the impact of "buy local" movements. In **Language Arts,** students will develop and promote a "buy local" campaign to be shared with the New Haven Chamber of Commerce.

In connection with their study of American History since the American Revolution, eighth grade students might conduct an inquiry on how immigration has affected America's cultural diversity and a uniquely American national identity. Students will examine settlement patterns, starting with a visit to the Mystic Seaport and Museum to study local immigration in the 18th century, and discuss the ways that immigration has impacted American culture from colonial times through today and how it has affected their class' adopted country. In **Science**, as students study the uneven distributions of Earth's mineral, energy and groundwater resources, they will determine how resource distribution and economic factors affected immigration patterns and diversity in the United States and other countries. Students will use topographic maps to trace the routes undertaken by immigrant groups and evaluate the effect of geographic features and natural resources on their passage. In **Math**, they will utilize these maps to calculate the length and cost of immigrant groups' journeys and graph the results. As part of an interdisciplinary (**Social Studies and Language Arts**) inquiry project students will examine why people left their countries of origin during different historical periods, including today, and propose changes to current immigration laws. Students will interview community members who have immigrated to the United States and work with Youth Rights Media to compile their research in a documentary format, creating a rich narrative account of why people leave their homelands and how their time in America has changed their lives. Students will use their first person accounts and additional

research as evidence to support their proposed changes to immigration laws.

A Discovery Room/Media Lab will be equipped with computers, digital cameras and video equipment for presentation and supplies to support students as they undertake sustained inquiry. STEM projects that students perform in connection with their NGSS aligned STEM curriculum will be integrated with their interdisciplinary magnet units built around the Connecticut Social Studies Frameworks, as demonstrated in the grade two example above.

Partners: New Haven Historical Society and Museum, Mystic Seaport and Museum.

Professional Development (PD): The following were previously described: Connecticut Science Center, The Buck Institute, and the Yale Office of New Haven and State Affairs.

Additional PD: Two expert consultants, one an expert in the social sciences and the other in science, to assist teachers in integrating the magnet units with science. New Haven Historical Society and Museum; and Mystic Seaport and Museum for content related to the magnet theme.

Parent Involvement for All Project Schools: The meaningful involvement of parents in the education of their children is desirable and necessary in supporting academic achievement.

Every magnet school is required to develop a parent involvement strategy, as part of its School Improvement Plan (SIP). While helpful, this section of the SIP often lacks detail. Therefore, each school in this project will develop an annual Parent Involvement Plan that builds on the SIP's parent involvement strategies. Each Parent Involvement Plan will describe objectives and activities that 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 will 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 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. Boost!, a partnership with United Way of Greater New Haven, brokers connections between schools, community-based providers, and public agencies to support children's 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 NGSS and their schools magnet theme through school based workshops, newsletters and presentations during parent-teacher conferences. ► New Haven facilitates at least two in-person parent-teacher conferences per year and tracks attendance. Parents may also, at any time, request a meeting with a teacher or principal. ► Each school will familiarize parents with the PowerSchool Parent Portal which gives them access to information about their child's progress, including real-time student attendance, grades, assessment scores, disciplinary activity, and weekly homework assignments. ► Detailed information is available for each school, including state assessment results and item-by-item responses from teachers, students and parents on the Learning Environment Survey. The district works to make access to this data easy, giving students, parents, and educators to school computer labs or to community resources (for example, through partnerships with local libraries).

Parent involvement at school *refers to parent volunteers who assist teachers, administrators, and children in classrooms or in other areas of the school.* Parents can volunteer as classroom assistants or tutors or in other capacities determined by the SPMT 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.

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*, Activities at each magnet school will 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 and Family Engineering Nights. Project schools will use their local partners to develop authentic STEM learning opportunists inside of school and extend them outside of school. Partner institutions will create activities for families, aligned with the activities for students at their institution, at home (e.g., projects students and family members can do together to reinforce what students are learning in school), and school (e.g., family science meetings where students present projects or work on projects with their families.)

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.* ► Parents are members of each School Planning and Management Team (SPMT), Personnel Selection Committee, each school-based recruitment team and the District Magnet Advisory Council—all groups that make important decisions about the functioning of the schools

and their magnet programs. ► Parents provide invaluable input through membership in the Parent-Teacher Associations. ► New Haven's Citywide Parent Leadership Team meets monthly, with district participation, to discuss key policy issues of interest to parents.

(b) Quality of project design. …(2) the extent to which the applicant demonstrates that it has the resources to operate the project beyond the length of the grant ….

New Haven is committed to sustaining the magnet initiatives described in this proposal following the conclusion of MSAP funding, as evidenced by the 27 magnet schools currently in existence in New Haven. Every magnet school that has been established has been sustained with local funds, most for more than a decade, some for nearly 40 years. The district will leverage activities undertaken during the grant period to facilitate the institutionalization of the magnet program through strategic multifaceted funding strategies that involve the following elements: use of state and local funding, intentional planning, and ongoing grant-seeking activities. Aggressive program development during the grant period, including professional development initiatives, the redevelopment of curriculum and instruction and the development and implementation of magnet themes, will be undertaken to develop a strong foundation for the long-term implementation of rigorous and comprehensive magnet programs.

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

With MSAP support, New Haven has developed 17 magnet schools since 2001: Using the first year of operation as the baseline, 15 of the 17 have reduced minority group isolation (MGI) through the current school year. In addition, every school is still operating as a magnet. Thirteen of these schools are being completely supported with local funds. The other four will be totally supported by local funds beginning next year when their current Federal grant ends. After federal funds are no longer available, the programs described in this proposal 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.

This project is not simply developing and implementing magnet themes that will be integrated into existing curricula. The goal is to completely redevelop the entire curriculum and support this curriculum redevelopment with high quality, high intensity professional development. New Haven has chosen its magnet school model for this redevelopment because it has worked in other similar New Haven schools. Logic model activities for this project include:

Improvement of Curriculum, Instruction and Student Academic Supports: The goal is to develop or revise, over the three years of the project, all core academic subject units and to strengthen how they are taught, supported by PD (at least 50 hours per teacher per year).

Magnet Theme Development and Integration: The goal is to develop and integrate the magnet theme into the units created through the Curriculum and Instruction Improvement process (above). Professional development will also support this component (at least 50 hours per teacher per year). The result of these activities will be: **Quality Magnet Curriculum and Instruction--**high quality, peer reviewed units that integrate the magnet theme with core academic subjects (for at least 3, 6 and 10 hours per week, for all students, by the end of years 1, 2 and 3 respectively) and use new and improved instructional practices.

New Haven has been able to successfully operate magnet schools because when MSAP funds have been available they have been used to completely redevelop and improve curriculum and instruction as well as develop and integrate a magnet theme supported by extensive PD. Therefore, MSAP funds will increase New Haven's capacity to carry on project activities after federal funds are no longer available.

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 38 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 (ECS) 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.

For Interdistrict Magnet Schools (West Rock), Connecticut provides an award of $7,085 for each student from a town/city other than the one operating the interdistrict magnet school (New Haven). For each student who lives in the town/city that operates the school, the state grant is $3,000 in addition to its regular per capita state aid (ECS.) In other words, when a suburban child enrolls in a New Haven magnet school, the state ensures that most (but not all) of the cost of educating the student is covered by a subsidy and that the sending town keeps the ECS for the child. The additional per capita state aid that New Haven will receive for its own students attending the magnet school will help it sustain these programs as well as close the gap between the state subsidy for out of district (suburban) students and the actual cost of educating them. The other three schools (Martinez, Clemente and Bishop Woods) will receive suburban students under the Open Choice program for which the state subsidy is one half of ECS (about

$3,500) plus $3,000 for each suburban student who attends the school. In addition, costs associated with transporting students to the magnet schools will be paid by the state.

This means that West Rock will receive about $1,000,000 per year from the State of Connecticut to support the education of its suburban students and the magnet program for all of its students. Of those funds, approximately $175,000 will be available to support the school's magnet program when federal funds are no longer available. This will be used to maintain at least one Magnet Resource Teacher position, additional professional development and curriculum development, as needed, as well as replace and repair supplies and equipment.

The other three schools, which accept suburban students under the Open-Choice Program, will receive a smaller subsidy from the state for its suburban students. However, because New Haven regards its magnet program as a school improvement model, it uses other funds available to its schools to maintain Magnet Resource Teacher positions (one per school) and fund the relatively modest additional costs of maintaining a magnet program (e.g., some PD especially for new teachers, updating, replacing or repairing supplies and equipment for magnet program). Fortunately, Connecticut pays the transportation costs for suburban transfer students, a major support that makes this program possible. Each of these schools receives either 21st Century Development Program or State After School Program funds and will be able to use these funds to continue magnet theme components in after school programs. In addition, all three schools receive Title I allocations ($53,000 to $70,000 per year) and Clemente and Martinez receive about $100,000 per year in Connecticut 1003a funds because they are low performing schools. These funds can be used to support a wide variety of activities to improve the academic achievement of students including professional development, supplies, equipment and curriculum development. Finally, the district will allocate approximately $100,000 per year in

district funds to the three Open-Choice schools (Clemente, Martinez, Bishop Woods) for supplies, equipment, office supplies textbooks and field trips. Therefore, while these schools would not have the resources to start or significantly revise a magnet program, or to completely redevelop and restructure curriculum and instruction, they will have the resources to maintain the programs that will be developed. Also, because magnet schools and school choice is part of the culture of New Haven and has been for so many years, the entire cost of the recruitment, marketing, application and selection processes for the four magnet schools participating in this project will be paid for by New Haven and the State of Connecticut.

In addition to the funds described above, and per capita state aid for students, 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.

The status of West Rock as a State approved Interdistrict magnet school and the status of Clemente, Martinez and Bishop Woods as schools that will receive suburban students through the Open-Choice Program is confirmed in a letter from the Connecticut Commissioner of Education. This commitment is on-going and will continue for these schools as it has for New Haven's other magnet schools. In addition, all aspects of this application are supported by both the Teachers' and Administrators' Unions as well as the District Parents Advisory Council. Finally, New Haven has commitments of support from its other partners include Yale University and its various schools, the Eli Whitney Museum and Workshop and many other partners. Please see the letters of support in the appendix.

Sustainability Planning: Even though there are many capacity building activities built into this project and resources to continue the program, sustainability planning is needed to insure the best use of these available resources and to identify additional resources and supports. Therefore, the project director will coordinate the development, starting in the project's first year, of a detailed plan for program sustainability that will emphasize a results orientation, strategic funding, and adaptability to changing conditions (The MSAP Center and The Finance Project, 2013). This will involve a sustainability planning team that will include individuals with decision-making authority that are representative of all internal and external stakeholder groups (e.g., principals, magnet staff, school staff, local institutional partners, parents, district, and New Haven and suburban communities). The sustainability planning team's participation in a multi-step process will support buy-in as well as an ongoing, iterative exercise, within a context in which members are clear from the outset of the team's role and the scope of its work.

The goals of this process will be aligned to best practices around ensuring program sustainability: (1) engaging strong leadership; (2) understanding the magnet program's mission, vision, and goals; (3) the development of realistic goals and objectives for after federal funds are no longer available; (4) knowing the community; and (5) documenting and communicating magnet program successes (The MSAP Center, 2011). The sustainability planning team will begin by establishing an understanding of the current context, assessing both internal factors (e.g., program population, level of staff and district commitment) and external factors (e.g., partnerships, local community needs, other programs) that affect the operation of the magnet project. This work will be structured using the Sustainability Self-Assessment Tool for Magnet School Assistance Program Grantees developed by The MSAP Center and The Finance Project.

Next, the team will develop a theory of action for the plan that will include components

key to magnet sustainability: Vision & Results, Conditions & Causes, Strategies & Activities, Performance Measures, Interim Indicators, and Ultimate Indicators (The MSAP Center and The Finance Project, 2013). Goals will follow the SMART framework and will be Specific, Measurable, Action-Oriented, Realistic, and Timed (WestEd). Finally, the team will begin to develop the framework for a cohesive sustainability plan by (1) prioritizing the project strategies and activities they want to sustain (e.g., instructional practices, marketing activities, community outreach); (2) determining the project's personnel, fiscal, and other needs; (3) identifying the resources available to meet those needs and the remaining resource gaps; and (4) identifying the monetary and other resources (e.g., administrative, managerial) that would best fill those gaps.

