

M&G

Managing Maryland's Growth

Smart Growth, Community
Planning and Public
School Construction

27



Managing Maryland's Growth

Smart Growth, Community
Planning and Public
School Construction



MODELS AND GUIDELINES

State of Maryland

Martin O'Malley
Governor

Anthony G. Brown
Lt. Governor

Maryland Department of Planning

Richard Eberhart Hall
Secretary

Matthew J. Power
Deputy Secretary

Contributing Staff

MDP: David T. Whitaker, AICP, John Coleman, Mark Praetorius, Pat Goucher, Aziz Mammad, Arabia Davis, Dan Rosen, and Mark Goldstein,

Commenting Staff

PSCP: Dr. David Lever, R.A., D.A., Executive Director

MSDE: Barbara J. Bice, School Facilities Branch Chief

DGS: Kenneth Lurz, R.A.

Peer Review

C. Pete Gutwald, Director, Harford County Planning and Zoning; Elizabeth Pasierb, Frederick County Public Schools; James R. Cohen, Ph.D, Director Urban Studies and Planning Program, University of Maryland – College Park; Rita Misra, Community Schools Advocate, Mount Airy, MD; John Frece, Associate Director - National Center For Smart Growth, University of Maryland – College Park;; Tim Torma and Matt Dalby, U.S. Environmental Protection Agency; and Ann Walsh, Maryland Department of Health and Mental Hygiene.

Maryland Department of Planning
301 West Preston Street, Suite 1101
Baltimore, Maryland 21201
Tel: 410.767.4500 Toll Free: 1.877.767.6272
TTY users: Maryland Relay
www.mdp.state.md.us

Models & Guidelines, Volume 27, Smart Growth, Community Planning and Public School Construction

July 2008 Publication No. 2008-001

This Models and Guidelines publication was written by the Planning Services Division of the Maryland Department of Planning as a service to local governments and planning officials. The principal author is David T. Whitaker, AICP, Deputy Director of Infrastructure Planning. Contributing authors and editors are gratefully acknowledged. Staff of the MDP Communications Office provided graphic design. Carol Siegel provided attentive and skillful editing.

Executive Summary, 1

Part I: Guidelines, 9

Chapter One, 9

- What is a Community-Centered School?, 10
- Public School Construction Trends and Smart Growth, 11
- HB1141 – Schools and Municipalities, 11
- Interagency Committee on School Construction and Public School Construction Program, 12
- Maryland School Construction Trends – PFA and Non-PFA, 12
- Maryland’s Planning Act and Smart Growth Law and Neighborhood Conservation Act of 1997, 15
- Smart Growth Issues and Public School Construction, 16

Chapter Two, 17

- Public Health, Walkability, Safe Routes to Schools and Active Community Environments, 17
- Safe Routes to Schools, 18
- Case Study, 18
- Walkability and Safety, 19
- Sidewalks and Bicycle Access, 21
- Active Community Environments and Schools, 22

Chapter Three, 25

- Energy Efficiency, Green Schools And Sustainable Sites, 25
- Financial Benefits of Green Schools, 25
- High Performance Buildings Act, 25
- Benefits of Green/High Performance School Construction, 26
- Case Study, 26
- Sustainable Sites, 28
- Achieving Sustainable Sites, 28

Chapter Four, 31

- Community-Centered Schools, School Siting And School Site Size, 31
- School Siting Criteria, 33
- Community Centered Schools, 33
- School Site Size, 35
- Connecting Schools and Neighborhoods, 37

Chapter Five, 39

- Co-Location And Shared Use Of School Facilities, 39
- Case Studies, 39, 40 & 41

Chapter Six, 45

- School Transportation: Choices, Costs and Energy Efficiency, 45
- School Transportation Choices, 45
- School Transportation Costs, 46
- Energy Efficiency in School Transportation, 46

Chapter Seven, 49

- Integration Of School Facility Planning And Community Planning, 49
- Case Study, 51

Part II: Model, 53

A Community-Centered Approach to School Planning, Location and Construction in Maryland, 53

