BUILDING AN INFRASTRUCTURE FOR QUALITY

An Inventory of Early Childhood Education and Out-of-School Time Facilities in Massachusetts

Children's Investment Fund

Children's Investment Fund was established in 1991 to increase the supply and quality of early childhood education (ECE) and out-of-school time (OST) facilities for children from low- and moderate-income families in Massachusetts. The Fund's mission is to ensure that children spend their days in physical environments that support healthy development and learning. The Fund provides loan and grant financing, technical assistance, and training to nonprofit ECE and OST organizations planning facilities projects.

The Fund sponsored the Facilities Inventory project and worked with research partners, The Wellesley Centers for Women and On-Site Insight, to develop the "Program Facility Standards for Early Care and Education and Out-of-School Time Programs" and to conduct studies of a statewide sample of Massachusetts ECE and OST program sites, as well as a supplementary study focused on a larger sample of program sites in Boston.

The Children's Investment Fund is affiliated with the Community Economic Development Assistance Corporation (CEDAC). CEDAC is a public-private, community development finance agency that provides financial and technical assistance to nonprofit organizations involved in affordable housing development and preservation and to agencies that promote workforce development. The Commonwealth of Massachusetts created CEDAC in 1978 to serve as a resource for nonprofit organizations engaged in community economic development.

This report was written by Mav Pardee, with input and assistance from Martha McCahill Cowden, Theresa Jordan, Carl Sussman, and the Facilities Inventory research team and advisory committee.

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The Wellesley Centers for Women (WCW) at Wellesley College is the nation's largest research center dedicated to positive change for women and families. WCW is an important source of policy-relevant research on children, including studies of early care and education, school-age child care, the evaluation of programs for children, and the use of subsidies in child care. The National Institute on Out-of-School Time (NIOST) is part of WCW and offers extensive experience in investigating, evaluating, and reporting on the critical issues and needs of the out-of-school time field.

On-Site Insight (OSI), a Recap Real Estate Advisors company, is a recognized leader in high-quality physical needs assessments (PNAs) — helping clients better understand the capital needs of their properties over time and the cost implications of those circumstances. Over the past twenty years, the firm has completed more than 6,000 PNAs across the country. While much of its work is in the multifamily residential field, OSI has a wealth of experience serving institutional clients, and evaluating churches, schools, and special-use facilities.

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"A vital and productive society with a prosperous and sustainable future is built on a **foundation** of healthy child development. Health in the earliest years...**lays the groundwork** for a lifetime of vitality. When developing biological systems are strengthened by positive early experiences, children are more likely to thrive and grow up to be healthy adults. Sound health also provides a **foundation** for the **construction** of sturdy brain **architecture** and the achievement of a broad range of skills and learning capacities."

— Jack P. Shonkoff, MD, National Scientific Council on the Developing Child[1]

Introduction

USING CONSTRUCTION IMAGERY TO DESCRIBE THE PROCESS OF healthy child development is particularly fitting when considering the physical infrastructure for early childhood education (ECE) and out-of-school time (OST) programs.

The physical environment is a dimension of quality that is often overlooked. Most definitions of high-quality ECE and OST programs focus on the educational qualifications of teachers, a well developed curriculum, age appropriate materials, class size, and the ratio of teachers to children. Yet the physical environment is the setting where learning takes place, and it has a measurable impact on program quality.

The Children's Investment Fund commissioned the Facilities Inventory, the first-ever comprehensive review of ECE and OST facilities, to determine whether physical learning environments support policymakers' and educators' ambitious educational goals for children at risk, or whether some spaces might actually interfere with successful teaching and learning. The Facilities Inventory reviewed the impact of physical space on children's health and safety, behavior, physical development, cognition, and social and emotional well-being. It examined accessibility and how adult workspace either enhances or impedes staff effectiveness.

Massachusetts has a mixed delivery system for ECE and OST with a wide range of program types: home-based family child care, Head Start centers, programs operating in public schools, a for-profit business sector, and a large community-based nonprofit sector. The Facilities Inventory sample was drawn from licensed nonprofit ECE and OST centers in communities with a high proportion of low-income children. All programs in the sample serve children whose families receive tuition subsidies via state-funded vouchers and contracts, or federally-funded Head Start grants. Because of the overwhelming evidence that high quality ECE and OST programs pay an enormous public dividend in improved health and education outcomes, this study focused on the needs of this cohort of children.

The study did not review programs operating in public schools because the Massachusetts School Building Authority already exists as a source of public financing for public school facilities across the state. The study also omitted employer-sponsored programs at government or corporate worksites, because the sponsors have capital resources to create the physical infrastructure these programs need.

The noted Italian educator Loris Malaguzzi emphasized that a well-designed environment acts as "the third teacher" because it promotes exploratory learning and physical activity, facilitates positive interactions, and keeps children safer and healthier.

The Importance of Quality

Common sense, supported by extensive research, shows that early experiences shape how a child's brain develops: good nutrition, health care, and stable, loving relationships provide a foundation that leads to positive outcomes. Extreme poverty, homelessness, or emotional deprivation can damage the developing brain and lead to lifelong problems in learning, behavior, and physical and mental health.[2] There is research that indicates a powerful correlation between children's early language development and their reading proficiency by third grade, which, in turn, has a critically important impact on later academic performance.[3]

Three economists, including a Nobel Prize winner,[4] analyzed a number of well-regarded longitudinal studies on the impact of early education to calculate the value of public investments in high-quality early education, measuring the benefits to individual participants as well as to all of society. They concluded that society realizes a 7 to 16 percent return on investment (ROI) in the form of reduced public health spending, savings in special education and social welfare costs, higher educational attainment, and greater tax revenue because of participants' lifetime earnings.[5]

As children move into elementary school, high-quality OST programs that wrap around the school day and extend the school year help build academic and life skills, and play a crucial role in reducing the summer learning loss experienced by many low-income children.

Healthy Child Development = Economic and Community Development

"While there's no magic bullet to remedy economic development, economic research strongly suggests that a key ingredient to economic growth is investment in human capital. Until recently, I would have advised local public officials to invest in education from K–12 through higher education. Rob Grunewald and I looked at the literature on interventions using high-quality early child development (ECD) programs with at-risk children. In addition, we looked at research on brain development, a totally independent line of work. Both lines of research came together in a way that said, If done right, high-quality, parent-focused ECD programs that began at birth can make an extraordinary difference in outcomes both for the child and for society."

— Arthur J. Rolnick, Co-Director of the Human Capital Research Collaborative, University of Minnesota[6]

Out-of-School Time Programs as a Competitive Advantage

"I think the school day is too short, the school week is too short, and the school year is too short. And I worry particularly about poor children — children who don't have two parents at home, children who don't have a household full of books. You look at all the creative schools that are getting dramatically better results. The common denominator in all of them is they're spending more time, doing more after school, doing more on Saturdays, and doing more over the summer. The other big issue is that, ultimately, if we don't do more time, our children are at a competitive disadvantage. Kids in India, China are going to school 25 to 30 percent more than students here."

— Arne Duncan, U.S. Secretary of Education[7]

The Economics of the Sector

The choice of space, the modest level of renovations possible upon occupancy, and the difficulty budgeting and paying for repairs are indicative of a more fundamental problem. The maintenance challenges cut across program size and location because of tight operating margins in ECE and OST programs, especially those that serve children on subsidy, the market segment the study examined. Between 70 and 80 percent of revenue in ECE programs and 60 percent of revenue in OST programs in this study came from government sources; the balance came from various other sources, including parent fees and fundraising.

Publicly funded tuition-assistance rates are established by state and federal regulations.[8] Even with the parent co-pay, the rates do not cover the full cost of quality that most programs try to achieve. Federal regulations recommend that rates be set at the 75th percentile of market rate, and those surveys are conducted every two years. Market rates generally reflect what working parents can afford, but prices are kept "affordable" by paying low salaries and occupancy costs.

Recent state and federal budget cuts have acutely affected the availability of subsidy funding for ECE and OST services. Massachusetts providers received a rate increase in 2009, but even so, rates are well below the 75th percentile. In Boston, programs are currently paid 52 percent of the market rate for ECE services and 58 percent for OST. A similar rate structure is found across the state.

The Economic Impact of the Sector

In addition to the critical role that high-quality ECE and OST programs play in children's healthy development and education, this small business sector is an essential part of the socio-economic infrastructure for employers and working parents in the Commonwealth. According to the National Economic Development and Law Center, two-thirds of children in Massachusetts live in families where all parents are in the workforce. Without good, affordable ECE and OST services, parents can't work and employers face absenteeism and reduced productivity.

In addition, the sector is an economic driver in its own right, employing 30,000 people in Massachusetts and generating $1.5 billion in revenues.[9]

Crispus Attucks Children's Center
Dorchester, Massachusetts

THE CRISPUS ATTUCKS CHILDREN'S CENTER (CACC), which serves the Boston neighborhoods of Dorchester and Roxbury, is a focal point in the community. The center was established in 1971 and for forty years has provided early education and care for working families. CACC, named for the 18th-century patriot and former slave killed at the Boston Massacre, educates more than 200 children from infants through kindergarten.