The sustainability planning team will meet regularly throughout the grant period to develop and refine a multi-year sustainability plan, aligned to the priorities and resources identified. By the end of the second grant year, the team will have completed a comprehensive sustainability plan to be distributed to key stakeholders, which will include the following elements: History, Progress, and Future Plans; Strategic Considerations; a Financing Plan; an Action Plan and Timetable; and Supporting Documents as needed (The MSAP Center and The Finance Project, 2013). Completing this design for sustainability in the second year will allow each school to implement the plan as proposed in Year 3 making appropriate modifications to ensure that it meets the changing needs of each school and represents a plan for continued implementation after federal funds are no longer available.

Federal and Foundation Grants, and Competitive Grants: The New Haven Public Schools is confident that they will be able to offer a high level of continued support to the magnet schools described in this proposal based on their outstanding record in pursuing competitive federal and foundation grants. The district is currently administering over $10 million in competitive grant

programs that support, either directly or indirectly, existing magnet school programs and will continue to apply to funders who will both enhance magnet activities during the period of MSAP funding for these four school and address ongoing program costs at the end of that period. The success of the district's outside fundraising, in addition to ongoing state and local funding streams, makes it possible to plan for the gradual assumption of project costs.

(b) Quality of project design. …(3) the extent to which the training or professional development services to be provided by the proposed project are of sufficient quality, intensity, and duration to lead to improvements in practice among the recipients of those services.

Performance Measures 5: By the end of each project year, magnet school teachers will receive at least 50 hours of professional development (e.g., workshops, courses, coaching) in each of the following areas: **5.1** directly related to the improvement of curriculum and instruction including the development and implementation of the systemic reforms listed in the school improvement plan; **5.2** directly related to the development/integration of the magnet theme.

A core component of this project's logic model focuses on high quality professional development (PD) to strengthen core academic subject curricula and instruction and the development and integration of the magnet theme into core academic subjects. An Institute of Education Sciences (IES) sponsored review (Yoon, et al., 2007; Yoon, Duncan, Lee, & Shapley 2008) identified nine studies that met the What Works Clearinghouse evidence standards and found that "teachers who receive substantial professional development—an average of 49 hours in the nine studies—can boost their students' achievement by 21 percentile points." The studies that had 30 hours or more of professional development showed a positive and significant effect on student achievement from professional development. All nine studies focused on elementary schools, included workshops or summer institutes and focused on ELA, math and/or science.

Eight included follow-up sessions supporting the main professional development event. Therefore, at the three STEM schools in this project, all teachers will receive at least 50 hours of PD focused on STEM subjects including formal workshops and follow-up coaching, professional learning communities, and collaboration with colleagues and 50 hours focused on improvement of core academic subject curriculum and instruction. (These are annual performance measures.)

The **Connecticut Science Center** (CSC) will provide professional development in inquiry, science content and the Next Generation Science Standards (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. During the Institute's 129 hours of professional development over three years (43 hours per year per teacher), teachers will learn the inquiry-based skills needed to develop and modify NGSS units and, for Clemente NGSS and social studies standards. As with all professional development that will support the activities of this grant, there will be the main workshops (provided by CSC) and then school follow-up coaching (by the MRTs) and collaboration (facilitated by the MRTs) for an additional 15 hours per year per teacher. In addition, CSC staff will participate in two review meetings throughout each year to discuss problems of practice and give guidance on how to address challenges as educators work to put their learning into practice. The follow-up (MRTs, teacher collaboration and CSC staff) insures that teachers will receive continuous support and will be working on units, connected to their specific magnet theme, that they will be teaching. At the end of each year, teachers will have the opportunity to come together for two days to share ideas with other teachers from New Haven and around Connecticut who have been working to bring inquiry into their classrooms.

As part of the Institute, teachers will engage in full inquiries that they can use with their

classes. Science content will be taught within the context of engaging in inquiry. They will also explore how to use inquiry in math, English language arts and social studies. In school follow-up will involve the teaching of additional science (or social studies) content, the modeling of inquiry in science (and social studies for Clemente) and other subjects, demonstration lessons and unit and lesson development. The emphasis on these and all PD activities is to make direct connections between the PD and what teachers are actually doing in their classrooms. The first year of the training ensures that participants have a solid foundation in inquiry on which to build their classroom and school culture. Teachers will compare approaches to instruction, design and engage in actual inquiries, identify ways to make changes to existing lessons to engage students in the skills required of inquiry and see what inquiry looks like when used with other subjects.

The second year will deepen teachers understanding of inquiry and provide an opportunity to further develop an inquiry-based units and lessons. The pedagogy and strategies of inquiry teaching and learning are reinforced and modeled in different ways. The third year will focus on assessing student learning through the inquiry cycle. This will include helping teachers give effective feedback and more effectively analyzing student work.

To be better prepared to support teachers, all magnet resource teachers (MRTs) and middle grades science teachers will take the 36-hour Next Generation Science Exemplar Learning System (NGSX) course which will allow them to engage in and analyze the tree-dimensional (3D) science used in the NGSS. It uses a blended PD model combining in-person study groups with a web-based environment. NGSX is organized into learning pathways that combine first-hand science investigations, videotaped expert commentary and classroom case studies along with facilitated individual, small group and whole group discussions. Although the MRTs will be very knowledgeable in the use of NGSS, this course will reinforce that knowledge.

The **Center for Technology and School Change (CTSC) at Teachers College, Columbia University** will provide all classroom teachers at the 3 STEM magnet schools with professional development on curriculum mapping, developing magnet theme STEM units that use project based learning (PBL) and include authentic projects that integrate science, math, engineering and technology and solve real world problems. The work is framed around the Center's model for professional development, an approach based on design-based research findings from over a decade of work with teachers and leaders across PK-12 schools. Primary elements of the model include interactive, hands-on workshops, collaborative planning sessions, and structured classroom-based work. Facilitators introduce new technologies within the context of structured design work to support key content-based understandings across the STEM disciplines. Teachers will be designers of student-centered STEM learning experiences.

The professional development work will be adapted to the needs and realities of each school, with all activities taking place at each school. Participants will include the two Magnet Resource Teachers and all classroom teachers. Center facilitators will spend an annual average of 30 contact hours with each participating teacher per grant year. This initiative will span the three years of this project for a minimum of 90 hours per teacher. Participants will also engage in a minimum of 8 hours annually on structured assignments with colleagues (collaboration), including ongoing project work. Magnet Resource Teachers (MRTs) will have a larger commitment to the project, as they work across grade-levels to support the related work for an additional 8 hours per teacher per year. Further, in their role as administrators, it is expected that principals and/or assistant principals will engage with Center staff to support the STEM design work for 8 hours per grant year.

The work will be rolled out in three key phases: (1) developing a scope and sequence;

(2) designing and implementing units; and (3) sustaining the design work.

Phase 1 (2016-2017): Developing a scope and sequence. Participants will work alongside facilitators to reflect on their unique Magnet theme, to identify big ideas across the curriculum, and to map the desired results of each unit. To do this, participants will first engage in dialogue on STEM teaching and learning, exploring approaches to interdisciplinary and transdisciplinary STEM instruction (Vasquez, 2014). Working collaboratively, teachers will think about what they want their students to understand both within and across the STEM or STEAM disciplines, identifying key concepts, knowledge, and skills in alignment to the standards (NGSS, CCSS). The outcome of this Phase is a horizontally and vertically planned scope and sequence of the interdisciplinary Magnet units for each participating school.

Phase 2 (end of 2016 and 2017-2018). Designing and implementing units. Participants will continue to work alongside the facilitators to design appropriate Magnet experiences for their students. Participants will explore innovative approaches to project-based learning in STEM, and will begin design work on their own projects, building from the scope and sequence identified in Phase 1, considering both assessment and learning plan components. The three key outcomes of this Phase are: (1) the development of four draft unit plans by participants (culminating in 96 unit plans in total across schools and grades); (2) an initial implementation of the Magnet units by teachers; and (3) a preliminary refinement of the units based on teacher observation and reflection.

Phase 3 (2018-2019). Sustaining the design work. Participants will continue to work alongside the facilitators to re-implement and to refine the magnet units and magnet unit resources (including, a project rubric). New teachers will be introduced to the planning process as a way to grow and to sustain a professional learning community for STEM at each of the sites.

Teachers will consider the needs of their students, as well as their available resources (including, new technologies), to tailor the project experiences/resources to their respective classrooms. The two key outcomes of this Phase are (1) refined units and related resources, and (2) an opportunity to expand the number of teachers involved in the STEM design work.

All magnet units will be interdisciplinary or transdisciplinary and include STEM subjects, social studies and English language arts. This PD will also help teachers' use of state of the art, real world technology to enhance math and science. CTSC will help each school develop a quality rubric for magnet units that will be used for peer review of units.

Buck Institute of Education: The Buck Institute for Education (BIE) will provide all teachers at Roberto Clemente Leadership Academy for Global Awareness with professional development on curriculum mapping, and developing interdisciplinary magnet theme units that use project based learning (PBL) and include authentic projects that integrate the global awareness theme to solve real world problems. BIE will guide teachers through the use of a Critical Friends Protocol and help as they develop a quality rubric for magnet units to be used in the peer review process. The partnership with BIE will build upon work with Connecticut Science Center's Institute for Inquiry to deepen teachers' understanding of the use of inquiry to drive authentic student engagement within the PBL framework.

Work with BIE will begin with a three-day PBL 101 training, which will include intensive training in the PBL framework. Throughout the course of these 21 hours (7 hours x 3 days), Clemente teachers will be given the skills and knowledge to design and implement a rigorous and thematic, project based unit aligned to the CCSS and NGSS. These sessions will be facilitated by BIE National Faculty and will include a mix of direct instruction, video-based examples, and resource sharing and will promote collaboration among teachers to facilitate

project design. By the end of PBL 101, teachers will have developed a project plan for their first project based unit, will have received feedback from their peers and BIE staff and will be prepared to implement the unit in their own classroom.

Key partners, the Mystic Seaport and the New Haven Museum, will help teachers integrate real world learning experiences related to Clemente's theme into each PBL unit. Instruction on-site at both Mystic Seaport and New Haven Museum will engage students in hands-on inquiry into primary source documents as they conduct authentic research aligned to PBL units. Throughout each project year, BIE will provide ongoing guidance through four Sustained Support Visits, which will offer an additional 28 hours (7 hours x 4 days) of targeted training in the PBL framework. Using teacher and administrator surveys, these visits will be structured to address key needs in project and unit design, assessment and implementation. This sustained support will ensure that teachers are able to effectively implement the project based model with fidelity while also aiding teachers in adapting to meet changing student needs.

As with other types of professional development in this project, the magnet resource teachers will provide in-school coaching to support the Buck PBL training. They will facilitate curriculum writing sessions during collaborative planning time, after school curriculum sessions and summer curriculum writing sessions. BIE training will be also provided for years two and three. The goal is that every magnet unit will have a PBL project.

Yale University: Yale's support of STEM education in the New Haven Public Schools is an important part of the work of Pathways to Science Yale's coordinated STEM outreach infrastructure. Guided by a steering committee of Yale senior scientists and administrators, the Office of New Haven and State Affairs (ONHSA) serves as a central hub for this initiative, both supporting programming efforts by faculty graduate students and undergraduates and

coordinating school and community contact and partnerships. ONHSA will use this infrastructure to coordinate this work that will bring new resources to the four schools participating in this project. Out of school professional development for teachers and programs for families of the participating schools will be led by the Peabody Museum and the Lietner Planetarium. Graduate students and faculty, from departments across the university will provide in school learning experiences and offer content support at each site.

The **Yale Office of New Haven and State Affairs (**ONHSA), will help develop a speakers' bureau of local STEM or Social Science (Clemente) professionals, including faculty and graduate students, to provide professional development and mentoring for both teachers and students. ONHSA will facilitate the partnerships with Yale schools such as the School of Engineering and Applied Science, the Center for Engineering Innovation and Design (YCEID) and the School of Forestry. These "scientists and engineers in residence" (2 per school) will help teachers with STEM project development, integration and implementation, and speak to students.

Getting Started: Recognizing that building the capacity of teachers to create magnet units will take time, each school will immerse teachers and students in STEM activities from the very start by using selected district created NGSS units, Engineering is Elementary and GEMS units that will be supplemented and expanded to integrate them with the magnet theme of each school. This will be done with the support of the MRTs and professional development from the Connecticut Science Center which is a certified Engineering is Elementary professional development partner. (Engineering is Elementary, a research-based curriculum, engages students in the engineering design process, applying science and math to engineering problems and understand the role of materials and their properties in engineering solutions. GEMS Space Science Sequence, for Martinez, was discussed in Priority 5.) As the year progresses, teachers

and MRTs will modify the units more extensively and will produce their own STEM units that are integrated with the magnet theme by the end of project year one and then throughout the grant period. The middle grades will use the same strategy but use grade appropriate units created units created by the Connecticut Science Center instead of EiE units.