Scenario, 53

Goals of the Adopted Warfield Countywide Comprehensive Plan, 54

County Population Trends, 54

Warfield County Public Schools, 54

School System Goals and Facility Objectives, 55

Enrollment Projections: Total Public School Enrollment Grades K-12 for Warfield County, 56

Site for a New Middle School, 56

Prospective Sites: New Middle School – Zone 3, 57

Warfield County Site Analysis: New Middle School – Zone 3, 58

Model, 61

Site Selection Study Team and Municipal Coordination Process, 62

Public Comment Period, 62

Recommended Screening and Ranking Criteria for Public School Sites, 62

Integration of School Facility Planning and Comprehensive Planning for School

Location and Site Acquisition, 63

Acquisition and Banking of School Sites, 63

Educational Facility Master Plans, 64

Capital Improvement Programs, 64

Conclusion and Recommendations, 65

Bibliography, 67

Executive Summary

This Models and Guidelines document is intended for all parties involved in the public school facility planning and siting process as well as local land use officials. This includes school facility planners, local planning and zoning departments, transportation and public works planners and engineers, local residents, school boards and superintendents, and elected officials. Quality community planning and well-placed school siting decisions involve an integrated and cooperative process by all parties, not the least of which are the residents of communities that the schools serve.

This document addresses key issues involved in public school construction, community planning and Smart Growth in Maryland. A decade after implementation of the Smart Growth and Neighborhood Conservation Act in Maryland, it is useful to examine how Smart Growth-oriented community planning principles are integrated in the State and local school construction processes. Likewise, it is important to lay out a template for integrating school planning, funding and school design with community planning, public health, walkability, energy efficiency, co-location, and transportation choices and costs.

It is important for all stakeholders in the public school process, including citizens, students, planners, and appointed and elected officials, to be involved in the decisions for designing and locating public schools. This is truer now than ever. The decisions to locate a new school or invest in an existing school are critical to the continued success and vitality of Maryland's communities and municipalities. As Marylanders are rediscovering the benefits of walkable communities and neighborhood centers, it is prudent to examine the planning and funding processes for public school facilities as well as the issues involved in school location and community design.

The issue of school placement is even more important when public health and energy efficiency are considered. Schools can be models of energy efficiency and should be designed to with a high consideration for energy efficiency. There is a need to examine life cycle costs rather than first costs only.

New and existing schools should also promote energy efficiency by being accessible through walking and bicycling to students and community residents. Busing or driving to school should be two of many travel options rather than the primary options for school travel.



Across the State a number of school boards now lead in the effort to improve student and community public health in the planning, design and construction of walkable community-oriented schools. Nationwide, it has been shown that while 50 percent of parents walked or biked to schools, only 15 percent of their children do so today.^[1] Public health officials indicate that the lack of routine physical activity is one factor in the current "obesity epidemic" among children. It is

important that walking and biking be fully considered in the location and design of new school facilities.

Investments in Maryland school facilities should reflect quality community design principles while incorporating energy efficient facility construction technologies and promoting ways to reduce the growth in school transportation costs and parking associated with students and staff.

Public School Construction Trends and Smart Growth

The percentage of State public school construction investments in Priority Funding Areas (PFAs) is one indicator of the Smart Growth status of Maryland's public school funding. Since adoption of the Smart Growth and Neighborhood Conservation Act in 1997, over one quarter of Maryland's Capital Improvement Program (CIP) funding for public school construction was allocated to schools located outside of county-certified PFAs. These investments include new school construction, school replacement projects, additions and renovations. The total percentage of State public school construction funding within PFAs peaked in FY2000 at 86 percent. In FY2008, 40 percent of approved non-systemic public school construction projects were located outside within PFAs.

In Maryland, county governments designate planned community growth areas that, in most cases, are certified by counties as PFAs. PFA designations depend on the availability of existing or planned infrastructure including water and sewerage service. Within Maryland, coordination between local planning departments and Local Education Agencies (LEAs) is essential if public schools are to support PFAs in channeling growth and stopping suburban sprawl.