Challenge:

In the 1990s, the Crispus Attucks Children's Center adopted goals that asserted that all children inherently possessed the capability to succeed, so long as their capacities were developed. The center assumed a strategy that requires participation and accountability from all staff and parents. CACC designed programs to achieve their goals and to support the families they serve. Along with those programs, they needed to improve their space to adequately address the needs of the children, staff, and the community.

Solution:

The Children's Investment Fund (CIF) began working with CACC in 1994 to assist them in the renovations to their facilities to meet their educational goals. Starting with a facilities assessment grant, CIF worked with CACC leadership to turn their inadequate space into a high-quality facility. CACC developed a master plan that led to better classrooms and program space as well as upgraded work space for staff. By 1998, the organization had determined that a whole reconfiguration of the building was needed and hired architects to create a design.

The interior renovations were conducted in four stages: first, a total renovation of preschool classrooms; second, infant and toddler rooms were designed; third, administrative and teacher work space; and fourth, a new roof. As Lesley Christian, President of CACC, said in a newsletter to members after the renovations, "All CACC classrooms are now state-of-the-art…and absolutely gorgeous!!" Currently, CACC has fifteen modern classrooms, each equipped with computers, along with space for professional development, a kitchen, and conference rooms.

With the building renovations complete, CACC — again with help from the Children's Investment Fund — turned its attention to creating a natural playground for its 90,000-square-foot campus. Natural playgrounds encourage play and activity in an outdoor setting, which not only helps the physical health of children but also assists the development of their cognitive abilities. With financial and technical assistance from CIF, CACC opened the Wiley Playground in May 2010 and was one of the first urban child care centers in the area to adopt this important and innovative approach to outdoor play space.

The Findings from the Facilities Inventory

The Research Team and the Facilities Standards

Two well-regarded organizations conducted the Facilities Inventory. Wellesley Centers for Women, an organization known for its research and policy work on ECE and OST quality, and On-Site Insight, an engineering firm known for its capital needs assessments, conducted the research and data analysis. The research team worked with Children's Investment Fund to develop evidence-based Program Facility Standards[10] and the research methodology. On-Site Insight made the field visits to assess site conditions. Equipped with a tablet computer and instruments for collecting data on a variety of physical conditions, the inspector spent approximately half a day at each of 182 randomly chosen sites included in statewide and Boston studies. The complete *Program Facilities Standards for Early Care and Education and Out-of-School Time Programs* and the statewide Boston Facilities Inventory data reports are on the Children's Investment Fund website at www.cccif.org.

THE CORE STANDARDS ARE:

1. Inspections
2. Site location, orientation, and layout
3. Vehicular access and parking areas
4. Building entry and lobby
5. Building envelope and mechanical systems
6. Child activity space
7. Adult work space
8. Support space
9. Environmental health
10. Outdoor space

The Program Facilities Standards

While there are multiple sets of standards offered through varying regulatory, professional, and accrediting organizations that address some components of the physical environment, there is no single set of standards that pays comprehensive attention to facility quality and functionality and none that address standards for both ECE and OST programs.

The Children's Investment Fund recognized the need for standards to identify those elements that support good educational environments for children, good work environments for staff, and the health and safety of all occupants — standards that go beyond the interior to assess the general condition of a building, the building envelope, the mechanical systems, and the grounds. The Fund, with consultants from Wellesley Centers for Women and On-Site Insight, developed standards for physical environments that support children's safety and healthy development. The ten facilities standards, with over three hundred individual criteria, cover various aspects of a site.

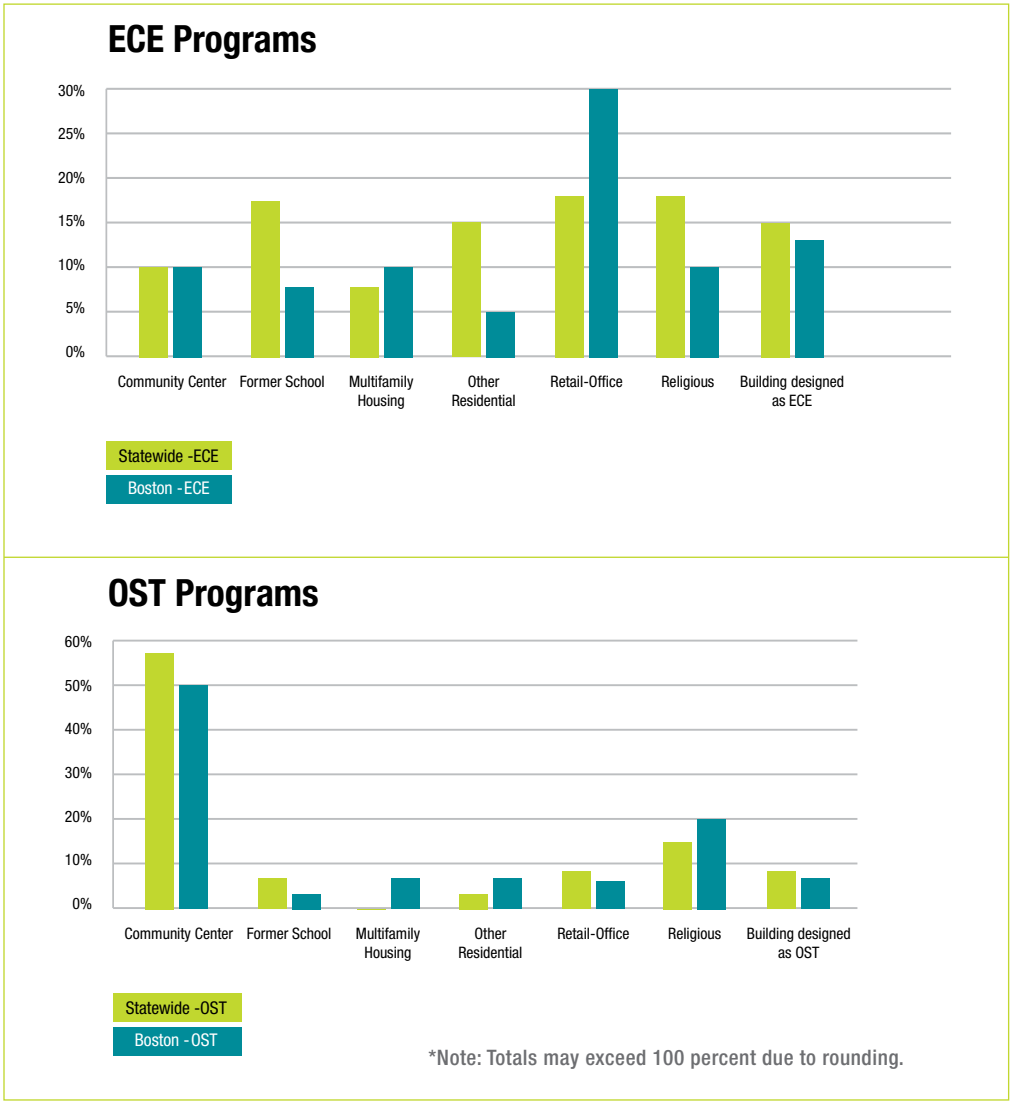
In addition to the ten core standards, the Program Facilities Standards include an appendix that provides a summary of key regulations governing accessibility in ECE and OST program facilities. A summary of the standards is in Appendix 1, and the references on which they were based are found in Appendix 2.