In addition, the **two Magnet Resource Teachers** at each school will provide and facilitate embedded STEM (and or inquiry based social studies at Clemente) professional development that will include: ►demonstration lessons and coaching; ► observations and feedback; ►creation of magnet standards, ► curriculum mapping; ► help classroom teachers create units and lessons that integrate the CCSS, the NGSS, the new Connecticut social studies standards and the school's specific magnet theme, are project based, and use inquiry and technology; ► facilitate teacher collaboration; ► support individualized teacher learning plans.

Partner organizations will provide magnet theme content PD and help develop authentic STEM experiences. Please see school descriptions in the Quality of Project Design section.

Partnerships and Professional Development: Project schools will use local partners to develop authentic STEM learning opportunities inside of school and extend them outside of school. Each partner institution will develop activities for students that will be integrated with interdisciplinary STEM units and provide students with authentic STEM experiences tied to the magnet theme at their institution (e.g, observing freshwater environments and how they can be created in an aquarium), in the field (e.g., studying freshwater ecosystems at a state park) in their school (e.g., setting up and maintaining freshwater ecosystems in classroom aquaria). Partner institutions will also create activities for families, aligned with the activities for students at their institution (e.g., hands-on, touch tank experiences with marine animals), at home (e.g., projects students and family members can do together to reinforce what students are learning in school),

and school (e.g., family science meetings where students present projects or work on projects with their families.) In addition, partner institutions will provide teachers with specific STEM content professional development (e.g., freshwater and marine ecosystems, water testing, astronomy, design thinking, aeronautics) that is connected to the units that they are enhancing with the types of authentic STEM experiences described above. Please see the STEM priority 4 for additional details related to professional development provided by partnerships.

The School Change Initiative and Professional Development*:* New Haven has developed and implemented its educator evaluation and development system which includes teacher evaluation, coaching and individualized professional learning. Through the teacher evaluation process, school administrators work collaboratively with teachers to develop annual individualized teacher learning plans. For teachers at the four magnet schools, this process will focus on student outcomes, including those specific to the magnet program, professional practices, and teacher learning goals. The teacher evaluation process is a form of professional learning. At the annual goal setting conference at the beginning of the school year, each teacher, along with an instructional manager, will select at least two magnet theme specific 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.

Common Planning Time (180 minutes/week): During these collaborative sessions, teachers will learn how to develop STEM (or PBL social studies) units and projects and align

them with the CCSS, NGSS and state standards. MRTs will facilitate and help structure these sessions. This time will also be used for unit development and magnet integration.

In addition to the project staff and outside consultants, the State Education Department as well as New Haven's Curriculum and Instruction department will provide training related to CCSS and assessments. For example, the Connecticut Accountability for Learning Initiative (CALI) provides PD focusing on data driven decision making and effective teaching strategies.

School Improvement Planning: New Haven's school improvement process identifies school strengths and weaknesses and develops a plan to remediate the weaknesses. Using an inquiry process to examine data to identify and prioritize needs, the process develops strategic objectives that drive a set of strategic initiatives and actions that lead to improved student learning. The resulting School Improvement Plan (SIP) measures progress and impact against collaboratively-identified benchmarks. The SPMT of each school develops the plan in consultation with the district (Directors of Instruction and Curriculum and Instruction). Each plan must be approved by the district. The results are evaluated by the district each year. Much of the PD related to curriculum and instruction improvement is related to the findings of the school improvement process. The MSAP project contributes an even more intense focus on curriculum and instruction at the classroom level, additional PD and resources focused on curriculum and instruction improvement, and the creation of a high interest (magnet theme) curriculum. An important part of the New Haven conversion magnet model is revising all core academic subject units and how they are taught while teachers receive intensive PD to support the magnet theme development, integration and implementation. Each School Improvement Plan will contain an extensive professional development plan for the improvement of core academic subjects that is the result of the school improvement process.

(b) Quality of project design. …the Secretary considers the following factors-**(4)** the extent to which the proposed project is supported by strong theory (as defined by this notice).

New Haven's conversion magnet schools have historically attained three key objectives. (1) They reduce the isolation of Hispanic and black students by attracting white students. (2) They reduce the percentage of low income students by attracting middle class students.

(3) They increase academic achievement for all students. Over time, a set of best practices evolved that worked regardless of the magnet theme that was being developed. These formed the basis of a logic model and a theory of action that the activities of this proposal are based on. Research and high quality evaluations have helped New Haven confirm and refine the model.

Theory of Action: (1) If all teachers, in each proposed magnet school, receive 50 hours of high quality Professional Development focused on Improvement of Core Subject Curriculum and Instruction and Student Academic Supports, and 50 hours on Magnet Theme Development and Integration into that curriculum, then teachers will develop and implement Quality Magnet Curriculum and Instruction (a special curriculum capable of attracting substantial numbers of students of different racial and socioeconomic backgrounds).

(2) If Quality Magnet Curriculum and Instruction is taught to students and becomes the core of the school's instructional program, and that is widely known in the communities served by the magnet school, then a large, diverse group of students will apply to a magnet school and minority group and socioeconomic isolation will be reduced.

(3) If a magnet school's students are exposed to Quality Magnet Curriculum and Instruction for 10 hours per week (project year 3 performance measure target), they will then attain higher levels of achievement than carefully matched students who do not attend a magnet school.

The logic model operationalizes the theory of action for this project, outlining the core

components including activities, outputs and short, medium and long term outcomes. Below is a description of the logic model components. It refers to the "district level" logic model graphic that can be found at the end of this Strong Theory section (page 110). It shows both district and school level activities, outputs and outcomes how they contribute to the attainment of the annual and three-year project outcomes. (Logic models for each school are included in the appendix. School level logic models include more school specific descriptions of project activities and outputs.) **Logic Model Activities at the School Level: Improvement of Curriculum, Instruction and Student Academic Supports:** During this activity, teachers will develop or revise, over the three years of the project, all core academic subject units and strengthen how they are taught, supported by professional development (PD) (at least 50 hours per teacher per year) which will show teachers how to write high quality interdisciplinary units. This PD will include reviewing of Common Core State Standards (CCSS), learning Next Generation Science Standards (NGSS) and how to use them, as well as specific practices such as inquiry, cooperative learning, differentiated instruction and RtI, and programs such as Readers' and Writers' Workshop and Singapore Math. This PD will be linked to each school's improvement process and plan that assesses school strengths and weaknesses, identifies areas to be strengthened, and provides remedies (e.g, PD) that lead to improvement. Performance Measure 2.1 requires that at least 33% (year 1), 66% (year 2) and 100% (year 3) of all core academic subject units will meet district and project quality criteria determined by peer reviews using a unit quality rubric.

Magnet Theme Development and Integration: During this activity, teachers will develop and integrate the magnet theme into the units created through the Curriculum and Instruction Improvement process (above). The PD supporting this component (at least 50 hours per teacher per year) will include curriculum mapping, magnet theme development, unit development/

enhancement (integrating the theme into units), Project Based Learning, NGSS implementation, inquiry, the development of authentic STEM projects and in-school and off-site learning experiences with partner institutions (e.g, authentic STEM experiences at the Mystic Aquarium, the Leitner Planetarium, and the Eli Whitney Museum) and the creation of magnet standards.

Science, math, engineering and other enrichment content--supplemented with core subject content when necessary--will be taught as part of this PD. For example, the content that is required for a specific inquiry unit or PBL will be taught within the context of that unit. Much of that may be part of the in-school PD supplied and facilitated by the magnet resource teachers. Curriculum mapping will be used to determine the best topics to target for theme integration and the creation of magnet standards to better define what students will do and learn that are related to the magnet theme and that supplement and enrich the core academic curriculum.

It is likely that the Magnet Theme Development and Integration and Improvement of Curriculum, Instruction and Student Academic Supports will occur at the same time. The exact sequencing of activities will be determined at the school level by the School Planning and Management Team (SPMT) of each school, in consultation with the Deputy Superintendent of Curriculum and Instruction and her staff (the curriculum supervisors) and the project director. Each school has made the commitment to teach students units that integrate the magnet theme for no less than 3 hours per week by the end of year one, 6 hours per week by the end of year two and 10 hours per week by the end of year three. These are project performance measures.

Participants for both logic model activities described above (Improvement of Curriculum and Instruction and Magnet Theme Development and Integration) will be all classroom teachers. Curriculum development will be implemented during common planning time for grade teams for 90-180 minutes per week, to be determined weekly by SPMTs and the

project director, to insure the attainment of performance measures and benchmarks. Additional time will be planned before and after school and during summer months.

Professional Development (PD): All teachers, in each school, will receive 50 hours of high quality Professional Development focused on the Improvement of Core Subject Curriculum and Instruction, and 50 hours on Magnet Theme Development and Integration into that curriculum. PD will include formal workshops with follow-up coaching (e.g., observations/ feedback, model lessons, unit development, individual or small group PD) by magnet resource teachers MRTs), professional development providers, partner organizations, district resource staff or instructional coaches, and teacher collaboration (e.g., PLCs, facilitated unit development, intervisitations with feedback and discussion, peer reviews of units).

Scheduling of PD and coordinating it with what is being developed for and taught in classrooms, will be done by the magnet resource teachers in consultation with the project director and each school's SPMT. For example, a workshop on a specific topic will be followed-up, immediately (that week) with in-school unit development, coaching, collaboration and eventually, unit implementation. Because magnet theme curriculum dosage goals (3, 6 and 10 hours per week for project year 1, 2 and 3 respectively) increase gradually during the three-year project period, there is time for teachers to better understand new content, curriculum and instruction. **Participants** will be all classroom teachers in each school supported by magnet resources teachers, other instructional coaches, the district curriculum supervisors and professional development providers.

Parent Involvement Planning: Every magnet school will develop a Parent Involvement Plan to address five key areas of parent involvement. Please see the parent involvement activities in the Quality of Project Design section of this proposal. **Participants** will be the

SPMT, the parent organization, parents representing New Haven and suburban communities, the magnet resource teachers and classroom teachers.

Desegregation: These activities include student recruitment, the school application process and selection of students. Please see the student recruitment section of in this application. **Participants** will be all New Haven families that have students in or about to enter grades PreK or K through 8, project recruiters, magnet resource teachers and SPMTs. There is also a district level component.

Logic Model Outputs: Quality Magnet Curriculum and Instruction--high quality, peer reviewed units that integrate the magnet theme with core academic subjects (for at least 3, 6 and 10 hours per week, for all students, by the end of years 1, 2 and 3 respectively) and use new and improved instructional practices. Each school will create a unit quality rubric, with the support of the magnet resource teachers, the Deputy Superintendent for Curriculum and Instruction and her staff, and Center for Technology and School Change (Columbia University) or, for Clemente, the Buck Institute. This rubric will be used for a peer review (peer review committee members will be determined by each school's SPMT) of all units to insure that they meet district and school quality standards, that they meet the project quality standards for magnet integration and insure that each magnet program is unique for both New Haven and suburban students. All units not meeting quality standard will be revised. Schools may decide to develop classes or classroom time (discrete magnet classes) dedicated to teaching the magnet theme without integrating it into core academic subject areas to supplement magnet theme integration. Most magnet curriculum dosage will be related to integrated units. Discrete magnet classes will be developed in the same way as integrated units and will meet the same quality standards. Most or all magnet curriculum dosage will be presented to students through integrated magnet units.

Whether to use discrete classes to supplement unit dosage will be school based decisions (SPMTs) in consultation with the project director.

Parent Activities: Parent activities will be developed for each school in each of the five areas described in the Parent Activities Plan.

Desegregation: A large and diverse (racially/ethnically, socioeconomically) applicant pool from which students are selected is a result of the student recruitment and application process described in this proposal and Quality Magnet Curriculum and Instruction. The quality of instruction, including the magnet theme, directly effects the results of the recruitment process. Please note that on the logic model graphic, both school and district activities lead to this output (a large and diverse applicant pool) and the reduction of minority group and SES isolation.

Outcomes: The Short Term Outcomes for this project are called Benchmarks. They indicate whether adequate progress is being made towards the attainment of annual performance measures, are described in the performance measure section of this proposal and are part of the evaluation. Medium Term Outcomes are the annual performance measures for this project. Long Term Outcomes are the Project Performance Measures (i.e., the targets expected by the third year of the project). Please see the evaluation section of this proposal.