A community-centered school functions much like a major department store in a shopping center in that the community school serves as an "anchor" to attract and retain families. From a community-planning standpoint, classroom capacity in community-centered schools serves a larger growth and development function. It attracts new home building and homebuyers to these communities. In growth counties in Maryland, public



schools actually drive residential growth. Public school capacity in quality schools attracts builders, developers and homebuyers. In effect, State capital funding for public school construction has an impact on the location of residential growth and development throughout Maryland.

School construction dollars that are focused on additions and renovations to existing schools, rather than new school facilities outside of PFAs, support Maryland's Smart Growth policies. Through the Adequate Public Facilities Ordinance (APFO), LEAs

and planning departments are expected to allocate school construction dollars to direct growth to where it is recommended in adopted comprehensive plans. To do otherwise is counter productive to adopted growth management plans and ordinances.

While locating a new school in an agricultural site outside a planned growth area may meet an immediate need for school capacity, this will create many long-term problems. The future costs of "sprawl schools" to Maryland counties are only partially understood and are rarely calculated. Among these factors are the loss of agricultural land and the encouragement of low-density residential development outside of municipalities and areas planned for growth in local comprehensive plans.

The loss of agricultural land and the loading of farm roads with residential vehicle traffic lead to a "tipping point" where agriculture is no longer a viable way of life in many of these areas. Few farmers desire increased numbers of motor vehicles, including school buses, on roads that have been used for decades for the movement of tractors, combines and local residents. As such, schools and farms do not usually make the best of neighbors.

The pattern of residential development outside of communities and planned growth areas often takes the form of low-density house lots on well and septic systems. These house lots are usually an acre or more in size: sometimes up to three to five acres. Low-density residential development represents a consumption of acreage historically in agricultural use in areas not planned for residential development. This leads to increased vehicle loads on rural roads and the need for community services such as fire and rescue and parks outside

of areas planned for these services. Soon, additional school capacity is needed to support the low-density development and the cycle repeats itself until large areas are shifted away from viable agriculture or natural resource uses.

Maryland encourages local and appointed elected officials, Boards of Education and those involved in school site selection to be fully aware of the type of residential development that is encouraged in decisions on school location. New school sites outside of communities and municipalities often lead to loss of viable agricultural land and other natural resources. They are rarely walkable and induce residential growth in areas that are not planned for it. Instead, officials and Boards should locate, design and build new schools as parts of planned or existing neighborhoods in designated community growth areas.

Public Health, Walkability, Safe Routes to Schools and Active Community Environments

School location and student health and fitness are linked: Are new schools planned within walking distance of current or future residents and other community services? The Centers for Disease Control (CDC) endorses the many public health benefits associated with neighborhood school sites, Safe Routes to Schools Programs, and co-location of uses at school facilities. Additional consideration must be given to the lack of physical activity associated with exclusive bus and auto travel to and from school. It has been shown nationally that Safe Routes to Schools programs can and do work. The Maryland State Highway Administration administers a very effective Safe Routes to Schools program with federal transportation funding. All Maryland jurisdictions are strongly encouraged to participate in Maryland's Safe Routes to Schools program and to pursue funding options to encourage safe walking and biking options to and from schools.

Public health is affected by school location in other ways. An Environmental Protection Agency (EPA) study of travel and the environmental implications of school location indicates decreased air quality in the vicinity of schools where most or all students are bused or driven. In contrast, there is a tangible reduction in unhealthy air emissions associated with schools that are based in and around neighborhoods. Reducing the rate of growth in vehicle miles traveled (VMT) to and from schools needs to be a priority for school facility planners in Maryland.