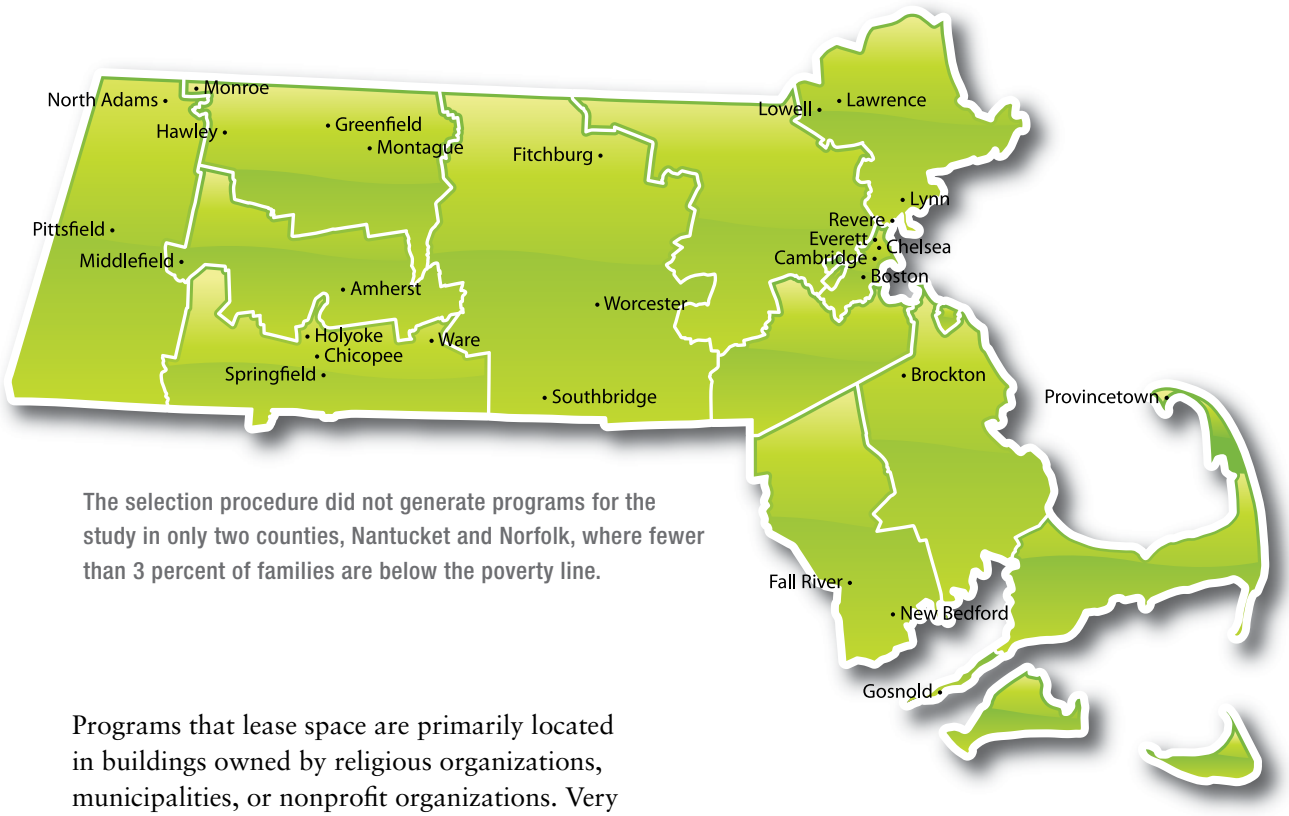
The Program Sample

The Facilities Inventory examined existing conditions in a random sample of 130 licensed sites across Massachusetts: 73 ECE and 57 OST sites. In addition to the statewide sample, a second phase of the research focused on the City of Boston. The Boston sample included 45 sites in Boston from the statewide sample and 52 additional sites, for a total sample of 97 licensed sites: 57 ECE and 40 OST programs. The children's ages range from birth to age 14, depending on the program type.

Most programs operate in buildings that were designed for another use but were later adapted as educational settings. OST programs are more likely to be located in buildings owned by a sponsoring organization, often a YMCA or YWCA, a Boys & Girls Club, or a community center. Across the state, ECE programs are distributed across a greater variety of property types. The locations of ECE programs are almost equally split between owned and leased spaces. In Boston, only one-third of programs own their sites while more than half operate in leased spaces.

Table 1: Property Type





The selection procedure did not generate programs for the study in only two counties, Nantucket and Norfolk, where fewer than 3 percent of families are below the poverty line.

Programs that lease space are primarily located in buildings owned by religious organizations, municipalities, or nonprofit organizations. Very few programs can afford market-level rents, so they seek out mission-oriented landlords who are willing to accept below-market rents or, in some cases, to allow them to use the space rent-free. However, rent-free space has costs as well. The space may be in poor condition and may require significant repairs, most often paid for by the program before it takes possession. In other cases, the in-kind rental agreement shifts responsibility for building maintenance and improvements from the owner to the program.

Most program operators make modest improvements to their site to comply with regulatory requirements. Rarely do they have the resources for more significant capital improvements, so it is not surprising that so few occupy a building specifically designed for ECE or OST educational programs.

While three-quarters of the programs in the sample reported making facility repairs in the past year, many reported that they were unable to make some urgent repairs because of budget constraints. Fewer than half the programs carry a line item in their budget for building maintenance or replacement reserves.

The Positive Findings

The findings reveal positive aspects about the OST and ECE facilities reviewed as part of the Facilities Inventory.

The research team evaluated each site using three standards. The existing regulations for Massachusetts formed the Regulatory Standards. ECE and OST national accreditation, the Massachusetts Quality Rating and Improvement System standards, and other published quality criteria were the basis for the Professional Standards. The U.S. Department of Defense Unified Facilities Criteria, the Massachusetts High Performing Green Schools Guidelines, and other national standards served as the basis for the Best Practice Standards. Exact citations for these sources can be found in Appendix 2.

Despite budget constraints, most programs did their best to maintain physical environments that met the state standards for safety and health.

The summary of our findings based on these standards is as follows:

- The research team assessed each building using 76 Regulatory Standards. Nearly all sites met 80 percent of the regulatory requirements.
- In addition, the research team reviewed 60 Professional Standards items. Nearly all sites met 50 percent of the Professional Standards.
- The most rigorous standards were 132 Best Practice Standards. Nearly all sites met 50 percent of the Best Practice Standards.

Well planned sand and water play

Green space with varied outdoor activity areas

Despite budget constraints, most programs did their best to maintain physical environments that met the state standards for safety and health. In addition, more than 90 percent of classroom environments in ECE programs met most Regulatory and Professional Standards for room arrangement, display, and furnishings. All programs provided adequate classroom space to accommodate varied activities and to accommodate children playing individually or in small or large groups. This shows the results of quality improvement efforts in Massachusetts from widespread interest and participation in national accreditation and recent implementation of the Quality Rating and Improvement System.

High quality OST interior space

The Quality Rating and Improvement System (QRIS)

The Massachusetts Department of Early Education and Care adopted its Quality Rating and Improvement System (QRIS) in December 2010. It includes a set of standards to help family child care, early childhood education centers, and out-of-school time programs to measure program quality and plan future improvement efforts. QRIS includes five domains: Curriculum and Learning; Safe, Healthy Indoor and Outdoor Environments; Workforce Qualifications and Professional Development; Family and Community Engagement; and Leadership, Management, and Administration. Twenty-three states have implemented a QRIS system, and the remaining states are developing QRIS standards.

Accreditation

There are two national accreditation organizations:

- The National Association for the Education of Young Children administers a voluntary accreditation system that sets professional standards for early childhood education programs, and helps families identify high-quality programs for their children. The standards are appropriate for school- and community-based programs serving children from birth to 8 years. The ten NAEYC accreditation standards cover children's learning and development, teacher qualifications and knowledge, family and community partnerships, program administration, the physical environment and leadership and management.
- The Council on Accreditation (COA) works with the National AfterSchool Association (NAA) to administer the voluntary national after-school accreditation process. The accreditation standards include criteria for program administration, human resources, and after school programming and services.

While both accreditation and QRIS address several aspects of the learning environment, they overlook many factors that influence facility quality and functionality. The Facilities Program Standards cover elements of the building site, design, and condition, with over 300 detailed criteria assessing the Regulatory, Professional, and Best Practice Standards. The field visits focused on the quality of existing spaces: the building envelope and mechanical systems, children's program space, adult work space, and outdoor play space. In addition, we found a number of potential hazards that require immediate attention.

High quality ECE interior space

Areas for Improvement

While the positive findings are reassuring, in order to create learning environments that support teacher excellence, a strong curriculum, and program quality that meet the needs of diverse learners, there are still significant areas that require attention.

Hole in classroom ceiling

Building Code Compliance

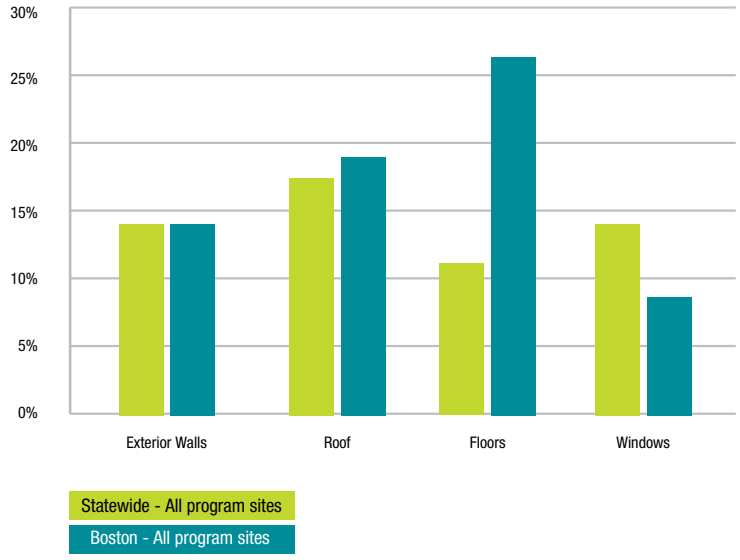
Because the Facilities Inventory examined sites currently occupied by programs, the review focused on code requirements that are mandatory for existing buildings that house an ECE or OST program. Because codes are periodically revised, existing programs do not have to meet all of the current building codes. Therefore, recently renovated or newly constructed space must meet more stringent code requirements. Even using the more lenient standards that apply to unimproved space, the team found some conditions that represent potential health and safety hazards.