Logic Model Activities at the District Level: Although most of the activities in this project that will impact most directly on student achievement occur at the school level, district level activities and outputs are also important and contribute to the successful attainment of annual and project performance measures. These are project management and fiscal control activities and desegregation activities which, together with school level desegregation activities, will lead to reductions in minority group isolation and socioeconomic isolation.

Desegregation: District level desegregation activities include working with schools to

design brochures and other recruitment materials, distributing recruitment materials, implementing the application system used by the district and selecting student through a lottery. Both district level and school level recruitment activities and how they will be coordinated, are described in the Desegregation section of this proposal. School and district level desegregation activities together will produce the large and diverse applicant pools for each school which will lead to the reduction of minority and socioeconomic isolation.

Project Management: This is an important part of the district level activities. As described in the Management and Quality of Key Personnel sections, the project director will manage the project and be responsible project budgets and expenditure and all required fiscal and programmatic reporting. It is the director's responsibility to ensure that project performance measures are attained, that project activities are implemented as designed and on schedule and that budget procedures are used at all levels of the project and that the project stays on budget. Project management is discussed in the Project Management section of this application.

Outputs. Desegregation: This output is the results from both the district and school level desegregation activities. This item was previously discussed in the school level model.

Project Management: The project management section described how this project will be managed. It is district level function and results in a high degree of fidelity of implementation as evidenced in evaluation site visit reports, the Annual Performance Report and the Ad Hoc Report. Project management outcomes include the attainment of school benchmarks and fidelity to the budget and fiscal controls as discussed in the management section. Medium and long range outcomes include attaining annual and project outcomes, approved annual reports to the USDOE and a highly rated compliance review by the USDOE.

Logic Model Context: As previously explained in Priority 1, Need for Assistance, these

schools will be implemented in New Haven, a Connecticut city with a large Black and Hispanic population. The combined Black and Hispanic enrollment of the New Haven public schools is over 80%. The four schools in this project are all highly minority group isolated and serve large numbers of low income students. The district has 27 magnet schools. Many are among the best schools in New Haven. Many have reduced minority group and socioeconomic isolation.

The scores on state English language arts, mathematics and science tests are well below state averages for most New Haven schools. New Haven is surrounded by suburbs that have many more white and middle class residents. This is reflected in the enrollment of most suburban schools. An exception is that some suburban communities that border New Haven or are close to the city have growing Black and Hispanic populations including middle class Black and Hispanic families. Therefore, developing a socioeconomic integration plan, as is being proposed, can help increase the diversity of the proposed schools. Finally, the principals, staff and parents of the proposed schools are enthusiastic about the prospect of either becoming a magnet school or significantly revising programs that are no longer effective.

As previously discussed, Connecticut has two programs that allow suburban students to transfer to New Haven schools (or New Haven students to suburban schools): the Interdistrict Magnet Program and the Open Choice Program both of which subsidize the transfers.

Research Supporting Logic Model: The logic model and a theory of action for this proposal are based on research and high quality evaluations have helped New Haven confirm and refine the model. As previously described, New Haven's magnet schools have been successful in reducing minority group and socioeconomic isolation and increasing test scores of many of its magnet schools. For this project, the model has been strengthened by increasing the minimum number of hours of PD supporting the logic model curriculum activities. This is supported by

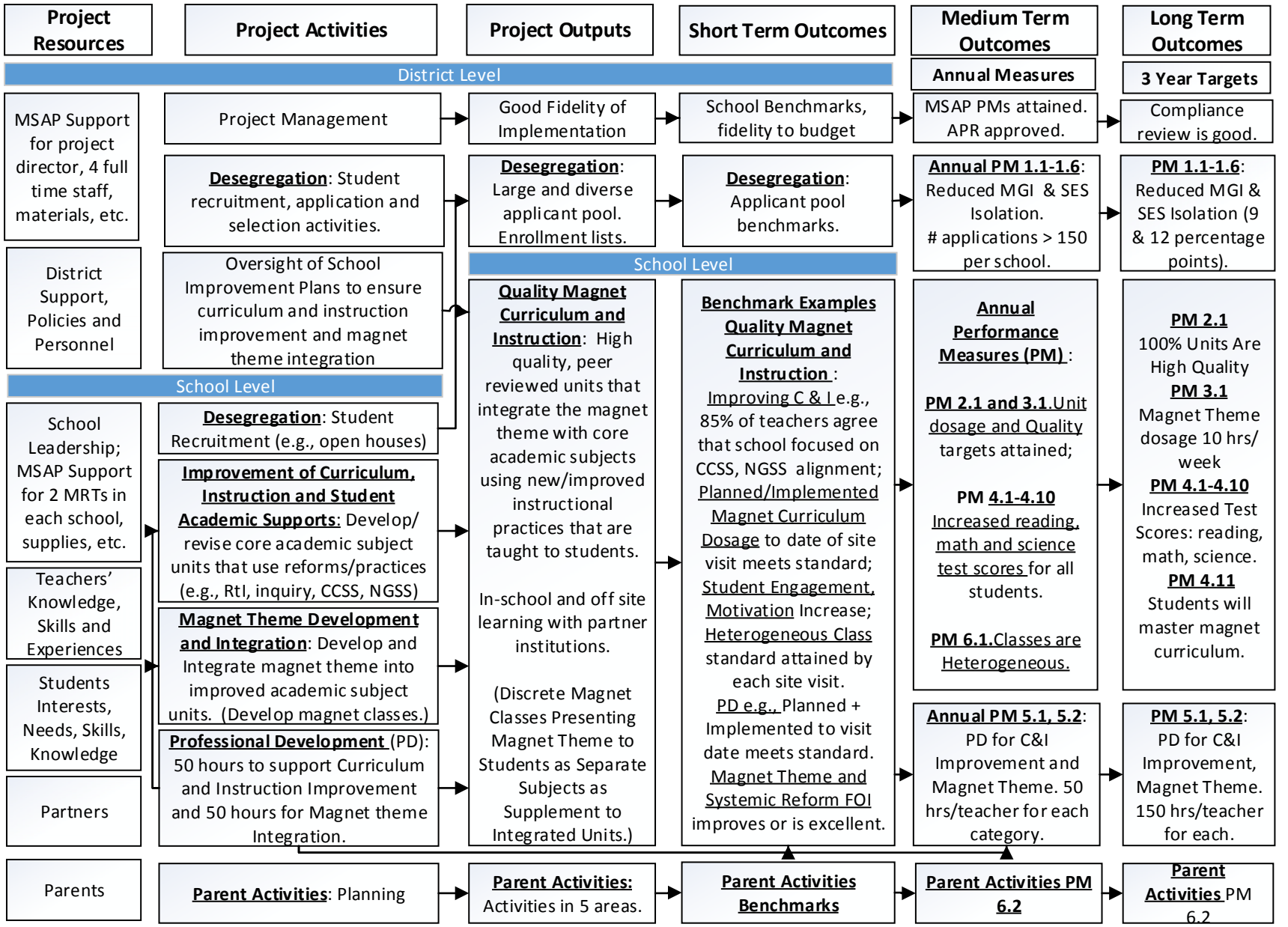
the following research: **Professional Development (PD) Research:** An Institute of Education Sciences (IES), U.S. Department of Education funded research review (Yoon, et al., 2007; Yoon, Duncan, Lee, & Shapley 2008) identified nine studies (after examining more than 1,300) on the effect of teacher professional development on student achievement that met the What Works Clearinghouse evidence standards. An analysis of these studies found that "teachers who receive substantial professional development—an average of 49 hours in the nine studies—can boost their students' achievement by 21 percentile points." The studies that had 30 hours or more of professional development showed a positive and significant effect on student achievement from professional development. All nine studies focused on elementary schools and included workshops or summer institutes. Eight included follow-up sessions supporting the main professional development event illustrating the importance of follow-up activities after workshops. Even though the content of the professional development varied, the effect sizes were about the same: 0.51 for science, 0.57 for mathematics, and 0.53 for reading and ELA. Each of the studies links intensive professional development with improved classroom teaching resulting in higher student achievement as does this project. Based on an extensive review of the PD literature, Dr. Linda Darling-Hammond, et al, (National Staff Development Council, 2009) recommends that professional development should (1) be intensive, ongoing, and connected to practice; (2) focus on student learning and address the teaching of specific curriculum content; (3) align with school improvement priorities and goals; (4) build strong working relationships among teachers. The PD for this project will follow these research based recommendations.

Magnet School Research Raises a Question: Dr. Dale Ballou (2009) cites two studies--Crain, Heebner and Sim 1992 and 1999; Ballou, 2007--that indicate that magnet schools improve student academic achievement supporting the logic model output Quality Magnet Curricula and

Instruction. (Ballou examined fourteen studies and found four that met high design quality criteria. Of those four, the two cited above have statistically significant positive results.)

As described for Competitive Priority 5, Bifulco et al., supports the logic model output Quality Magnet Curriculum and Instruction. That is, if a magnet curriculum is developed and presented to students, as is being proposed for this project, it will result in increased test scores.

This study is especially important for this project because it evaluated interdistrict magnet programs in Connecticut, the same model used by the schools in this project. In the experimental component of the study, which used lottery results to match treatment and comparison groups (lottery winners and losers), it found that reading scores of students were 0.28 standard deviations higher and their math scores were 0.14 standard deviations higher than what they would be if those students had not attended a magnet school. (The schools were one middle school and one grade 6-12 school). The quasi-experimental component of the study, which included many more schools, found that middle school magnet students had significantly higher math scores than comparison students (.237 standard deviations) and that high school magnet students had significantly higher reading and math scores (.228 and .277 standard deviations). The experimental component (randomized control trial) of this study meets WWC group design standards without reservations. Therefore, Bifulco, et. al., provides evidence of promise for the Quality Magnet Curriculum and Instruction component of this project.


Project Resources
Project Activities
Project Outputs
Short Term Outcomes
Medium Term Outcomes
Long Term Outcomes
Annual Measures
3 Year Targets
District Level
MSAP Support for project director, 4 full time staff, materials, etc.
Project Management
Good Fidelity of Implementation
School Benchmarks, fidelity to budget
MSAP PMs attained. APR approved.
Compliance review is good.
Desegregation: Student recruitment, application and selection activities.
Desegregation: Large and diverse applicant pool. Enrollment lists.
Desegregation: Applicant pool benchmarks.
Annual PM 1.1-1.6: Reduced MGI & SES Isolation. # applications > 150 per school.
PM 1.1-1.6: Reduced MGI & SES Isolation (9 & 12 percentage points).
District Support, Policies and Personnel
Oversight of School Improvement Plans to ensure curriculum and instruction improvement and magnet theme integration
School Level
Quality Magnet Curriculum and Instruction: High quality, peer reviewed units that integrate the magnet theme with core academic subjects using new/improved instructional practices that are taught to students.
In-school and off site learning with partner institutions.
(Discrete Magnet Classes Presenting Magnet Theme to Students as Separate Subjects as Supplement to Integrated Units.)
Benchmark Examples Quality Magnet Curriculum and Instruction: Improving C & I e.g., 85% of teachers agree that school focused on CCSS, NGSS alignment; Planned/Implemented Magnet Curriculum Dosage to date of site visit meets standard; Student Engagement, Motivation Increase; Heterogeneous Class standard attained by each site visit. PD e.g., Planned + Implemented to visit date meets standard. Magnet Theme and Systemic Reform FOI improves or is excellent.
Annual Performance Measures (PM): PM 2.1 and 3.1.Unit dosage and Quality targets attained; PM 4.1-4.10 Increased reading, math and science test scores for all students. PM 6.1.Classes are Heterogeneous.
PM 2.1 100% Units Are High Quality PM 3.1 Magnet Theme dosage 10 hrs/ week PM 4.1-4.10 Increased Test Scores: reading, math, science. PM 4.11 Students will master magnet curriculum.
School Level
School Leadership; MSAP Support for 2 MRTs in each school, supplies, etc.
Desegregation: Student Recruitment (e.g., open houses)
Improvement of Curriculum, Instruction and Student Academic Supports: Develop/ revise core academic subject units that use reforms/practices (e.g., RtI, inquiry, CCSS, NGSS)
Teachers' Knowledge, Skills and Experiences
Magnet Theme Development and Integration: Develop and Integrate magnet theme into improved academic subject units. (Develop magnet classes.)
Students Interests, Needs, Skills, Knowledge
Professional Development (PD): 50 hours to support Curriculum and Instruction Improvement and 50 hours for Magnet theme Integration.
Partners
Annual PM 5.1, 5.2: PD for C&I Improvement and Magnet Theme. 50 hrs/teacher for each category.
PM 5.1, 5.2: PD for C&I Improvement, Magnet Theme. 150 hrs/teacher for each.
Parents
Parent Activities: Planning
Parent Activities: Activities in 5 areas.
Parent Activities Benchmarks
Parent Activities PM 6.2
Parent Activities PM 6.2

(c) Quality of Management Plan. **(1)** The adequacy of the management plan to achieve the objectives of the proposed project on time and within budget, including clearly defined responsibilities, timelines, and milestones for accomplishing project tasks;

The New Haven Public Schools have 38 years of experience in the planning and operation of magnet schools. The management plan that follows includes many of the individuals who have helped to successfully implement past desegregation and magnets school efforts. This section will first describe the management structure and reporting relationships that are most important to the management of the project and the attainment of objectives and performance measures. It will then describe the personnel responsible for attaining the various project outcomes. Please see the organization table in the appendix of this proposal.