The Maryland Nutrition and Physical Activity Plan of 2006 was prepared by Maryland's Department of Health and Mental Hygiene in association with the Centers For Disease Control (CDC). This plan identifies program goals and measurable objectives intended to "encourage and enable the citizens of Maryland to lead physically active lifestyles throughout the lifecycle" and to "Reduce levels of obesity." Strategies include planning for Active Community Environments which "Increase the number of physical activity opportunities in communities by focusing on the built environment"; and that "Promote non-motorized transportation, public transit, pedestrian and bicycling initiatives in communities to increase physical activity opportunities." The Plan includes, as a Strategy/Action Step for Active Community Environments, advice to: "Advocate for integration of land use and school site planning so that school and residential areas are within walking and biking distances of each other" and "Support Safe Routes to Schools Initiatives." According to the recommendation of the Maryland Nutrition and Physical Activity Plan, these Strategies/Action Steps are to be in place in Maryland by June 2011.

School Location and Neighborhoods

The location and design of public schools are two of the most far-reaching decisions made by school facility planners and public officials across Maryland. Schools play a critical role in a community's development and quality of life. In much of Maryland, neighborhood schools planned decades ago were located in close proximity to parks, recreational areas and other community assets. These schools have become anchors in their communities. Neighborhood residents continue to use nearby schools for a variety of activities other than education: athletic facilities are used daily, health and wellness centers as well as senior centers may operate in off hours, and libraries are used on weekends. Likewise, schools often host community events such as theater, fireworks celebrations, weekend instructional classes, local music and art festivals, community meetings, and even local farmers markets. To reflect their importance, many schools in Maryland are architectural icons, remaining the most prominent architectural features in their communities.



Energy Efficiency, Green Schools and Green Sites

A body of research indicates that high performance/Green School technology provides not only better indoor air quality, lower chemical emissions and energy consumption, better humidity control and natural day lighting, but also public health and fiscal benefits such as lower student and staff absenteeism and turnover, lower health care costs, and improved academic and job performance. A recent national review of 30 green schools demonstrates that building green schools cost less than 2% more than conventional schools but provides financial benefits that can be 20 times greater over the life span of the structure. It is a wise budgetary practice to plan for and invest in geothermal, high performance and other technologies in Maryland's public schools.

Maryland school systems have acknowledged the advantages of high performance/Green design, construction and building management practices. As of the publication of this document, LEED certified schools are in place, under construction, or under design in the planning stage across the State.

In 2008, the Maryland General Assembly passed HB 376, The High Performance Buildings Act, which requires that the construction of new schools that have not initiated a request for proposal for selection of an architectural and engineering consultant on or before July 1, 2009 be high-performance, energy-efficient, and green. A "high performance building" refers to a building that "meets or exceeds the current version of the U.S. Green Building Council's LEED (Leadership in Energy and Environmental Design) Green Building Rating System Silver Rating, or achieves at least a comparable numeric rating according to a nationally recognized, accepted, and appropriate numeric sustainable development rating system, guideline, or standard approved by the Secretaries of Budget and Management and General Services.

Community-Centered Schools, School Siting and School Site Size

The escalation in school site size must be considered. Over the past three decades, the acreage required for school sites has grown so large as to be at odds with wise community planning practices. Overly large school sites, by necessity, are usually located on the periphery of a community or completely outside of planned growth areas and locally certified PFAs. Another factor is that rapidly growing counties often are in need of new

school sites since they lack currently "banked sites" within planned growth areas and PFAs. In jurisdictions where site banking is not practiced, there are often significant obstacles faced by school facility planners in locating and securing quality school sites and the solution is often to select any site that can be obtained through development proffer, purchase or annexation, whether it is within a community or miles outside of it.

It should be noted that some of the factors that drive school systems toward excessively large school sites include educational specifications and community expectations such as the need for athletic fields and courts, parking, storm water management requirements, ADA requirements, bus and car drop off and queuing areas, service courts and waste management areas, and assorted educational specifications: outdoor learning areas, playground equipment and buffers between areas.