Broken baseboard heating system

Table 2: Findings on Building Envelope and Systems

The Regulatory Standards assumed compliance with the Massachusetts State Building Code: "All buildings and structures and all parts thereof, both existing and new, and all systems and equipment therein, which are regulated by 780 CMR, shall be maintained in a safe, operable, and sanitary condition."

Percent of program sites that did not meet the state building code for the following items.



Health and Safety

Unexpectedly, the study uncovered a number of potential hazards in sites across the state. These conditions warrant special attention because of the possibility of injury, but all are relatively easy to fix and do not require substantial capital investments.

No single site had all the hazards shown below. The cost of remediation at any single site would depend on the prevalence of a particular hazard. The estimates in Table 3 are based on average costs compiled using the statewide sample of 130 program sites.

Table 3: Potential Hazards

Percent of program sites that had the following conditions in one or more classrooms	Statewide - All program sites / Boston - All program sites	Average cost per program site
ECE only: Electrical outlets within reach of children must be made inaccessible by use of a safety device. If the covering is a shock stop, it must be of adequate size to prevent a choking hazard. (Regulatory Standard)	38% 52%	$546
ECE only: All play equipment and structures must be free of entrapment hazards. Note that this hazard was primarily found in children's classroom chairs that had openings in the chair back that measured between three and a half and nine inches; the cost estimate is based on replacing twenty chairs per site. (Regulatory Standard)	33% 50%	$1,344
ECE & OST: If emergency exits lead to potentially unsafe areas for children, alarms or signaling devices shall be installed on these exit doors to alert the staff in case a child attempts to leave. (Professional Standard)	55% 58%	$319
ECE & OST: All windows used for ventilation must include screens in good repair. (Regulatory Standard)	26% 18%	$408
ECE & OST: Windows and glass doors must be constructed, adapted, or adjusted through use of window guards or other means to prevent injury to children. (Regulatory Standard)	24% 15%	$948
ECE & OST outdoor space: Gates must be self-closing and latching. Children's fingers must be protected against pinching or crushing on gate hinge spaces. (Professional Standard)	43% 35%	$228

The Impact of Indoor Air Quality

One of the first indicators of poor ventilation is the buildup of carbon dioxide caused by human respiration. Children breathe a greater volume of air in proportion to their body weight than adults do, so the potential impact of poor air quality is more serious for young children. In addition, ECE and OST classrooms offer much less floor space per person than most homes or offices, so pollutants build up more quickly.

FINDING:
22 percent of centers statewide and 16 percent of centers in Boston have carbon dioxide levels that exceeded 700 parts per million (ppm).

FINDING:
36 percent of centers statewide and 31 percent of centers in Boston lack mechanical ventilation systems over diapering areas and toilets.

FINDING:
38 percent of programs statewide contain classroom equipment or furnishings that contain formaldehyde, which is believed to be a carcinogen.

WHY IT'S SIGNIFICANT:
Keeping carbon dioxide levels below 700 ppm is an indication that sufficient outdoor air is being brought into the space through either open windows or mechanical ventilation. Poor indoor air quality (IAQ):

- is linked to higher rates of absenteeism and illness;
- exacerbates airborne bacteria and mold, which can trigger asthma;
- leads to headaches, drowsiness, and an inability to concentrate, which affect the performance of both children and adults;
- prevents dilution or removal of odors from diaper pails or contaminants from cleaning supplies, off-gassing from building materials, furnishings, or rugs.[11]

ECE classroom with poor IAQ

An elevated carbon dioxide level, because it results from inadequate ventilation, often means that excessive concentrations of other pollutants are also present.

Indoor air quality affects all children, but children with asthma and other chronic health conditions suffer more from poor air quality. In Massachusetts, 10.3 percent of children have asthma.[12] High-density occupancy and intensive use of an unventilated space for a prolonged period of time have direct impacts on indoor air quality. Good ventilation and related improvements to indoor air quality should be a high priority for health, comfort, and performance.

The Impact of Placement of Sinks and Toilets

The location of classroom sinks and children's bathrooms has a measurable impact on infection control, children's hygiene, and independence, as well as on teachers' ability to be present and actively participating in classroom activities.

FINDING:

Nearly 70 percent of program sites statewide and in Boston lack classroom sinks.

WHY IT'S SIGNIFICANT:

Hygiene practices affect children's health.[13] Fifteen studies reviewed data from schools and child care centers in which the only hygiene intervention was frequent handwashing, and those studies found significant reductions in incidences of diarrhea in young children.[14]

A report in the *Journal of the American Academy of Pediatrics*[15] emphasized the need to educate children and staff about infection control, handwashing, disinfecting, and cleaning. That report estimated the cost of "excess illness" in child care settings to be $1.4 billion annually in medical costs and parents' absenteeism.

FINDING:

While most ECE program sites have children's bathrooms located within fifty feet of the classroom space, many fewer meet the Best Practice Standard of locating bathrooms in an area directly accessible from the classroom. The standard was not met by 38 percent of ECE programs statewide and 62 percent in Boston.

WHY IT'S SIGNIFICANT:

Research at a preschool in Connecticut found that positive interactions between children and teachers increased sevenfold after the program relocated to new space, renovated specifically to serve as an ECE center. With bathrooms directly accessible from each classroom, teachers no longer left the room to escort children down the hall to the bathroom. With fewer interruptions and the ability to maintain a favorable teacher-to-child ratio, researchers measured substantially more adult-child interactions, which are the basis for learning.[16]

Because of the importance of locating handwashing sinks in children's classrooms, the Massachusetts Center and School Based QRIS Standards[17] include access to classroom sinks in its highest-quality rating for safe, healthy indoor and outdoor environments. Classroom sinks and children's bathrooms adjacent to classrooms are important for health and hygiene, and to support education goals such as fostering autonomy and increased teacher interaction with children. It also contributes to a better work environment for teachers. This is particularly important for ECE programs since a teacher must accompany each child to the bathroom. The alternative method of taking a group of children to the bathroom together wastes time, can contribute to problem behaviors, and does not support the developmental needs of young children.

Rough concrete floor and leaky toilet

The Impact of Physical Activity on Childhood Obesity

Across the country, there is growing concern about the increase in the number of overweight children. There are many risks associated with childhood obesity, including Type 2 diabetes, high blood pressure, and asthma.[18] Obesity rates are high among all children in Massachusetts, but even higher among low-income children and children of color. One-third of low-income children ages two to five and about 30 percent of school-age children are overweight.[19] As a result, obesity is a public health issue that will continue to drive up the cost of medical care in Massachusetts.

Factors that influence physical activity in ECE and OST programs are the availability, size, and proximity of indoor gross motor space and outdoor play space and the availability of appropriate equipment.[20]

Indoor Gross Motor Space

FINDING:

54 percent of ECE programs statewide and 31 percent in Boston lack indoor gross motor space and equipment.

WHY IT'S SIGNIFICANT:

Several national studies have measured children's activity levels in ECE programs and found that preschool children get very little physical activity. In one study, children indoors were physically active only four to ten minutes per hour; most of their time was spent in sedentary activities.[21]

FINDING:

31 percent of OST sites statewide and 43 percent in Boston lack separate indoor space for sports or active games.

WHY IT'S SIGNIFICANT:

Lack of regular sustained physical activity is a key factor in obesity. In addition to health concerns related to obesity, some research shows a worrisome connection between weight problems and poor school performance.[22] There is also evidence that the benefits of physical activity improve children's social skills, concentration, and mental health.[23]

In support of efforts to get children moving, Massachusetts licensing requirements specify that children in full-time care must have at least sixty minutes per day of indoor or outdoor physical activity.[24] Nevertheless, without adequate space, compliance can be difficult, especially during inclement weather.

Barely equipped for active play

Outdoor Space

Playing outdoors has a positive impact on children's social, emotional, and cognitive development. Physically strenuous play contributes to healthy brain development, enhances learning, and improves memory. The social benefits include cooperation, flexibility, increased self-awareness, stress reduction, reduced aggression, and increased happiness.[25] Children with higher levels of fitness consistently show better academic performance, particularly in math and reading.[26]

FINDING:

82 percent of ECE sites and 61 percent of OST sites statewide have their own outdoor play space. In Boston, 37 percent have their own outdoor space and 20 percent share the outdoor space with another program. Program sites without outdoor space use public playgrounds, which were not visited as part of the study.

FINDING:

46 percent of OST programs statewide and 23 percent in Boston do not have playing fields for sports and games; 34 percent statewide and 28 percent in Boston have no hard-surface play area for rollerblades, bikes, or games such as basketball.

WHY IT'S SIGNIFICANT:

Field games are an age-appropriate and enjoyable activity for school-age children. A key quality indicator for OST programs is the availability of challenging organized sports activities.[27]

FINDING:

About 20 percent of outdoor play areas lack landscape plants, trees, or other natural features.