District Level: The Project Director will be housed in the District Office, will report to the Chief of Staff to the Superintendent, Dr. Delores Garcia-Blocker, and will meet with the Superintendent at least twice per month. All aspects of this project will be managed by the MSAP Project Director. She will work closely with the Directors of Instruction, who have direct supervisory responsibility for principals, to coordinate project activities with the Magnet School principals. She will also work closely with the Deputy Superintendent for Curriculum and Instruction and District Curriculum Supervisors on the extensive curriculum development (Improvement of Core Curriculum and Instruction and Magnet Theme Development and Integration) that is a cornerstone of this project and with the staff of the Office of Assessment and Analytics to ensure that district assessments both drive project activities and adequately measure its outcomes. The Project Director will supervise all district-based MSAP project staff.

New Haven has successfully managed federal and state funded programs for many years.

While the Grants Office manages programs that are relatively small and do not have full time project directors, larger grants, such as the MSAP, are managed by each grant's Project Director and supported by the Business Director, who assures proper and efficient fiscal administration.

A special District Magnet Schools Advisory Committee will be created to assist the Project Director and Recruitment Coordinator with the administration of the project.

School Level Management: At each magnet school, a School Planning and Management Team (SPMT) will have overall responsibility for the program's success. It will be led by the building principal, and will be composed of representatives of all adult stakeholders, including teachers, parents, and Magnet Resource Teachers. The Project Director will attend these meetings as well. The team will have responsibility for establishing guidelines to address magnet program implementation including the revision and improvement of all core academic subject units, the development and integration of the magnet theme, and staff development. The SPMT will coordinate 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 also meet with magnet school principals and school based magnet staff at least once each week.

***Organizational Reporting Relationships*:** The Magnet Project Director will report directly to the Chief of Staff to the Superintendent, who will meet at least twice weekly with the Project Director and will regularly visit the magnet schools. As part of her role in the New Haven Public Schools, the Chief of Staff is responsible for oversight of magnet schools, school choice and enrollment. New Haven's already established magnet schools as well the district's central registration process for new students will be managed by the Director of Choice and Enrollment who also reports to the Chief of Staff. Since New Haven has one recruitment and

selection process for all of its magnet schools, the Director of Choice and Enrollment and the Project Director will work closely together to coordinate grant and district resources and activities. They will be located in the same suite of offices at the New Haven Central Office to facilitate communication and cooperation. The Chief of Staff, who was a magnet school principal for seven years, will ensure that MSAP funds will only be spent in support of the MSAP program and schools and that the Project Director and Director of Choice and Enrollment coordinate the activities of their offices.

The **Curriculum and Instruction Supervisors, led by the Deputy Superintendent for Curriculum and Instruction,** will give support in their disciplines to the teachers in every magnet school and to the Magnet Resource Teachers to 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 (SPMTs) at the magnet schools to help plan staff development activities and to answer questions and offer suggestions concerning their subject areas. They have already been deeply involved in the initial planning of this project and have been valuable assets to the principal and planning team of each participating school.

There will be a monthly (more frequently if needed) meeting at which the Project Director will meet with the Chief of Staff, the Deputy Superintendent for Curriculum and Instruction, the subject-area Curriculum and Instruction Supervisors, the Directors of Instruction and the Director of School Choice and Enrollment 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 any obstacles that have been encountered. At these meetings, problems will be solved and support services for the schools will be aligned.

The **Directors of Instruction**, who report to the Superintendent, supervise New Haven's

principals. Each has been a highly successful principal. Their responsibilities include not only supervising principals, but also giving them support and helping them to solve administrative and instructional problems. They are the district's representative on the SPMTs of each school.

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 SPMT, the Project Director, and the MSAP Staff. As obstacles to implementation arise, the principal will work with the Project Director, the Directors of Instruction (who supervise the principals), and the Chief of Staff to the Superintendent to modify and improve the activities in question.

Because the **Magnet Resource Teachers** will be school based, their daily activities will be supervised by the principal of each magnet school. However, the Project Director, together with the Directors of Instruction, will insure 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.

How Personnel Will Help Achieve Project Outcomes. Please note that objectives and performance measures (PM) described below are summarized. Full descriptions are included in the evaluation section of this proposal.

Objective 1. Minority group and socioeconomic isolation will be reduced at the proposed magnet schools. ***Summary of Performance Measures (PM) 1.4-1.6:*** Minority group and socioeconomic isolation at each magnet school will be reduced by 2 and 4 percentage points per year respectively. Each magnet school will receive at least 150 applications**. Logic model Activity**: Desegregation--Student recruitment, application and selection activities. ***How Personnel Achieve Objective***: The success of these performance measures depends on the following key personnel who have important roles in the previously described recruitment plan:

The Magnet Director is responsible for all recruitment activities and will supervise the Magnet Recruitment Coordinator and Specialists who will implement activities such as magnet fairs, send recruitment mail and e-mail, maintain the website with magnet school information, help parents with the application process at the Magnet Resource Center and community meetings, monitor the applicant pool to improve effectiveness of recruitment activities. With the magnet resource teachers, principals, parents, classroom teachers and SPMTs at each school they (MSAP recruitment staff) will implement open houses and school tours, help design school brochures and the school's web. Please see the recruitment section for a more complete description of recruitment activities and staff responsibilities. For this project, the selection process will be modified to include a lottery selection factor for socioeconomic status (SES) to better meet SES integration goals. This process will be assisted by Richard Kahlenberg, a noted researcher and authority on SES integration. He will work with the project director and recruitment staff, the chief of staff and the magnet school staffs to develop a socioeconomic integration plan for the magnet schools in this proposal. (Please see invitational priority.)

Timeline: ►Develop district level recruitment plan (Oct); ►Develop school level recruitment plans (Oct-Nov); Implement Recruitment Activities (Dec-March); ►Parents submit application (Dec-Mar); ►Selection of Students (April); ►Activities to retain selected students (May-Sept); ►Develop socioeconomic integration plan and lottery factor with Richard Kahlenberg (Oct-Jan).

At the heart of this project is improvement of the core academic curriculum, the development and integration of the magnet theme into the core curriculum and the academic life of each school, and the professional development to support these changes. They will be described together in this section because their implementation is closely tied together.

Objectives 2: All students will receive instruction that includes their school's systemic reforms

and magnet themes in units and courses aligned with CCSS, NGSS and State standards. **PM 2.1 Summary:** Each year, a third of all core academic subject units will meet district and school quality criteria as determined during peer reviews using a unit quality rubric. **Logic Model Activity:** Improve Curriculum, Instruction and Student Academic supports. **Objective 3.** All students, at each magnet school, will receive magnet theme instruction. **PM 3.1 Summary**: Students will receive 3, 6 and 10 hours of magnet theme instruction years 1, 2 and 3 respectively. **Logic Model Activity:** Magnet Theme Integration. **Objective 4.** Student academic achievement will increase in ELA/literacy, math and science for all students. **PM 4.1-4.10** Summary: Each project year, the proportion of students attaining level 3 or 4 on State tests will increase for all racial/ethnic subgroups of students; School Performance Indexes will increase for all students and high needs students. Magnet school student State test scores will be higher (statistically significant), by year 3, than scores of non-magnet students. **PM 11 Summary**: Students will master the magnet curriculum. **Objective 5.** Provide professional development related to improvement of curriculum, instruction and magnet theme development and implementation. **PM 5:** Each project year, teachers will receive at least 50 hours of professional development related to improvement of curriculum and instruction and 50 hours related to the development and integration of the magnet theme. **Logic Model Activity**: Professional Development.

Students will study their school's magnet theme using an inquiry/project-based, thematic learning approach that integrates STEM topics (social studies topics for Clemente) throughout the curriculum and will receive instruction that includes their school's systemic reforms (e.g., inquiry, implementation of NGSS and CCSS, RtI, Readers' and Writers' Workshop) and magnet themes in units and courses aligned with State standards.

At the beginning of each project year, each school will develop an implementation plan

based on this proposal and its school level logic model with the assistance of the magnet resource teachers, project director, and SPMT. With the support of the magnet resource teachers, classroom teachers will create new units or modify and improve existing units, aligned with Common Core State Standards (CCSS) and Next Generation Science Standards (NGSS) and state standards that integrate their school's specific magnet theme with science, mathematics, engineering and technology or with social studies and science (Clemente). This will be supported by professional development (at least 100 hours per teacher per year—50 focused on improvement of curriculum and instruction and 50 on magnet theme development and integration) from: the Connecticut Science Center (inquiry teaching, Engineering is Elementary, NGSS, science content); the Center for Technology and School Change (development integrated magnet units, technology integration, project based learning),; the Yale Office of New Haven and State Affairs (Engineers and Scientists in Residence). Partner organizations including the Eli Whitney Museum, the Connecticut Audubon Society, the Mystic Aquarium, and various Yale University Schools such as the School of Forestry will provide content area professional development and help develop authentic experiences in schools, at their institutions and in the greater New Haven area outside of school. Professional development will be planned, coordinated and scheduled by the magnet resource teachers in collaboration with the principal and SPMT of each school and supervised by the project director. The Project Director 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. 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. A District Magnet Schools Advisory Committee will be created to assist the Project Director and Recruitment Coordinator with the administration of the project. The committee will meet monthly (except July) and discuss all aspects of the project including activities, evaluation results, partnerships, parent activities and use of resources.

Magnet resource teachers will also provide each teacher additional hours of coaching each year and facilitate collaboration (e.g, intervisitations, PLCs) so that teachers receive more than 100 hours of PD related to improvement of core academic instruction and the development of the magnet theme. All units will be peer reviewed by teachers at least twice each year a process facilitated by the magnet resource teachers. The unit quality rubrics will be developed by a committee of teachers (at least one per grade) who will work with the magnet resource teachers, the school's reading and math coaches and the district curriculum supervisors to create the rubric which has to be approved by the school (SPMT), the district (deputy superintendent of curriculum and instruction) and the project director. Magnet resource teachers will insure that curriculum development activities, the peer reviews and professional development activities are implemented as designed and on time. **Timeline**: ►Develop Yearly Implementation Plan (Oct Year 1; Summer Years 2 and 3); ►Establish District Magnet School Advisory Committee (Oct-Nov Year 1); ► Magnet School Advisory Committee Meetings (monthly Oct-Sept except July); ►Strengthen (revise/develop) core academic subject units (Nov-Sept Year 1; Oct-Sept Years 2 and 3); ►Magnet unit development/integration (Dec-Sept Year 1, Oct-Sept Years 2-3); ►Magnet curriculum implementation (Dec-Sept Year 1; Oct-Sept Years 2-3) ►Creation of Unit Quality

Rubric; (Nov-Dec Year 1); ►Unit Quality Reviews (May and Jan); ►PD Columbia (Nov-Sept) ; ► PD CT Science Center (Jan-Sept); ►PD Partners (Oct-Sept); ►In-school, job-embedded PD and support from MRT and partners for teachers (Oct-Sept).

Objective 6a: All students enrolled in the magnet schools will have equitable access to high quality education. **PM 6.1:** All classes will reflect the racial/ethnic and gender diversity of its grade. **Objective 6b:** There will be an increase in parent participation at each magnet school. PM 6.2 Each year, more parents will be involved in school activities.

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 each magnet school's principal, the magnet resource teachers, the project director, and the evaluator. Schools not attaining the measure will take actions approved by project director, the directors of instruction and the deputy superintendent for curriculum and instruction 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. School will offer workshops for parents to better acquaint them with the school program and make them feel welcome.

Timeline: ►Evaluator checks ethnic/racial and gender enrollments during 3 site visits; results reported during visits and in reports (Dec, Mar, Sept); ►Project director reviews class level enrollment data and recommendations if any; discusses actions with principals if any (Dec, Mar,

Sept); ► Brown University professional development including cultural competence (Jan, Sept); ►Develop parent participation plan (Oct Year1; Summer preceding Years 2 and 3); ►Implement parent participation plan; develop schedule activities (Nov-Sept Year 1, Oct-Sept Years 2-3).