The tradeoffs between overly large school sites and smaller community oriented school sites are many. While upfront land costs may be less in agricultural areas, long-term costs appear to be much higher. The costs of sprawl in terms of land consumption, water and air pollution when schools are located away from communities often take a decade or more to realize. These include providing public services such as fire and rescue, constructing and maintaining roads, providing parks and solid waste disposal. Some Maryland jurisdictions abandoned the practice of building on distant school sites years ago, preferring instead to invest in schools in towns and neighborhoods where growth was planned and development encouraged.

Co-Location and Shared Use of School Facilities

When appropriate, co-location or shared use of a school with a public library, fine arts center, senior center, health clinic, community college branch, sports stadium, public park, or museum, is wise for budgetary reasons as this places public services together providing cost savings for all agencies involved. Also, co-location increases public use of some of the most underused public facilities, public schools, during evenings and weekends. An example of a community recreation center that is used by the public when school is in session is Berwyn Heights Elementary School in Prince George's County. Shared use of school facilities should be fully explored throughout Maryland.



If done correctly, co-location/shared use can be an effective utilization of public funding and can offset some public school construction costs through cost sharing by different public agencies. Incentives that reward flexible school configurations that meet a variety of community needs should be considered. In many situations, it makes fiscal sense for community resources such as libraries, community centers, day care, park and athletic facilities and other amenities to be co-located with public school facilities.

To be effective, the square footage allocation for shared community use should be flexible in order to allow more space to be dedicated in larger school facilities. While 3,000 square feet for community use space the current upper limit in which the State may participate, may be appropriate for an elementary school, additional community-use space should be considered for middle schools and high schools. It is recommended that a sliding scale based on the total amount of space in a school be explored by the State to encourage quality co-location of community uses in Maryland schools.

Transportation Choices, Costs and Energy Efficiency

Long term transportation costs associated with the travel needs of students should be a factor in school site decisions. Trends indicate that costs associated with public school bus fleets are on the rise in many jurisdictions in Maryland. Costs include fuel consumption, vehicles, and the drivers who serve increasingly large areas where students reside.

It is vitally important for school boards to find ways to reduce the rate of growth in costs and in the Vehicle Miles Traveled (VMT) associated with public school transportation, not only to limit direct costs, but also to reduce the "carbon footprint" associated with Maryland's school facilities.



The rise in public school transportation costs is often looked at as a sprawl indicator. There is no question that fuel consumption rises as bus fleets grow larger. This can be partially remedied by planning for transportation choices for students from the outset. Some Maryland school systems are effective at this, however, better analysis of future transportation options associated with new school construction should be a priority for all. Beyond the needs of teachers and staff, parking should not be available automatically for high school students. A limit on

parking spaces has been shown to be an effective manager of vehicular travel by students. Travel demand management must be considered in the school planning process.

It is important for both energy costs and for public health objectives that more students be encouraged to walk or bike to school. Whether it is through Safe Routes to Schools programs, reduction of parking at high schools, or other methods, the rate of growth of VMT and transportation costs associated with new and existing public schools can and should be reduced.

A variety of sustainable long-term solutions can be considered to reduce the rate of growth in school transportation costs and to improve transportation-related energy efficiency. Strategies include a combination of design and technological innovations such as use of hybrid-electric or compressed natural gas (CNG) buses, community-centered school design, Safe Routes to Schools programs, and sidewalk installation within one mile of school sites or other approaches. It is important to address school transportation early in the school planning process in order to manage energy costs over the life cycle of the school.

The rise in public school transportation costs is often looked at as a sprawl indicator. There is no question that fuel consumption rises as bus fleets grow larger. Some of this can be remedied by planning for transportation choices for students from the outset. Better analysis of future transportation options associated with new school construction should be a priority. Also, beyond the needs of teachers and staff, parking should not be a ubiquitous commodity for high school students. A limit on parking spaces has been shown to be effective at managing vehicular travel by students. Travel demand management must be considered in the school planning process.

It is important for both energy costs and for public health objectives that more students be encouraged to walk or bike to school. Whether it is through Safe Routes to Schools programs, reduction of parking at high schools or through other methods, the rate of growth of VMT and transportation costs associated with new and existing public schools can and should be reduced.