WHY IT'S SIGNIFICANT:

There is growing evidence about the positive impact that a child's exposure to nature has on learning. Several studies show that 67 percent more students used greener elementary school grounds for active play, and that greener school grounds support a wider variety of play activities.[28] One study found that symptoms for Attention Deficit/Hyperactivity Disorder (ADHD) were reduced and concentration was enhanced after children spent time in green settings.[29]

Parking lot used for outdoor play

Children First
Granby, Massachusetts

CHILDREN FIRST is a small nonprofit center serving families in Western Massachusetts. It provides these services for children age three through fourteen. With a vision to expand and rehabilitate its space to create a physical structure to enhance its educational programs, Children First turned to the Children's Investment Fund for assistance.

Challenge:

The region needed more early learning and after-school programs while, at the same time, Children First had outgrown its space. Children First planned a 6,600 square foot addition to allow the program to double its capacity, and provide children with spaces better suited to exploratory learning. The plans would also include a "Big Back Yard" — a three-acre nature-based outdoor play area — where children could learn and play. To do this, Children First needed to purchase land and secure financing.

Solution:

With a focus on the vision, and with the initial support from Children's Investment Fund (CIF), Children First was finally able to make headway with their new space.

Children First enrolled in the Building Stronger Centers training institute run by the Children's Investment Fund, an intensive training program that helps nonprofit early education and care organizations understand the practical and technical aspects of capital planning and financing for significant facilities improvement projects. The Building Stronger Centers training helped Children First to focus its energy, vision, and knowledge on the steps needed to successfully complete the project. It also provided Children First with information on USDA Rural Development loans and loan guarantees which were critical to the financing package. Children First eventually received a loan commitment from a commercial bank but could not close until a building permit was issued. The permit could not be issued until the land was purchased. CIF stepped in with short-term financing to purchase the land, and the project moved forward.

The resulting new space, which often draws gasps for its beautiful and welcoming entry, has an impact on every child, parent, and staff member. Preschoolers have more space for learning and exploration and school-age students have their own special space that is age-appropriate to their needs. The staff now has pleasant office space, a resource library and meeting area, and separate adult bathroom facilities. The new space is healthier, safer, and more conducive to high-quality programming.

"The Children's Investment Fund provided so much at every step of the way: training, technical and financial support, and ideas. I literally cannot say enough about how critical they were to the process." — Donna Denette, Executive Director of Children First

The Learning Environment

Key elements of a well-designed environment for children include safety features, age-appropriate challenges and complexity, and a carefully planned layout with separate activity areas.[30] Teachers need space with convenient access to storage and resources, adult seating, and other features that support their work in the classroom. Appropriately designed space improves staff attitudes and effectiveness, which promote student engagement, challenging activities, and better-quality homework time for school-age children.[31] Students in substandard facilities have lower test scores, poorer attendance records, and higher dropout rates.[32] Other features that have an impact on the learning environment are acoustics, lighting, and thermal comfort.

Classroom Features

There should be a proper fit in the organization of the space and the activities that take place therein: a quiet, comfortable space for reading; separate spaces for noisy and quiet activities; and spaces where children can play uninterrupted or take breaks from the larger group. There should also be a fit between the environment and the children, with furnishings and fixtures appropriate to the child's physical size and development, and sufficient space to avoid crowding.

FINDING:

Nearly every site for both ECE and OST programs meet the Regulatory and Professional Standards of thirty-five square feet per child of classroom space.

WHY IT'S SIGNIFICANT:

Determining whether a classroom is an appropriate size depends on occupancy density — the net classroom area relative to number of children and adults occupying the space. Space has an enormous impact on a program's cost per child. As previously noted, the programs in our sample rely on public tuition subsidies for 60 to 80 percent of their revenue. Given the resulting tight operating margins, programs serving a higher proportion of low- and moderate-income children are rarely able to exceed the thirty-five square feet per child minimum required for a state license.

Research indicates that preschool-age children exhibit withdrawal and off-task behavior under crowded conditions.[33] Crowding is associated with attention deficits, behavior problems, more time spent in solitary play, less time spent in group play, and fewer positive interactions among children.[34] These factors create classroom management challenges and may make more densely occupied classrooms less rewarding places for teachers to work.

Young children learn through play, by exploring their classroom environment and materials, and through interacting with their peers and teachers. In addition to space, research demonstrates that classrooms need to be organized into activity areas that provide sufficient variety and which are appropriately furnished and equipped. Such classrooms support language development and higher-quality interactions between staff and children.[35]

FINDING:

Over 90 percent of classroom environments in ECE programs meet most Regulatory and Professional Standards for room arrangement, display, and furnishings.

WHY IT'S SIGNIFICANT:

Massachusetts has more nationally accredited ECE programs than any other state.[36] While many of the accreditation standards focus on teaching and curriculum, there is a significant focus on appropriate furnishings, materials, and layout of the ECE classroom. The Massachusetts Center and School Based QRIS Standards also contain elements related to curriculum materials, classroom organization, and state learning standards.[37]

School-age children spend about 1,260 hours per year in school, which leaves a lot of time after school and during vacations for other activities. OST programs are no longer seen as just safe places for children between the end of their school day and the end of their parents' workday; instead, there is growing interest in using this time to help close the achievement gap for children in low-performing schools and to offer access to enrichment activities, sports, homework help, and mentoring by supportive teachers and coaches.

FINDING:

67 percent of OST sites did not meet the Professional Standard of forty-five square feet per child for enrichment activities, such as art, woodworking, or science activities; 40 percent did not have computer labs or access to technology as part of the program space.

WHY IT'S SIGNIFICANT:

In contrast to the number of accredited ECE providers, there are fewer than ten nationally accredited OST programs in Massachusetts, so Professional Standards have not yet influenced development of program space in OST programs to the same degree as they may have in ECE programs.

Minimally adapted, poorly equipped OST space

Research on the quality of OST programs identifies the characteristics of high-quality programs: "a clear mission; high expectations and positive social norms; a safe and healthy environment; supportive emotional climate; small total enrollment; stable, trained personnel." This research also links the

following characteristics to positive academic outcomes: "staff education level, certification, and training; intentional high-quality academic and cognitive activities; high-intensity sports activities; intentional relationship building; broad variety of enriching activities; strong leadership."[38] These programs play a critical role in helping to address persistent achievement gaps, but they require suitable space in order to reach those goals.

Accessibility

There are about 165,000 children and youths with identified special needs in Massachusetts. These special needs include physical, emotional, neurological, sensory, or developmental disabilities, or chronic health conditions. The physical environment is often a significant barrier to full participation in education for children with special needs.

FINDING:
Only one program site in the study is fully accessible, and it was constructed a year before the Facilities Inventory was conducted. Most programs in older buildings are granted a waiver from compliance with accessibility regulations until they undertake a significant renovation project.

FINDING:
61 percent of ECE and 49 percent of OST sites statewide and 48 percent of ECE and 38 percent of OST sites in Boston do not meet accessibility standards in children's bathrooms.

FINDING:
23 percent of sites do not have an accessible route into and through the building.

WHY IT'S SIGNIFICANT:
If children with special needs cannot enroll in ECE or OST programs, they cannot benefit from the learning, development, and enrichment opportunities that these programs offer.

In addition to the more commonly recognized physical accessibility guidelines, children with disabilities can be especially sensitive to indoor air quality, hygiene issues, acoustics, lighting, temperature, and crowding. Children with allergies or acute chemical sensitivity are adversely affected by poor indoor air quality. Loud noises, overcrowding, or certain kinds of oscillating lighting can be over-stimulating for children with sensory integration issues or for children who are on the autism spectrum. Children with special medical conditions require appropriate thermal comfort and convenient access to sinks or toilets for special hygiene routines. In addition, appropriate hygiene practices and well-located sinks and toilets help protect medically vulnerable children from germs spread by other children and staff.

Acoustics

The impact of acoustics in the learning environment is often overlooked. Excessive noise, background noise, and high reverberation times are common conditions in centers, especially those without full-height walls between classrooms.

FINDING:
26 percent of centers lack acoustical tile or ceiling treatment.

WHY IT'S SIGNIFICANT:
Chronic exposure to ambient noise is associated with reading difficulties, poor long-term memory, and poor attention, independent of any effects noise may have on hearing. It can interfere with motivation and concentration and may affect children's abilities to carry out complex tasks.[39]

WHY IT'S SIGNIFICANT:
Researchers observing four-year-olds in a classroom with substantial ambient noise found that children's language skills improved significantly after sound-absorbent panels were installed on the ceiling.[40]

WHY IT'S SIGNIFICANT:
Noisy environments also affect teachers who report great fatigue, annoyance, and impatience.[41]

Noisy conditions are stressful for all occupants of the space, and interfere with language development and reading skills. Children should be able to hear spoken language, to articulate and interpret the spoken word, and to understand the relationship between spoken language and written symbols. School-age children need to have access to reasonably quiet spaces for homework and participation in small group activities that build confidence, and encourage cooperation and other interpersonal skills.