Principals will oversee and manage the magnet implementation process in their school. The project director will monitor the entire process for all four schools and district level activities to determine if all project activities are being carried out as designed and on time. The director will be assisted by information provided by the evaluators (e.g., 3 site visits and 5 formative reports—please see evaluation section). Implementation problems identified by evaluators or the director or the principal will be addressed immediately under the direction of the Directors of Instruction and the Chief of Staff to the Superintendent as previously described.

Timeline and milestones: At the beginning of each project year, each school will develop an implementation plan based on this proposal and its school level logic model. The process will begin by revisiting and clearly explaining, to teachers and principals, project activities and why they will result in expected outcomes, the logic model and the theory of action so that stakeholders understand what is being implemented and why. Although this was part of the initial planning process prior to submission, it is still an important part of pre-implementation planning. Using the grant application and logic model, school staffs will list and describe the activities to be implemented, the professional development for teachers that will support the implementation of these activities, the people and organizations who will provide the professional development and a timeline. They will also outline, at a minimum, all units for the year including unit content. Finally, each school will create a timeline for all of the activities, including professional development, that will occur during the project year. Timelines will be developed by the SPMTs of each school and must be approved by the project director. This

activity recognizes the best practice of planning the entire year prior to implementation, in sufficient detail, to enable a strong and complete implementation. In the evaluation section of this proposal, the most important short term outcomes, called benchmarks in this project, are described in relation to the logic model components they support. These benchmarks let school staffs, the project staff and the evaluators know if schools are on track to attain their annual performance measures. A timeline for each project year follows, listing key project activities and their timeframe for implementation. The timelines that will be created as part of the implementation plan development will be based on these timelines. Implementation plan timelines will be approved by the project director.

Achieving the Objectives of the Project Within Budget. Linda Hannans, Business Director, working under the supervision of Victor De la Paz, Chief Financial Officer will work with the project director, principals and magnet resource teachers to ensure that project performance measures are accomplished and that all fiscal controls are maintained. Mr. De La Paz and Ms. Hannans will provide appropriate internal controls to ensure that project funds will only be used for project activities, professional development, supplies, equipment and personnel that are in the approved budget or a budget modification approved by the USDOE. They will ensure that all items purchased will be consistent with the approved budget and the scope of the project. They will safeguard project funds, check the accuracy and reliability of project accounting data, promote operating efficiency, and ensure compliance with prescribed management policies and fiscal requirements. Ms. Hannons will issue monthly budget reports that will list, in detail, all expenditures for that month and for the year to date by budget category. The project director will use that information to ensure that the project budget is being used as approved, that expenditures are occurring on schedule and that project budgets including

those submitted in Annual Performance Reports (APRs), Ad Hoc Reports and the Final Report are accurate. Ms. Hannans will meet with the project director at least once per month to go over fiscal procedures, review purchase orders, and discuss monthly and annual expenditures and the rate that the funds are being used, and discuss the amount and categories of unspent funds to determine if the project is on schedule. If modifications are necessary, they will be discussed with both Ms. Hannans and Mr. De La Paz, who must approve budget modification requests made to the U.S Department of Education. Mr. De La Paz will meet with Ms. Hannans and the project director at least quarterly to determine that the project is on schedule and on budget.

Mr. De La Paz and Ms. Hannans will maintain fiscal control in adherence to the New Haven Public Schools and the City of New Haven's accounting and auditing system, and all regulations and laws established by the Federal Government and the State of Connecticut.

(c) Quality of Management Plan. **(2)** How the applicant will ensure that a diversity of perspectives are brought to bear in the operation of the … project, including those of parents, teachers, the business community, a variety of disciplinary and professional fields, recipients or beneficiaries of services, or others as appropriate.

A District Magnet Schools Advisory Committee will be created to assist the Project Director and Recruitment Coordinator with the administration of the project. The committee will meet monthly (except July) and discuss all aspects of the project including activities, evaluation results, partnerships, parent activities and use of resources. The Magnet Schools Advisory Committee membership will consist of: (1) Three representatives from each of the magnet school's School Planning and Management Team (teacher, parent, administrator); (2) The President of the Parents Associations Council for each school; (3) Additional parent representatives to insure that the advisory committee will include representatives from every

New Haven and suburban community that sends students to the magnet schools participating in this project; (4) A Magnet Schools Resource Teachers Representative from each school; (5) Representatives from Community Based Organizations; (6) The Deputy Superintendent; (7) Representatives from Partner Organizations (e.g., Eli Whitney Museum, Mystic Aquarium); (8) Representative of Curriculum Supervisors; (9) Representatives of Yale University; (10) Representatives from the teachers' union; (11) Representative of the Administrator's union.

AT the school level SPMT's will reflect the diversity of the families that each school serves and all of the school's stakeholders. Its members will include the principal, an assistant principal, the Director of Instruction for that school, classroom teachers, one per grade, the math, ELA coaches, the Magnet Resource Teachers, New Haven and suburban parents (representing each community that sends students to particular schools), non-instructional staff and community partners. Student representatives will be invited when appropriate.

(d) Quality of personnel (1) the extent to which the project director is qualified to manage the project;

New Haven has 38 years of experience in the planning, and operation of magnet schools. The district has 27 magnets. Therefore, many of those who have helped to successfully implement past desegregation and magnet school efforts will insure the success of this project.

Qualifications of the Project Director (100% FTE): The Project Director will be a principal with experience in magnet theme development, teacher professional development, and the creation and implementation of school improvement plans that have increased student achievement.

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; an exemplary administrator; ► at least five

years' experience as a classroom teacher; ► expertise in the themes that are described for the proposed magnet schools including STEM; ► experience and knowledge related to the Common Core and the Next Generation Science Standards and the Connecticut Social Studies Standards.

The Project Director will: ► manage all aspects of the project; manage all district based project staff; ► ensure that the activities of the magnet school project are focused on promoting desegregation; ► assist magnet school principals implement their MSAP programs; ► work closely with the District Curriculum Supervisors to coordinate their support for curriculum development; ► work closely with 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.

(d) Quality of personnel. (2) 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 Chief of Staff to the Superintendent.

Mr. Garth Harries, the Superintendent of Schools since 2013 came to New Haven in 2009 after working for New York City's Department of Education (DOE) for six years first as a Project Manager in the Office of the Chief of Staff, where he coordinated strategic planning for secondary school reform and then as Chief Operating Officer and Chief Executive of the NYC DOE Office of New Schools. In the latter position, Mr. Harries led the creation of 333 new schools, including many magnet schools and small, theme based high schools that have many of

the characteristics of magnet schools. Mr. Harries ultimately rose to the position of Chief Executive for Portfolio Development, where he developed portfolio planning for all New York City schools and supervised programs for new schools, including magnet, charter and small high schools. It is noteworthy that the Small High Schools Initiative that Mr. Harries' office helped to implement raised the achievement and increased the graduation rates of thousands of students.

Mr. Harries served as New Haven's Assistant Superintendent for Portfolio and Performance Management (2009-2013) and was responsible the development and implementation of eight new magnet schools as well as for designing and implementing the New Haven Public Schools' reform plan, including the teacher and administrator evaluation and development program. Working with the New Haven teachers' union, he helped to negotiate a new contract to include the use of student test scores, among other factors, to evaluate teacher effectiveness. This was a major breakthrough reported nationally and highlighted in a New York Times Editorial (October 29, 2009) calling it the "New Haven Model", the first important step in improving the effectiveness of an entire teaching staff. Since 2009, New Haven has received national recognition for its steadfast pursuit of education reform, and has even been referred to as "ground zero for school reform in America" by New York Times columnist Nicholas Kristof in the article the "The New Haven Experiment" (February 15, 2013) which documented the progress made in the use and acceptance (by teachers and their union) of the Teacher Evaluation System which not only evaluates performance but also provides significant support for teachers.

As Superintendent, Mr. Harries has furthered the *School Change 2.0* initiative, founded under his predecessor Dr. Reginald Mayo, focusing on academic learning, social emotional & physical growth, talented educators, a portfolio of schools, family & community, and resource stewardship. Under School Change 2.0, both graduation rates and college enrollment rates have

increased by 17 points and 16 points respectively. Mr. Harries earned a B.A. in Ethics, Politics, and Economics from Yale University and graduated from Stanford Law School with distinction.

Dr. Dolores Garcia-Blocker, **Chief of Staff to the Superintendent,** will supervise the Project Director and ensure close coordination between the MSAP and other New Haven programs. Dr. Garcia-Blocker has been a magnet school teacher, assistant principal, elementary school principal (2000-2004) and principal of Cooperative Arts and Humanities (Co-op) High School (2004-2011), a New Haven magnet school. Under her leadership, Co-op High School was awarded U.S. New and World Reports' Bronze (2007) and Silver (2008) Medals. Dr. Garcia Blocker earned an Ed.D. in Educational Administration from Columbia University.

Immacolata Canelli, Deputy Superintendent for Curriculum and Instruction since 2007, supervises the Curriculum and Instruction (C &I) Supervisors as well as the development and writing of all curricula. Since 2007, Ms. Canelli and her staff have been responsible for supporting the development and implementation of the theme curricula for nine new and three significantly revised magnets. Ms. Canelli has also served as New Haven's Director of Instruction (2005-2007) and as the Supervisor of Reading/Language Arts (1999-2005). She received a B.S. in Elementary Education, an M.S. in Reading.

Thenoa Sherri Davis-Googe, Director of Choice and Enrollment since 2014, manages the programs for established magnet schools and the registration process for new students. As the Assistant Director of the Regional School Choice Office in the Hartford Region (2011 to 2014) she worked with Hartford and many suburban school districts to implement a recruitment and student selection process for thousands of students.

William Clark, **Chief Operating Officer,** responsible for supervising facilities, transportation and operations since 2007, has supervised the revision of New Haven's school

transportation system as new magnet schools are implemented and the design/building or renovation of new and revised magnet schools since 2007. Mr. Clark received a law degree from Quinnipiac University and a B.A. from the University of Notre Dame.

Victor De la Paz, Chief Financial Officer since July, 2014, was Deputy and Chief Operating Officer for the Hartford Public Schools (2010-2012); and Chief Financial Officer for the Baltimore City Public Schools (2012-14). Mr. De la Paz supervises New Haven's Finance Department. Mr. De la Paz has a BA from Rutgers University, and an MBA from the Darden School of Business Administration of the University of Virginia.

Linda Hannans, Business Director has worked closely with MSAP project directors grants since 1996, offering valued counsel and generating monthly budget reports. Ms. Hannans has a Bachelor's Degree in Business Economics and a Master's in Public Administration.

Because New Haven has had successful magnet schools for many years, every **Curriculum Supervisor** has assisted in the design of magnet school curricula and in the integration of magnet themes with the curricula of their discipline. **Science Supervisor Richard Therrien** and **Mathematics Supervisor Ken Matthews** will directly contribute to the development of the thematic STEM curricula. Both have over 25 years of experience as educators respectively, organizing and facilitating professional development and curriculum development in their respective subjects for hundreds of New Haven teachers. They have also assisted in the design of magnet school curricula, including the design of the successful 6-12 Engineering and Science University Magnet School, Quinnipiac Real World Math STEM Magnet and Celentano Biotech Health & Medical Magnet. The project will be further supported by **Social Studies Supervisor Sandra Cates-Clark** (since 2010) and **Interim Literacy Supervisor Lynn Brantley,** who has worked on literacy development in New Haven for 15 years. **Pedro Mendia-Landa, Bilingual/**

ESL Program Supervisor since 2009, will continue to provide program support to ensure that English Language Learners have full access to magnet program activities.

Each principal will be supported by a **Director of Instruction,** who will be responsible for providing both supervision and support while ensuring that all academic initiatives, including those outlined in this proposal, are implemented with fidelity. Each Director of Instruction will also sit on their school's Planning and Management Team. **Director Kim Johnsky,** supporting Martinez and West Rock, was a principal (8 years), a magnet school assistant principal, and magnet school curriculum developer. **Dr. Iline Tracey** supporting Bishop Woods and Roberto Clemente, was principal of King/Robinson International Baccalaureate Magnet School (7 years), a Magnet Schools of America magnet school of distinction from 2008 to 2010. Dr. Tracey transformed it from an academically low performing to a higher performing school.

The **Magnet School Principals** will have responsibility for implementing the activities described in this proposal in their schools. 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.