A variety of sustainable long term solutions can be considered to reduce the rate of growth in school transportation costs and to improve transportation-related energy efficiency. Strategies include a combination of design and technological innovations such as use of hybrid-electric or CNG buses, community-centered school design, Safe Routes to Schools programs, sidewalk installation within one mile of school sites or other approaches. It is important to address school transportation early in the school planning process in order to manage energy costs.

Integration of School Facility Planning and Community Planning

In Maryland, there is a strong need to increase the level of coordination between school facility planners and the county and municipal departments in charge of local land use and comprehensive planning. Park and recreational planners must also be involved in school facility planning since co-location of park land with school sites can meet a variety of community and education needs. Different public agencies should increase coordination and sharing of information and resources. School planners and county and municipal planning and zoning departments should create joint processes for long term banking of land for future school sites. This should also include the linkage of community parkland with new and existing school facilities.

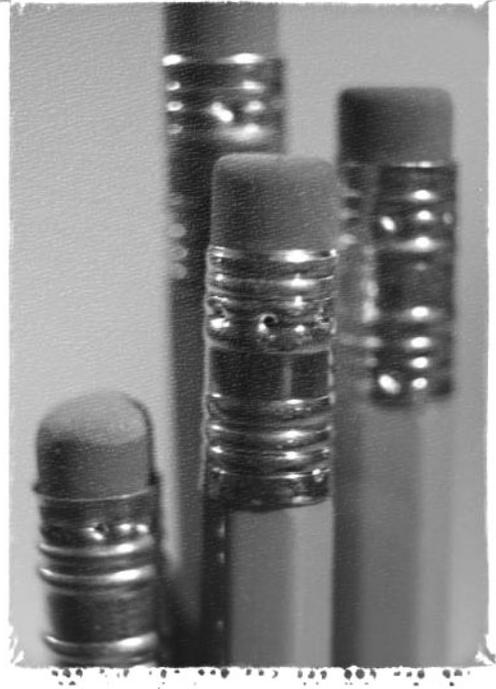
The American Planning Association (APA) has consistently adopted priorities that encourage increased coordination among planners and school officials in the siting and design of school construction. It is very hard to correct errors in school location and design once they are made. The APA and other planning organizations recommend that school sites be located in existing communities that lie in planned community growth areas. The APA notes that school sites should be oriented in a manner that enhance safe and effective access to neighborhoods and promote the use of non-motorized transportation for travel to and from schools and neighborhoods.

Model: A Community-Centered Approach to School Planning, Location and Construction in Maryland

This document includes a public schools location-planning scenario for a fictional county in Maryland based upon concepts discussed in the preceding chapters. It describes the process involved in a site location study for a future middle school, and outlines recommended steps, intergovernmental coordination and cost sharing strategies, and additional elements that should be considered in the school location process.

The scenario is followed by a recommended model for analysis, design, cost sharing, reinvestment, renovation and construction of community-centered, green/high performance/energy efficient schools in Maryland.

¹ Safe Routes to Schools National Partnership. Safe Routes to School: 2007 State of the States Report. October 2007



Chapter One

Public school construction has an impact on the location of growth and development in communities throughout Maryland. Location decisions such as school placement on the periphery of a community, in neighborhoods served, adjacent to big-box retail projects, or in farm fields away from communities, have a profound impact on future growth. Additional capacity in quality schools attracts residential growth. The location of new schools and additional school capacity is often a determining factor as to the location of residential development that occurs in Maryland. School location is a critical aspect of quality community planning and of Smart Growth.

During the next decade in Maryland, several hundred school facilities will be built, undergo renovations, have additions constructed or be considered for replacement. There is a need to achieve efficiencies in all areas of public funding for schools and other public facilities that will involve more coordination between different agencies. The location of school facilities, how they are constructed, and what they are located near are vitally important decisions for not only for educational quality but also to address important community and environmental aspects including energy efficiency, public health concerns, neighborhood sustainability, air and water quality issues, and optimal use of transportation infrastructure. Many Maryland communities have learned that these are all important factors to consider in the educational facility planning process and that it is important to more effectively integrate schools with neighborhoods, student populations, and the overall communities they serve. It is critical to use public resources and dollars to extend quality learning environments and a range of public services to a more residents within Maryland's communities.