Daylight and Artificial Lighting

In addition to information we collected on the condition of windows and window frames, the Facilities Inventory examined whether children's classrooms had windows that provide views of the outdoors and access to daylight.

FINDING:
20 percent of ECE and OST centers statewide and 21 percent in Boston have at least one classroom without exterior windows. The data for OST programs showed that one-third of sites have one or more classrooms without windows.

WHY IT'S SIGNIFICANT:
More than fifty studies reviewing the impact of daylight on children's performance found that children with the most daylight in their classrooms progressed further in reading and math skills than children in classrooms with the least amount of daylight. [42]

FINDING:

46 percent of centers statewide have only one type of indoor lighting or light fixtures that cannot be dimmed when teachers want to reduce light levels for naptime or quiet activities.

WHY IT'S SIGNIFICANT:

Seventeen studies indicate that appropriate classroom lighting, including task lighting, has a positive impact on children's behavior and performance.[43]

It is important to remember that children in windowless classrooms spend most of every day without access to natural light. Classrooms with ample daylight, supplemented by good artificial lighting, affect academic performance, comfort, and behavior.

Before renovation: a dark and cluttered hallway

After: better lighting, new paint and flooring

Thermal Comfort

Massachusetts licensing regulations set the minimum temperature for space occupied by children at 65 degrees Fahrenheit, and though they require that educators protect children from health risks associated with excessive heat, the regulations do not set a maximum temperature. The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) established the thermal comfort standards for our climate at 68 to 78 degrees Fahrenheit in the winter and 74 to 82 degrees Fahrenheit in the summer.

FINDING:

34 percent of sites statewide do not comply with ASHRAE's thermal comfort standards.

WHY IT'S SIGNIFICANT:

One study found that the best thermal comfort range for learning reading and math is 68 to 78 degrees Fahrenheit. As temperature and humidity increase beyond these levels, children report greater discomfort and decreased attention spans.[44]

FINDING:

52 percent of sites statewide lack individual temperature controls for each classroom.

WHY IT'S SIGNIFICANT:

Teachers report that the ability to control the temperature in their own classroom is central to optimal performance and that thermal comfort affects the students and themselves.[45]

There is considerable research on the effects of temperature on concentration and learning: when children are too hot or too cold, they can't concentrate and may resist participating in activities.

Adult Work Space

While there is a consistent correlation between the quality of a building and children's academic performance, research shows an even stronger link between building condition and teacher motivation, indicating that "good teaching takes place in schools with a good physical environment" and that "general attitudes, behavior, and relationships among pupils and staff are more conducive to learning in schools that have had significant capital investments."[46]

Teachers working in good spaces feel better about their work and are more engaged and positive with children. There is a strong emphasis on improving the education of the ECE and OST workforce in Massachusetts and across the country. Better prepared teachers improve children's educational outcomes and help children acquire the skills for academic success. Currently, only 30 percent of teachers in Massachusetts ECE programs hold a bachelor's (BA) degree; no data on the OST workforce was available. By 2017, Massachusetts Early Childhood Program Standards will require that all newly hired preschool teachers have a BA degree with eighteen credits and a practicum in early childhood education.[47]

In part because of compensation levels, ECE and OST programs have high rates of teacher turnover and find it hard to retain teachers with experience. Despite recent policy efforts related to upgrading teacher education and providing better compensation, little attention has been paid to the work environments and working conditions for teachers and administrators in ECE and OST programs.

For the ECE and OST field, there looms a larger concern. *As teachers acquire a BA degree, they will have access to a wider range of employment opportunities.* While program leaders, policymakers, funders, and advocates concentrate on educating teachers and improving compensation, they must also offer more professional work environments in order to recruit and retain newly minted teachers with BA degrees.

FINDING:
18 percent of ECE programs statewide and 26 percent in Boston lack space for administrative work, planning, preparation, or meetings. It is worse for OST programs — 30 percent statewide and 53 percent in Boston lack adult workspace.

FINDING:
33 percent of sites have no secure place for staff to store personal belongings.

FINDING:
65 percent of sites statewide and 50 percent in Boston lack appropriate technology for teachers.

Dismal staff space doubles as storage

WHY IT'S SIGNIFICANT:
The existing workspace and working conditions are an impediment to the goal of a better-qualified workforce and may undermine other efforts to improve program quality. Professional teachers require suitable workspace for planning, resource development, meetings with parents and specialists, and administration. Lack of technology means that teachers cannot participate in online training or coursework; they can't communicate with parents and colleagues via email or through an informative website; and they can't do web research for lesson planning.

For Kids Only Afterschool Inc, Youth in Motion
Revere, Massachusetts

FOR KIDS ONLY AFTERSCHOOL, INC. (FKO), provides year-round after-school, school vacation, and summer programming at eighteen sites in Everett, Peabody, Revere, Salem, and Winthrop. Youth in Motion is FKO's only non-school-based site, and its program focus is on health and nutrition for children and teens. Youth in Motion is an "inclusionary program," welcoming children and youth of all ability levels and backgrounds.

Challenge:

Nationally, childhood and teen obesity rates have tripled in the past three decades. In Revere, two growing problems are childhood obesity and inadequate nutrition. Youth in Motion believes that building a connection between physical activity and academic achievement will promote good physical health throughout the community.

Solution:

In order to create this physical and academic connection, students need space, equipment, and support from teachers and coaches. The Children's Investment Fund (CIF) aided FKO in creating space for Youth in Motion, which includes a Virtual Learning Center, Computer Lab, Nutrition Café, and a multipurpose room used for yoga and relaxation. CIF assisted FKO in envisioning the space in terms of color, thermal comfort, and lighting. CIF also encouraged FKO to make important connections at fundraising events and helped them seek other fundraising opportunities.

FKO's Youth in Motion program reaches children from all around the area, helping them gain self-confidence and stay active. Thanks to the carefully planned facility, over 1,000 children and youth have participated in the program. In the Virtual Learning Center, students dance through a virtual game and race virtual bikes using their own pedal power. They research healthy living in the computer lab and library, enjoy nutritional smoothies at the café, and cool down with yoga and breathing exercises. Through creative fitness programming, health education, self-empowerment, and academic enrichment activities, students ages six to twenty-one have learned positive lifestyle habits in a safe and supportive environment. Because of its success, Youth in Motion plans to expand to another site. CIF is working with FKO and Youth in Motion to find and renovate a new site in order to serve a larger number of students and promote health and wellness.

Deborah Kneeland, Executive Director of FKO, commented that "the Children's Investment Fund truly believes in top-quality care and creative programming for school age children; they helped us understand our building and be realistic about expectations."

Capital Resource Needs

Cost Estimates

One of the goals for the Facilities Inventory was to estimate the cost of improving ECE and OST facilities across Massachusetts. Given the variation in building types and the range of conditions in the sample sites, it was a challenging exercise. On-Site Insight used its cost-estimating protocol to calculate an average price to meet each program standard.

TABLE 4: COSTS TO MEET FACILITY STANDARDS

Standards	Number of Sites That Met the Standards	Average Cost per Site to Meet the Standard
Accessibility	1	$68,000
Regulatory	1 2 3 4 5 6 7	$18,000
Professional	1 2 3	$90,000
Best Practice	0	$154,000*

*Note that this estimate is low. Please see discussion on Cost to Meet Best Practice Standards.

Cost to Meet Accessibility

Only one site in the study was fully compliant with the accessibility standards, and it was constructed within the past year. Estimated costs for full compliance exceeded $225,000 at some facilities, with an average price of $68,000. A large cost-driver in these estimates was installation of elevators or chair lifts, or construction of accessible bathrooms. While current regulations do not require that existing buildings be fully accessible, they do require compliance with standards when undertaking a building renovation or new construction.

Cost to Meet Regulatory Standards

While seven sites met all the Regulatory Standards, there were several programs with serious deficiencies that would require more than $60,000 in repairs. At the regulatory level, the most common problems included repairs to exterior walls, repair or replacement of the roof or flooring, and installation of appropriate outdoor play equipment over an approved resilient safety surface. The more challenging upgrades at this level included subdividing an existing space to create adult workspace or the addition of bathroom fixtures to existing bathrooms in order to comply with minimum licensing requirements.

Cost to Meet Professional Standards

The Professional Standards place more emphasis on how the environment supports better educational and development outcomes for children. As noted in Table 4, three sites met the Professional Standards, but there were significant needs in the remaining sites. A few sites would require an investment of $200,000 to meet the standards at this level. Commonly needed modifications included upgrading heating, ventilation, and cooling systems, installation of classroom sinks, constructing indoor gross motor space, creating suitably equipped professional work space for teachers and administrators, and significant improvements to the outdoor play space.

Cost to Meet Best Practice Standards

Many Best Practice Standards are only feasible with new construction. Renovations would improve the physical environment at many sites, but still fall short of Best Practice. The modifications judged impossible at many sites in the sample included construction of children's bathrooms adjacent to classrooms, creating direct exits to outdoor play space from every classroom, installation of windows to optimize day lighting, and major modifications to improve acoustics, ventilation, and thermal comfort. The average cost of $154,000 was based on making additional improvements to several buildings where renovations would make an already good facility even better.