Other Key MSAP Personnel: Deborah Sumpter-Breland, Recruitment Coordinator (1 at 100% FTE) has been a magnet school recruitment coordinator since 1999. Ms. Sumpter-Breland has planned and implement recruitment activities that have been highly effective in both New Haven and its suburbs. She has a B.S. in English and a Master's in Urban Education. As the **Recruitment Coordinator,** she will supervise the recruitment specialists and work closely with project, district and school staffs on all aspects of student recruitment.

Recruitment Specialists (3 at 100% FTE): Erving Xochipiltecat, Olga Sanchez and Nikia Bigard. Please see their resumes in the appendix. The Recruitment Specialists will help implement previously described recruitment plan in both New Haven and its suburbs.

The Jubaliz Lopez, Purchasing Specialist (1 at 100% FTE) will provide clerical and budget support for the project. Please see Ms. Lopez' resume in the appendix.

American Education Solutions (AES) will serve as the **External Evaluator** for **t**his project. For the past 20 years, AES has evaluated 59 Magnet Schools Assistance Program grants and has partnered with the Education Alliance at Brown University and the SERVE Center at the University of North Carolina on 10 rigorous MSAP evaluations. Since 2010, AES has partnered with the National Center for Research on Evaluation, Standards, and Student Testing (CRESST) at UCLA on 10 rigorous MSAP evaluations as well as on survey development and analysis. CRESST will perform the rigorous test score study for this project. The AES MSAP site visit team includes former school administrators, all of whom have been teachers and have extensive evaluation and magnet school experience. The evaluation design is described in the evaluation section of this grant application.

(d) Quality of personnel. (3) 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 (8 full time; 2 per each magnet school) School-based Magnet School Resource Teachers (MRTs) will be hired to work in the 4 proposed magnet schools. At least one MRT at each STEM 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 Magnet 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 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 in curriculum development, and the magnet theme (for one resource teacher per STEM 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, PBL and inquiry projects and units integrated with core subjects. They will assist with curriculum alignment, facilitate collaborative teacher planning, teach model lessons and help in the development and implementation of recruitment plans and activities.

Classroom Teacher Quality: New Haven uses a clear process to determine teacher effectiveness based on student outcomes and teacher instructional practice, and develops an individual professional development plan for each teacher. 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 include magnet theme related student outcomes, professional practices and teacher learning goals. Teachers 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. Classroom teachers must be rated Exemplary, Strong or Effective. Classroom teachers with lower ratings will receive extensive professional development focused on their needs and will be continued only if they improve.

New teachers hired will have at least 3 years' experience, a rating of Exemplary or Strong or its equivalent, proven ability in STEM subjects or an inquiry approach to social studies for Clemente and experience teaching racially/ethnically and socioeconomically diverse classes.

(e) Evaluation Plan…The extent to which the methods of evaluation (1) provide for examining the effectiveness of project implementation strategies; (2) include the use of objective performance measures that are clearly related to the intended outcomes of the project and will produce quantitative and qualitative data to the extent possible; and (3) will provide performance feedback and permit periodic assessment of progress toward achieving intended outcomes.

This evaluation, spanning the three years of this project, will assist school and district staffs to modify and improve project performance helping them achieve high levels of fidelity of implementation and attain project outcomes. The evaluation will also produce information needed by the United States Department of Education to properly evaluate project effectiveness as well as determine if project implementation strategies are in place and effective in insuring that all project activities are implemented as designed and on time, and that adequate progress is made toward the attainment of all project outcomes. Finally, the evaluation will insure that feedback structures and processes are in place so that formative report recommendations and findings are used by project and school staff and result in project improvement.

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, student demographics and standardized test results) will be used in conjunction with student and teacher surveys, as well with qualitative data (e.g. interview and observation data, school improvement plans, curriculum materials, professional development records) to insure a thorough and balanced evaluation.

The evaluation 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 and project staff. The data to be collected will include: **Student academic achievement, demographic, enrollment and other data:** The contractor will collect standardized test score data (e.g., school, grade and class level and individual student reading, mathematics, science data) needed to address performance measures related to student academic achievement and perform the quasi-experimental test score analysis. Enrollment data disaggregated by race/ethnicity and socioeconomic status data (students eligible for free or reduced lunch) 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 and increasing socioeconomic integration. Applicant pool, student selection and student enrollment data will help explain the extent to which the reduction in minority group isolation and increasing socioeconomic integration performance measures were attained and help determine how performance in these areas 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 evaluator will conduct a walkthrough, observe lessons, and interview teachers, administrators, students and parents. The evaluators will develop an open-ended interview protocol to determine participants' perceptions of their schools, their leadership team, their faculty, and the contextual environment that surrounds their school and community. These semi-structured interviews will allow participants to reflect on their experiences in their school generally, with a particular focus on what works and what needs improvement. Interviews will be recorded (with permission), transcribed and coded by the evaluators. Combined with other data (e.g., surveys, observations, documentation), they will help assess progress towards benchmarks and performance measures.

Surveys will be administered annually to all teachers at each magnet and comparison school and a sample of students (one complete grade) at each magnet and comparison school. Comparison schools will be selected based on school size, grade span, and school-level student achievement and demographics. Drawing on its 20-year history of MSAP and regular and rigorous evaluations, American Education Solutions developed survey items and scales with its survey consultant, Dr. David Silver, a senior researcher at UCLA's CRESST Center, and currently, Dr. Jia Wang, a senior research scientist at CRESST. *These survey items are directly related to the purposes of the MSAP and the logic model, 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, teacher insights of what works, what is missing, and areas of improvement, as well

as magnet-specific professional development dosage.

Formative Evaluation: 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.

Because improvement of curriculum and instruction and the development and integration of the magnet theme, both supported by intensive professional development, are key components of this project's logic model, fidelity of implementation related to curriculum will include examination of the gap between the intended curriculum—as presented in curriculum materials and professional development—and the enacted curriculum (as seen in classrooms). Examining this gap will help determine if professional development activities are effective in improving classroom curriculum and instruction and developing and integrating the magnet theme and if increases in student test scores might be attributable to the curriculum developed for each school. Fidelity of implementation of curriculum and instruction will be determined through teacher interviews and surveys, principal interviews, classroom observations, unit analysis by project staff and evaluators, documentation of peer reviews of units and examination of the intended curriculum documents provided by professional development providers and the district.

Formative Evaluation Reporting: Data will be collected, as available, and analyzed, and

recommendations will be 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. Measures of fidelity include adherence to recruitment plans and student selection 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.

Site Visit Reports are opportunities to provide feedback based on data related to the development and implementation of the project. 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 proposed 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 (including improvement of curriculum and instruction) 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, help them to understand if they are on track to attain the intended project outcomes, 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. Other formative evaluation strategies include:

Short Term Outcomes. Benchmarks are short term outcomes that indicate whether adequate progress is being made towards the attainment of annual performance measures. Most are derived from site visit report or survey items. Since surveys are administered in the spring of each year, these benchmarks, reported by the end of the school year, can help the project director make adjustments by the beginning of the following school year. Site visit items (e.g, professional development and curriculum dosage, quality indicators) are reported and reviewed with schools three times during each project year. The most critical benchmarks are included in the performance measure section which follows. The project director and evaluator can decide on additional benchmarks, derived from site visit or survey items, that could be helpful guides to one or more schools. Desegregation benchmarks are derived from applicant and enrollment data. The degree to which benchmarks are attained will be reported in the site visit and survey reports.

Implementation Strategies: Fidelity of implementation may be affected by the complexity of the project or intervention. Learning the program and each of its components through intensive professional development and receiving implementation support from project staff (e.g., coaching, demonstration lessons, resource support), colleagues (e.g., unit quality peer reviews,

collaboration, intervisitations) and evaluators (e.g., site visit and other formative reports and feedback including progress on benchmarks) is essential and will occur as previously described. Having additional strategies to improve fidelity of implementation are important and include:

Planning: Schools started planning their magnet themes in June, 2015. However, implementing a complex program needs additional planning. Therefore, every school, with the guidance of the project director, will create an implementation plan based on this proposal and its school level logic model. The process begins by revisiting and clearly explaining, to teachers and principals, project activities and why they will result in expected outcomes, the logic model and the theory of action so that stakeholders understand what is being implemented and why. Although this was part of the initial planning process prior to submission, it is still an important part of pre-implementation planning. Using the grant application and logic model, school staffs will list and describe the activities to be implemented, the professional development for teachers that will support the implementation of these activities, the people and organizations who will provide the professional development and a timeline. They will also outline, at a minimum, all units for the year including unit content. This activity recognizes the best practice of planning the entire year prior to implementation, in sufficient detail, to enable a strong and complete implementation.

Peer review of unit quality: Each school will create, with the guidance of the project director and curriculum and instruction department, a unit quality rubric. All units must be reviewed and meet the quality criterion. Review sessions will include teachers' discussions of units. The rubric also provides a school-wide structure for inter-visitations and unit development.

Review of site visit reports, **its findings and recommendations**: Each school will develop a process for reviewing the site visit reports, discussing findings with staff and implementing recommendations. Fidelity of Implementation will be monitored and reported on during each

site visit as will each school's implementation plan, peer review of units, review of the previous report and progress made on implementing recommendations. A similar review process will be implemented for the findings of the **surveys**.

The ultimate effectiveness of the implementation and implementation strategies will be determined by the extent to which project outcomes will be attained, including reduction in minority group and socioeconomic isolation and test score improvement, and statistically significant improvements in test scores for students attending magnet schools when compared with carefully matched non-magnet school students (quasi-experimental analysis of test scores by the Center for Research on Evaluation, Standards, and Student Testing (CRESST) at UCLA.

Summative Evaluation and Reporting: The evaluator will determine the extent to which annual objectives and performance measures (medium term outcomes on the logic model) are attained. Data sources were described above. The evaluator will collect and analyze the data, prepare two annual performance reports (APRs) and one final report summarizing findings, and discuss the results with district and magnet school staffs. (For previous MSAP cycles, there were two versions of the APR each year. The APR was submitted in May to demonstrate progress made to date. The final APR, called the Ad Hoc Report, was submitted, on October 30, after the end of the project year.) The following section describes the annual performance measures (medium term outcomes), their relationship to each MSAP program purpose and to this project's logic model and how the evaluators will assess their attainment for the APRs (APR and Ad Hoc Report) and final report (e.g., indicators, measures of change, data collection methods, data sources and frequency of data collection). The most important benchmarks associated with each performance measure are also described. Long term outcomes on the logic model are the year 3 performance measures and represent the outcomes for the entire project period.

Project Outcomes: This proposal's outcomes are aligned with the six purposes of the Magnet Schools Assistance Program (MSAP) and the logic model for this project. A set of objectives and performance measures follow the Program Purpose and logic model activity they address. The Benchmarks are short term outcomes that indicate if adequate progress is being made towards the attainment of annual performance measures.

Program Purpose 1: *The elimination, reduction, or prevention of minority group isolation in … schools with substantial portions of minority students….***Logic Model Activity:** *Desegregation – Student recruitment, application and selection activities;* ***Benchmark****: for applicant pool - proportion of isolated students is 10 percentage points less than actual enrollment for each school.* All proposed magnet schools will reduce minority group isolation and increase socioeconomic integration by decreasing the percentage of black or Hispanic students and increasing the percentage of white and middle class students. The percentage of black students (West Rock) or Hispanic students (Bishop Woods, Martinez and Clemente) are greater than the district-wide (all grades) average of black students (40%) and Hispanic students (42%). The proportion of low income students at each school is greater than the district average of 54%. The district-wide PreK to grade 8 enrollment and projections are on Table 1: Enrollment Data-LEA Level.) **Objective 1.** Minority group and socioeconomic isolation will be reduced at the proposed magnet schools. (This objective addresses MSAP Performance Measure a.)

Performance Measure 1.1-1.4: By October 1 of each project year, for each magnet school, approved enrollment targets for each racial/ethnic group (see Table 3: Enrollment Data-Magnet Schools) will be attained by reducing the isolation of black or Hispanic student (using 2015-16 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 2015-16 enrollments (isolated groups in bold)

are: **1.1** West Rock STREAM Academy (PreK-4) (**64% black**, 22% Hispanic, 12% white, 2 or more races 2%, other groups less than 1%. **Low Income: 69.2%**); **1.2** Bishop Woods Architecture and Design Magnet School (K-8) (34% black, **49% Hispanic**, 4% Asian, 12%, white, other groups less than 1%. **Low Income: 59.6%**). **1.3** John S. Martinez Sea and Sky STEM Magnet School (K-8) (10% black, **86% Hispanic**, 3% white, other groups less than 1%. **Low Income: 68.9%**); **1.4 ►** Roberto Clemente Leadership Academy for Global Awareness (K-8) (38% black, **57% Hispanic**, 4% white, other groups less than 1%). **Low Income: 79.7%**.