Tomorrow's school will be a school without walls; a school that is built of doors which open to the entire community.

– Lyndon Baines Johnson

The ideal Maryland public school of the future should be a community-centered facility located within a neighborhood that will serve as a community anchor. It should be adjacent to recreational areas and parks and located within walking distance of other community facilities such as libraries and community centers. Most importantly, and where appropriate, Maryland schools need to offer additional community uses such as learning centers, health centers, senior centers or a related community oriented uses that serve neighborhood residents. For instance, later or longer hours may permit senior citizens access to health services or gym and fitness facilities during non-school hours or for community groups to use libraries and auditoriums or other facilities so that the school building remains a community asset after the academic day and on weekends.

Community-centered schools serve as catalysts to keep older neighborhoods vibrant. Older schools represent an element of Maryland's historic architectural heritage. As a result of costs and other factors, some communities are not in the practice of building prominent architectural structure like this anymore. Through renovation of older schools and revitalization of school sites and adjacent areas, Maryland can revitalize established communities, while conserving resources and making the best use of existing infrastructure.

There is often a larger community function that is served by school facilities. Community events including arts, theater, music, performance, and a range of other activities are important components of education. Community-centered schools send a clear message to neighborhoods that this is indeed their institution.

Green/high performance schools are increasingly shown to be quality educational environments for children.^[1] They can be rich learning environments working from both a physical and educational perspective . With quality community-centered schools, neighborhood residents are shown to have direct engagement in the school itself and in the educational well being of the students. Active involvement by parents and members of the community in academic and athletic activities at the school is shown to provide benefit to teaches and school administration. Increased parental and community involvement is a school is consistently shown to enhance student academic performance.^[2]

With use of Green/high performance technologies, schools can be environmentally efficient and provide a reduced carbon footprint when compared to conventionally designed schools located on the periphery of town or a substantial distance from planned growth areas. Reduction of greenhouse gas (CO₂ and other gases) emissions is an area of concern to Maryland. Ways to reduce future energy consumption, including electricity, gas and transportation energy, are currently factors in the public school planning process. All of these concepts are central to community-centered schools.

What is a Community-Centered School? ^[3]

- A neighborhood oriented building that encourages community involvement and interaction with nearby residents.
- A place that allows students to walk or bicycle to school, improving student health and fitness, and leading to reduced use of automobiles and buses for student transportation.
- A neighborhood anchor that, where appropriate, supports community use of school facilities, co-location of other uses, and shared use of public school facilities with other public uses so that the building is a community asset after school hours and on weekends.
- A central location within the community, effectively linked by sidewalks, multi-purpose trails and/or bike lanes.
- A quality use of existing resources such as historic school buildings and the adaptive reuse of non-academic historic structures for educational uses.
- A more compact building on a smaller site going up and not out. The site and structure is well integrated into the community and is designed to fit the scale and patterns of the community And makes use of existing sites and structures as opposed to new sites and new construction.
- A provider of transportation options including secure sidewalk networks, nearby transit access and is adjacent to or within walking distance of other public amenities including parks, athletic fields, libraries, museums and community centers
- An energy efficient Green/high performance building that reduces the growth in heating, cooling and transportation energy costs over the life of the facility.
- A part of an existing community that does not actively promote sprawl related land use change outside of planned community growth boundaries and Priority Funding Areas (PFAs). In Maryland, PFAs are areas where local governments and the State agree that growth should be concentrated.
- A joint plan by school facility professionals, county and municipal planning and zoning personnel that incorporates real input from residents in the communities where the school is or will be located.