Capital Resource Needs and Models

To the extent the Facilities Inventory found deficiencies in the state's ECE and OST facilities, it should not be construed as negligence or lack of interest on the part of program operators. As described earlier, the problem lies in the revenue model and the inability to generate enough revenue to adequately address capital needs.

Perhaps one of the most impressive findings is the high proportion of programs that fully comply with the Regulatory Standards and even the number that managed to meet some of the higher quality standards. Still, there is an enormous divide between the conditions found in these facilities and what we know about the physical attributes associated with effective educational settings.

Given the inadequacies of the revenue model, especially for programs serving children most in need of top-quality ECE and OST programs, the apparent capital financing gap requires a systemic solution. In reality, there are three capital gaps:

1. **Repair and Replacement**: In any business, when expenses threaten to overtake revenues, executives take measures to cut spending. The common temptation is to defer maintenance, to delay planned replacement of building elements — such as the roof, furnace, or carpeting — that have outlived their useful life, or to cut or eliminate the budget for repairs. In the short run, these measures may be a reasonable response. However, when thin operating margins are a structural characteristic of the business sector — as they are for ECE and OST programs serving subsidized children — delays lead to more costly repairs in the future and gradually undermine program effectiveness.

2. **Capital Improvements**: With the widespread recognition of the importance of quality ECE and OST spaces, many programs could benefit from carefully planned improvements to remodel and reconfigure their spaces. These include adding classroom sinks and bathrooms adjacent to classrooms, improving acoustics, lighting, and ventilation, creating professional work space for staff, creating indoor gross motor space for active play, and improving outdoor space.

3. **New Facilities**: Perhaps most striking is the small number of programs operating in facilities designed to house an ECE or OST program. Programs for children require distinct features, which makes it difficult to adequately adapt buildings originally constructed for a different purpose. One important strategy for improving the quality of ECE and OST programs is to commit to developing facilities that support the ambitious aspirations that Massachusetts has for our children.

Over the past decade, a few states have fashioned financing programs that make it economically feasible to improve the physical infrastructure needs of their expanding and improving systems. According to a study published by the National Institute for Early Education Research at Rutgers University,[48] there are several models that addressed these capital gaps. Also, a few private philanthropic initiatives demonstrated the importance of capital resources for the ECE and OST sector. However, because of their limited scale, these efforts cannot adequately meet the entire need.

The most promising examples include state programs in Pennsylvania and Connecticut, as well as philanthropic and public-private partnerships in Massachusetts and the greater Philadelphia area.

Capital Grants:
Between 2002 and 2004, Pennsylvania made grants totaling $30 million to construct or renovate fifty-five child care facilities. The centers had to raise at least 20 percent of the cost of the project. With the largest grants totalling $1 million, most of the money paid for improvements to existing buildings rather than for new facilities.

Debt Service Support:
Connecticut operates the most ambitious early childhood facilities development program. Launched in 1997 as part of the state's School Readiness Act, the program financed the construction and substantial rehabilitation of eighteen centers in urban communities with the poorest educational outcomes. Instead of grants, Connecticut helped providers raise tax-exempt bond financing with the promise to pay an average of 80 percent of the debt service for each project. To fulfill this promise, the state appropriated $2.5 million annually for the thirty year term of the bond. Each center's share approximates the level of expenditure for a typical rent for programs of this type. Because the projects finance the construction with a debt instrument, the School Readiness program stimulated $45 million worth of new or substantially renovated space specifically designed to meet the requirements of very high-quality early education programs. The state has since increased the annual appropriation level to $4 million.

Loans:
Because of the revenue constraints on OST and ECE programs, their ability to support debt is very limited. Children's Investment Fund and similar organizations in other states finds that some providers can carry modest levels of debt. However, these programs rarely meet conventional bank underwriting standards and often need longer amortization periods and lower interest rates than are conventionally available. Connecticut has a state-sponsored loan program for this purpose, which includes a state-funded 300 basis point interest-rate subsidy, as well as a partial loan guarantee. While demand is modest for these programs, providers should be encouraged to use debt where possible, and lenders should provide credit on favorable terms.

Like most states with an interest in and significant policy activity related to improving program quality, Massachusetts has focused on operating subsidies, developing the Quality Rating and Improvement System, raising minimum teacher qualifications, and investing in professional development for ECE teachers. These are all essential, but they are not sufficient.

Public-Private Partnerships:
Since 1991, the Children's Investment Fund has raised $29 million from foundations, corporations, and government sources to provide training, technical support, and grants and loans to address the capital needs of ECE and OST programs across Massachusetts. Of special note was the initial capitalization by the United Way of Massachusetts Bay and the Merrimack Valley, $4.3 million in state funding from the former Massachusetts Department of Education, ten years of significant capital funding from the Barr Foundation, and $500,000 in ARRA funds from the Massachusetts Department of Early Education and Care. Over twenty years, the Fund has financed 475 projects to improve learning environments for 22,000 children and youth. Projects included renovations and new construction, development of natural outdoor play spaces, purchase of high-quality equipment, and emergency repairs and energy-efficiency improvements.

Since 2003, the City of Philadelphia, the United Way, the Pennsylvania Department of Community and Economic Development, and four foundations have invested nearly $11.7 million to improve ECE and OST facilities in the region and address repair and replacement needs and modest improvement projects. The program makes grants for up to 75 percent of the cost of a project with a maximum grant of $75,000.

These programs provide useful models for addressing the substantial capital resources needed to create facilities specifically designed for ECE and OST that comply with the Best Practice Standards used in this study.

The Facilities Inventory documents the pressing need for a basic level of investment in existing licensed facilities in Massachusetts. These investments are needed to address deferred maintenance, routine replacements, and modest quality improvements. The two public-private partnerships described above are useful models, but there may be new opportunities once a commitment is made to focus on improving facilities for programs serving children on subsidy.

It is easy to focus exclusively on the shortage of capital. But it is important to remember that, for the most part, OST and ECE programs are small organizations without an administrative staff with the time or experience to plan and manage capital improvements. Special purpose intermediaries, like the Children's Investment Fund, exist in twenty-two states and provide technical assistance during project planning and construction management, including predevelopment loans to cover the cost of architects and engineers who prepare the scope of work and oversee the project. Any capital funding should include resources to cover these costs to ensure the efficient and effective use of scarce capital dollars.

Child Development, Economic Development, and Community Development

Massachusetts has a strong commitment to high-quality education, beginning in early childhood, even as it grapples with the most severe recession in memory. Building an infrastructure for quality is a critical piece of that commitment. The Facilities Inventory reviewed program sites on the front lines of the efforts to improve education, promote teacher effectiveness, and enhance the educational outcomes for all children.

Building the infrastructure will have an impact on employment. Making repairs and capital improvements to program sites will require skilled workers in communities across the Commonwealth. Purchasing high-quality equipment for programs — as Children's Investment Fund did this year with $325,000 of ARRA funding — stimulates the economy and results in noticeable improvements to children's learning environments. Constructing new centers is an opportunity for architects, engineers, construction firms, and finance organizations. The resulting high-quality facility influences teacher morale and motivation, parent engagement and satisfaction, and children's health and well-being.

Building the infrastructure is critical for families. Parents need-high quality care and education for their children so they can maintain employment or pursue job training, secure in the knowledge that their children are getting what they need. Children need programs that support their optimal development, and in the future, those children will repay the investment through a lifetime of productivity and responsible citizenship.

Building the infrastructure will take time. It requires resources in an era when budgets are particularly tight. But we have an opportunity to begin to address immediate needs for repairs and replacement, to invest in some critical facilities improvements and upgrades, and to plan for a sustainable source of low-cost capital for building facilities that make high-quality education possible.