1.5: By October 1 of each project year, for each magnet school, the proportion of low income students will be reduced by at least 4 percentage points per year. (At the current time, a low income student in New Haven is defined as a student who is eligible for free or reduced lunch.)

1.6 For each project year, each magnet school will receive at least 150 applications.

Assessment: School enrollment data, disaggregated by race/ethnicity and socioeconomic status will help determine the degree of attainment of 1.1-1.5. Each year (October 1), the percentage of students in the isolated racial/ethnic group and low income students enrolled in each school will decrease. Baselines are 2015-16 school enrollments. School census data is collected by teachers at each school and aggregated and confirmed by the district. Applicant pool (applications for magnet school seats) and student selection data (students who applied and were selected), collected by project staff (recruiters and recruitment coordinator, project director) each spring will determine if 1.6 was attained and explore how outcomes can be improved for all measures.

Purpose 2: *To develop, implement and expand magnet school programs that will assist LEAs achieve systemic reforms, and provide all students the opportunity to meet challenging State academic standards.* ***Logic Model Activity:*** *Improve Curriculum, Instruction & Student Academic Supports;* ***Benchmark****: 85% of teachers at each school agree that a moderate or a*

great deal of emphasis (as opposed to no or little emphasis) was placed on (a) alignment of curriculum content and assessments with CCSS, NGSS and state standards; (b) Designing professional development linked to CCSS, NGSS and state standards; (c) data based decision making; (d) RTi. (e) At least 85% of teachers will teach content or skills using structured small group activities daily or weekly. (Survey results.) The implementation of systemic reforms and improved curriculum, instruction and student academic supports will be facilitated and supported by the project and district office staffs. Classroom and magnet resource teachers will write improved units or revised and improve units in all core academic subjects during common planning time during school hours, supplemented with after school and summer sessions. **Objective 2:** All students will receive instruction that includes their school's systemic reforms and magnet themes in units and courses aligned with CCSS, NGSS and State standards.

Performance Measure **2.1** By the end of each project year (September 30), at each magnet school, at least 33% (year 1), 66% (year 2) and 100% (year 3) of all core academic subject units will meet district and project quality criteria determined by peer reviews using a unit quality rubric. **Assessment:** Unit quality rubrics will be designed, and passing scores established, by each school with the assistance of the curriculum and instruction department. Reviews will occur 2-4 times per year as determined by School Planning & Management Teams. Since this is a peer review process, teachers will review each other's units facilitated by magnet resource teachers. Baseline is zero for 2015-16. The percent of units meeting quality criteria increases each year.

Purpose 3: *The development, design and expansion of innovative educational methods and practices that promote diversity and increase choices in public elementary and secondary schools ….* ***Logic Model Activity:*** *Magnet Theme Integration;* ***Benchmark****: (a) Dosage for implemented and planned units attains the target number of hours for project year. (Checked*

during each site visit.) (b) See Benchmark for Project Purpose 2. (c) Student surveys indicate that engagement, motivation, academic commitment and interest in magnet theme increase each year (year 1 is baseline). 90% of students are interested in magnet theme and find it challenging. Magnet Theme Integration, Improvement of Curriculum and Instruction and intensive Professional Development will produce Quality Magnet Curriculum and Instruction which will increase student diversity and choice because the curricula are not offered at other schools.

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.

Assessment: Success will be determined, by the evaluators, through unit plan analysis and confirmed with interviews, and walkthroughs (3 times per year) and surveys. Unit summaries are submitted by each school 3 times per year. Entire units are made available by schools (magnet resource teachers) to evaluators (on-line access) on a continuous basis. The dosage is the average number of hours that each student receives magnet theme related instruction through integrated units and discrete (magnet theme) classes per week. Dosage is reviewed throughout each project year to determine if the schools are on target for reaching curriculum goals. The baseline is zero for 2015-16. The number of hours will increase each year to meet the target.

Program Purpose 4: *Courses of instruction in magnet schools that will substantially strengthen the knowledge of academic subjects and the attainment of … career, technological and professional skills of students...* ***Logic Model Activities:*** *All activities.* ***Benchmarks****: See Benchmark for Project Purposes 2, 3, 5 and 6.* In August of 2015, the State of Connecticut released the Next Generation Accountability System. For elementary and middle schools, it

consists of indicators for academic performance (Performance Indices) and academic growth--for all students and for High Needs Students (economically disadvantaged, English learners, students with disabilities)--and chronic absenteeism. Though Performance Index scores are reported for all student sub-groups, only the High Needs subgroup is used in accountability calculations. An Accountability Index for each school is calculated based on points awarded for each indicator. Schools are assigned to one of five accountability system levels (top quartile, middle quartiles, bottom quartile, focus, turnaround) based on their Accountability Index.

The Performance Indices in English Language Arts/Literacy (ELA) and Mathematics are based on the Smarter Balanced Assessment Consortium (SBAC) tests for grades 3-8. (Since SBAC testing began in 2015, the growth index will not be calculated until next year.) Performance index scores in Science are based on the Connecticut Mastery Test (CMT) for students in grades 5 and 8. The maximum index is 100. The target is 75 for all schools. Because the new ESSA discontinued the requirement for annual measurable outcomes, Connecticut is considering long term goals. However, targets, and the allowable time period to reach them, have not yet been established.

Objective 4 (a) Student academic achievement will increase each year in ELA/literacy, math and science for all students and high needs students. (b) The number of students from major ethnic and racial subgroups attaining level 3 or 4 on the state assessments (for grades 3-8) will increase.

Performance Measures: 4.1-4.2: By the end of each project year, the percentage of "All Students," students from each major racial and ethnic subgroup, and low income students in each magnet school who score at level 3 or above on the SBAC will increase when compared with the previous year in: **4.1:** ELA/Literacy. **4.2:** Mathematics.

These performance measures address MSAP Performance Measures b and c: *The percentage of*

students from major racial and ethnic groups … who score proficient or above on State assessments in reading/language arts and math.

4.3-4.5: By the end of each project year, each magnet school will increase its School Performance Index (SPI) in: **4.3:** ELA/Literacy. **4.4:** Mathematics. **4.5:** Science.

4.6-4.8: By the end of each project year, each magnet school will increase its Performance Index for High Needs Students in: **4.6:** ELA/Literacy. **4.7**: Mathematics. **4.8:** Science.

4.9: By the end of the third year of the grant (September 30, 2018), in at least three of the four project schools, students (total tested population) will have higher test scores than carefully matched students attending non-magnet schools in at least one subject area tested by the State of Connecticut (ELA/literacy, mathematics, science). These results will be statistically significant.

4.10: By the end of the third year of the grant (September 30, 2018), in all four project schools, students in two or more of the tested subgroups (e.g., grade, a racial/ethnic group, low income students) will have higher test scores than carefully matched students attending non-magnet schools in at least one subject area tested by the State of Connecticut, (ELA/literacy, mathematics, science). These results will be statistically significant.

4.11: By the end of the project period, 75% of students at each school will develop mastery of the magnet curriculum, as determined by project based assessments scored by rubrics.

Assessment: All students are tested in April of each school year. Data is analyzed by the State Education Department and made available to school districts. This data 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. Baselines are 2015 scores and indexes. PM 4.9-10 will be determined through a quasi-experimental analysis of SBAC (ELA/Literacy and math) and CMT (science) scores. The study

will meet the What Works Clearinghouse design standards for quasi-experimental studies. The study will be performed by UCLA's Center for Research on Evaluation, Standards, and Student Testing (CRESST). Dr. Joan Herman will be the principal investigator and Dr. Jia Wang will be the co-principal investigator and project director.

Project based assessments (performance measure 4.11) will be developed in year 1 for each grade by the magnet resource and classroom teachers with the support of the curriculum and instruction department. Rubrics will be used in years 2 and 3 by teachers at least twice per year (frequency to be determined by each school's planning and management team) and be approved by the magnet project director and the deputy superintendent for curriculum and instruction. The baseline is zero for 2015-16 and will increase each year.

Purpose 5: *Improvement of the capacity of LEAs, including through professional development, to continue operating magnet schools at a high performance level after Federal funding…is terminated.* ***Logic Model Activities:*** *Professional Development (PD);* ***Benchmarks****: (a) PD supports all grant activities, uses expert presenters and a variety of delivery methods. (b) The sum of annual implemented and planned PD dosage attains target. (a and b checked during each site visit.) (c)At least 85% of teachers will agree with these survey items related to PD: (i) helped me integrate the magnet theme into lessons; (ii) deepened my content knowledge; (iii) helped me better maintain student engagement; (iv) I use what I learned from PD in my classroom; (d) Unit quality rubric reviews and class observations will confirm that teachers are implementing what they learned from PD in their classroom.* **Objective 5.** Provide professional development related to Improvement of Curriculum, Instruction and magnet theme development and implementation.

Performance Measures 5: By the end of each project year, at each magnet school, teachers will receive at least 50 hours of professional development (e.g., workshops, courses, coaching) in

each of the following areas: **5.1** directly related to the improvement of curriculum and instruction including the development and implementation of the systemic reforms listed in the school improvement plan; **5.2** directly related to the development and integration 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.

Assessment: Magnet resource teachers (MRTs) will collect professional development (PD) data including the type of training, the number of hours provided and the number of teachers involved and summarize it. This will be checked 3 times per year by the evaluator and project director. Attendance sheets and data, agendas, workshop materials and magnet resource teacher logs and schedules will be available at each school and checked by the evaluator and project director. Similar information will be submitted for planned PD. The indicator is the number of hours of professional development per teacher per year. The target is 50 hours per teacher per year for each type of PD. PD will include workshop sessions, follow-up coaching (by MRTs), and teacher collaboration (e.g., PLCs, intervisitations). Quality will be determined through survey analysis, interviews and class observations. The 2015-16 baseline is zero. Each year, targets will be met and/or the number of hours will increase to target.

*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 …. **Logic Model Activities:** Parent Involvement and all other logic model activities; **Benchmarks**: The degree to which: (a) parent activities described in the proposal are being implemented; (b) all classes reflect the racial/ethnic composition of the school. (Items a and b be determined during each site visit.)* **Objective 6a:** All project school students will have equitable access to high quality education. **Performance Measure 6.1** By the end each project year, for

each magnet school, at least 70% (yr. 1), 75% (yr. 2) and 80% (yr. 3) of classes (elementary grades) 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. **Assessment:** Success will be determined by analysis of class enrollments disaggregated by race/ethnicity and gender. Please see assessment for measures 1.1- 1.6. Baselines are 2015-16 enrollments. The percentage of classes meeting the criteria increase each year.

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. **Performance Measure 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. **Assessment:** Workshop materials, attendance records and parent interviews will determine parent participation and satisfaction. They will be collected by the magnet resource teachers as sessions occur and summarized and submitted to evaluators and the project director 3 times per year. The baseline year will be 2016-17. There will be an increase in the number of parents involved in school activities for years 2 and 3.

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 6); Documents collected (e.g. units integrated with magnet theme - Weeks 14, 28, 49); Site visits including interviews and observations (Weeks 15, 29, 50); Site Visit-Document Review Reports (Weeks 17, 31, 52); applicant pool data (Week 31); Dosage data (ongoing); Surveys administered (Week 33-35); Survey results reported (Week 40); ► Formative evaluation including discussion of recommendations (Weeks 3-50); MGI Report (Week 9); MGI/Applicant Pool Update (Week 31); ► Analyze and process summative

data (Weeks 30-32 and 50-52); ► Prepare Annual Performance Report and Ad Hoc Summative Report (Weeks 30-32 and 50-52); ► Submit APR and Ad Hoc reports to school District (Weeks 33 and 52). Week 1 is the week the project begins each year. For the 2013-16 MSAP cycle, the project years were from October 1 through September 30.

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 academic 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. Specifically, 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), and the percentages of ELL students and NSLP participants, respectively.

To identify comparison students, the research team will first restrict the pool of MSAP

and comparison students to those who 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. Comparison students 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) by controlling for prior achievement in both the matching model and the analysis model, which increases the robustness of the estimates. The average 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 rigorous evaluation described above combined with data from surveys, the evaluation site visits and documentation and data reviews by AES will provide the district 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. An important focus of the interviews will be descriptions of the enacted curriculum which will help determine the impact of magnet related professional development. This will be supplemented with classroom observations.