Recommendations

1. **Address hazardous conditions:** Develop a pool of funding for programs to address the hazards listed in Table 3 and other repairs or minor improvements to comply with licensing. ECE programs that serve infants will also need to purchase new cribs to comply with Consumer Product Safety Commission mandatory crib safety standards by December 2012.
2. **Build partnerships with utility companies:** Public utilities provide programs for ratepayers to subsidize the cost of energy saving improvements including rebates and incentives for HVAC system replacement, more efficient lighting and controls, insulation, and other energy-saving measures. Target some of these resources to meet the needs of this small business sector — not only will the investments improve the quality and functionality of these facilities, they should also yield much needed operating savings.
3. **Leverage community-development resources to build or improve ECE or OST sites:** The U.S. Department of Housing and Urban Development created a new paradigm for community development with the Promise and Choice Neighborhoods program. This model differs from other community development approaches because of its central emphasis on young children and education. The community development system should realign its capital sources and investment strategies with this new paradigm by using existing capital funding streams and regulatory tools to stimulate improvements in the supply and quality of ECE and OST facilities in lower-income communities.
    - As Massachusetts expands its "Housing First" model for homeless families, emphasize access to ECE and OST programs along with workforce training and related support for parents.
    - Increase access to publicly funded capital financing that is currently restricted to public school districts and other public entities.
    - Make development of ECE or OST space an acceptable use in affordable-housing, transit-oriented, or sustainable community-development projects. To stimulate development of suitable facilities, award extra points for inclusion of space for ECE or OST programs in state funding proposal review.
4. **Leverage the focus on high quality ECE through the Race to the Top Early Learning Challenge competition and draw attention to the state of infrastructure:** As Massachusetts competes for Race to the Top Early Learning Challenge funding to increase access to high-quality ECE programs for high-need children, opinion leaders should consider the role of infrastructure in improving learning. There is an opportunity to demonstrate the measurable impact that a well-designed learning environment and good work environment will have on teacher effectiveness and children's educational outcomes.
5. **Develop a public funding mechanism** that will permit low interest, long term loans for major repairs, renovations and/or new construction of ECE and OST facilities to serve low income children. To build an infrastructure for quality, there must an affordable and dependable capital financing source for ECE and OST programs in lower-income communities.

"Everyone needs a place that is furnished with Hope"

— Maya Angelou

Appendix 1: Summary of the Facilities Standards

1. INSPECTIONS: The facility meets all local and state inspection, licensing, and code requirements to ensure the health and safety of all persons who occupy the space and to support basic program operations. All inspections are current.

2. SITE LOCATION, ORIENTATION, AND LAYOUT: The facility is located on a site that supports the program activities. The location is convenient to transportation and basic community services and makes best use of the features of the site.

3. VEHICULAR ACCESS AND PARKING AREAS: The facility drop-off/pick-up and general parking areas are accessible, easy to navigate, safe for vehicular and pedestrian traffic, and adequately address parking needs.

4. BUILDING ENTRY/LOBBY: The entrance to the facility is visible, secure, and accessible. It welcomes children and adults into the center while providing an appropriate level of security.

5. ENVELOPE AND SYSTEMS: The facility is safe, secure, and accessible. The external and internal envelope and structures (roof, ceilings, doors, walls, floors, windows, exits, stairways) are in good repair and well-maintained. There is sufficient capacity in the electrical, heating, ventilation and cooling, plumbing, fire, lighting, and water systems to meet all regulations and ensure the comfort and safety of building occupants.

6. CHILD ACTIVITY SPACE: The facility provides sufficient child activity space designed to support program activities, including educational activities, hygiene, and routine care. The space is divided into zones for messy, quiet, and active activities. It welcomes and engages children and youth and makes them feel secure and comfortable.

7. ADULT ACTIVITY SPACE: The facility includes space for reception and administrative offices; space for meeting, planning, and relaxation, per staff needs; and space for parents. It is equipped with furnishings, appropriate technology, and other resources that support a professional staff.

8. SUPPORT SPACE: The facility includes sufficient space for all functions that support program operations, including food preparation, cleaning and maintenance, laundry, and long-term storage.

9. ENVIRONMENTAL HEALTH: The facility meets environmental health standards in the management of hazardous materials, provision of safe drinking water, management of recycling and refuse, control of temperature and humidity, and storage of potentially toxic substances.

10. OUTDOOR SPACE AND ACTIVITIES: The facility provides sufficient outdoor space and equipment suitable for the ages of the children in the program. The space and equipment offer access to nature and natural materials and opportunities for healthy physical activities and learning.

APPENDIX: ACCESSIBILITY: The facility provides accessible indoor and outdoor space and equipment that gives persons with disabilities the full and safe use of the buildings and grounds.

A full copy of the Program Facility Standards for Early Care and Education and Out-of-School Time Programs can be found on the website of the Children's Investment Fund at www.cccif.org.

Appendix 2: Sources for Detailed Criteria

All of the criteria for the Program Facility Standards are grounded in existing regulations, professional standards, or best practices. In this section, we provide the exact citations for the sources of each criterion. The sources, and the abbreviations we use in this document, are:

Level 1: Regulations

Americans with Disabilities Act, Title 42, Chapter 126.

Department of Justice, ***ADA Standards for Accessible Design,*** Appendix A of the Americans for Disability Act Title III Regulations (28 CFR Part 36, revised July 1, 1994). Available at: http://www.ada.gov/adastd94.pdf. Abbreviation: ADA.

Massachusetts Architectural Access Board (AAB) standards (2006). Abbreviation: 521 CMR.

Massachusetts Department of Early Care and Education, ***Standards for the Licensure or Approval of Family Child Care; Small Group and School Age and Large Group and School Age Child Care Programs*** (2009). Effective January 2010. Abbreviation: 606 CMR 7.07.

Massachusetts Department of Environmental Protection, ***Regulations for Air Pollution Control,*** 310.CMR 7.15.

Massachusetts State Board of Building Regulations and Standards, ***The Massachusetts State Building Code*** (The Commonwealth of Massachusetts, 2008). Abbreviation: 780 CMR.

The Uniform Federal Accessibility Standards (UFAS) (1982). Available at http://www.access-board.gov/ufas/ufas-html/ufas.htm. Abbreviation: UFAS.

Level 2: Professional Standards

American Academy of Pediatrics, the American Public Health Association, and the National Resource Center for Health and Safety in Child Care, ***Caring for our Children, National Health and Safety Performance Standards: Guidelines for Out-of-Home Child Care Programs,*** second edition (Elk Grove Village, IL, 2002). Abbreviation: NHSPS.

Council on Accreditation, ***Afterschool Standards*** (2009). Available at http://coaafterschool.org/standards.php?navView=private&core?id=7. Abbreviation: COA.

Harms, T., E. Jacobs and D. White, ***School-Age Care Environment Rating Scale (SACERS)*** (New York: Teachers College Press, 1996). Abbreviation: SACERS.

Massachusetts Department of Early Education and Care, ***Center and School-based QRIS Standards Provisional Version and After School and Out Of School Time QRIS Standards Provisional Version*** (revised December 14, 2010). Abbreviations: Center and School Based QRIS Standards and After School and Out of School Time QRIS Standards.

National Association for the Education of Young Children (NAEYC), ***NAEYC Accreditation Criteria*** (Washington, D.C.: NAEYC Academy for Early Childhood Program Accreditation, 2008 and 2009). Abbreviation: NAEYC.

National Program for Playground Safety (NPPS), ***Child Care Assessment Manual and Workbook for Outdoor Play Environment*** (Cedar Falls, IA: University of Northern Iowa, 2005). Abbreviation: NPPS.

US Consumer Product Safety Commission, ***Public Playground Safety Handbook*** **(2008).** Abbreviation: CPSC.

Level 3: Best Practices

American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASRAE), ***Complete Set of Standards,*** print edition. Available at www.ashrae.org. Abbreviation: ASHRAE.

Collaborative for High Performance Schools, Massachusetts and the Massachusetts Technology Collaborative, ***Massachusetts High Performance Green Schools Guidelines, Criteria,*** version 1.0, 2006 (San Francisco: Architectural Energy Corporation, 2005). Abbreviation: CHPS

Gilmore, F., ***Health Considerations when Choosing School Flooring*** (Dorchester, MA: Asthma Regional Council of New England, 2005).

Olds, A. R., ***Child Care Design Guide*** (New York: McGraw-Hill, 2001). Abbreviation: Olds.

Sushinksky, G. F., ***Surfacing Materials for Indoor Play Areas: Impact Attenuation Test Report*** (U.S. Consumer Product Safety Commission, 2005).

United States Army, ***The Army Standard for Child Development Center Construction (for school-age children)*** (2004). Available at https://www.idsarmy/hqda.pentagon.mil/army_ids/IDG/Army_Standard_for_CDC_ Construction_v3_Approved_Oct04.doc. Abbreviation: Army CDC.

United States of America Department of Defense, ***Unified Facilities Criteria (UFC) Design: Child Development Centers*** (2002). Available at http://www.wbdg.prg/ccb/DOD/UFC/ufc_4_740_14.pdf. Abbreviation: DOD.

United States of America Department of Defense, ***Unified Facilities Criteria (UFC): Youth Centers*** (2006). Available at http://www.wbdg.org/ccb/DOD/UFC/ufc_4_740_06.pdf. Abbreviation: DOD Youth.

U.S. Department of Health and Human Services, ***Head Start Design Guide: A Guide for Building a Head Start Facility*** (Arlington, VA: National Head Start Training and Technical Assistance Resource Center, 2005). Abbreviation: Head Start.

U.S. General Services Administration, 2003 (GSA), ***Child Care Center Design Guide*** **(New York:** GSA Public Building Service Office of Child Care, 2003). Abbreviation: GSA.

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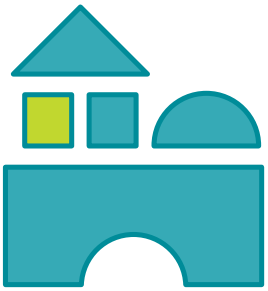

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