Public School Construction and Smart Growth

Maryland's Planning Act and Smart Growth Law

Maryland Planning policies and Smart Growth laws are challenged as in relation to the issue of public school construction and PFAs. School facilities continue to have "wiggle room" in terms of location within county certified PFAs and community growth areas.

The Eight Visions of the Economic Growth, Resource Protection and Planning Act of 1992 set State Policy for growth and development. This Act recognizes that State spending plays a significant role in guiding growth and facilitating development.

By policy, growth and State spending should be "directed to existing population centers and away from rural resource areas."

The Eight Visions of the Economic Growth, Resource Protection and Planning Act of 1992:

- (1) Development shall be concentrated in suitable areas;
- (2) Sensitive areas shall be protected;
- (3) In rural areas, growth shall be directed to existing population centers and resource areas shall be protected;
- (4) Stewardship of the Chesapeake Bay and the land shall be a universal ethic;
- (5) Conservation of resources, including a reduction in resource consumption, shall be practiced;
- (6) To encourage the achievement of paragraphs (1) through (5) of this subsection, economic growth shall be encouraged and regulatory mechanisms shall be streamlined;
- (7) Adequate public facilities and infrastructure are available or planned;
- (8) Funding mechanisms shall be addressed to achieve this policy.

The Smart Growth and Neighborhood Conservation Act of 1997 furthered the process of locating State spending within population centers. Subtitle 7B of the State Finance and Procurement Article addresses "Priority Funding Areas." This article set forth a category known as "Growth-related projects" and defines "Growth-related projects" as including most capital projects in the Transportation Article, categories of housing funding, assorted economic development and industrial assistance, categories of water and environmental assistance, and other State capital funding programs.

HB1141 – Schools and Municipalities

Legislation was passed in the 2006 General Assembly session that addresses comprehensive planning and the municipal annexation process. This has a bearing on the school planning process within municipalities. The intent of the legislation is to provide better coordination and planning of infrastructure needs during municipal annexations.

HB 1141, entitled "Land Use — Local Government Planning," was signed into law in 2006. The bill requires additional elements to be adopted into municipal comprehensive plans by October 1, 2009 to provide more effective infrastructure planning during municipal annexations. HB 1141 established requirements for a Municipal Growth Element and a Water Resources Element. The Municipal Growth Element is required to provide an analysis of "Public schools sufficient to accommodate student population consistent with State Rated Capacity standards established by the Interagency Committee on School Construction." Using population and dwelling unit projections, the Municipal Growth Element will use per household data to calculate the number of students expected by type of projected housing unit in elementary, middle and high school levels."

For additional information on HB 1141, annexation procedures and Municipal Growth Elements contact the Maryland Department of Planning.^[4]

Interagency Committee on School Construction and Public School Construction Program

The Maryland Interagency Committee on School Construction (IAC) was established in 1971 (Chapter 624, Acts of 1971). Chaired by the State Superintendent of Schools, the IAC supervises school construction in the State. The IAC is composed of the State Superintendent of Public Schools, the Secretary of the Department of General Services, the Secretary of the Maryland Department of Planning and, based on legislation passed in the 2005 session, two members of the public, appointed by the Speaker of the House and the President of the Senate.

The IAC administers the Public School Construction Program (PSCP), which is an independent agency under the Board of Public Works. The mission of the PSCP is to ensure that all public school buildings in Maryland meet minimum design and performance standards in support of the educational programs that they house. The mission of the PSCP is to achieve equity among school facilities across the State. Since the founding of the program, the State of Maryland has provided over \$5.3 billion in Capital Improvement Program funding to assist Local Education Agencies (LEAs) with the construction of public school facilities, as well as approximately \$1 billion through other construction funding programs administered by the PSCP.

The agencies that comprise the IAC perform the following functions: The Maryland State Department of Education reviews projects for alignment with local and State educational programs and good architectural practice. The Maryland Department of General Services reviews projects for conformance with State construction and procurement practices. The Maryland Department of Planning reviews enrollment projections, site approvals, and reviews projects for compatibility with adopted comprehensive plans, infrastructure plans, and Smart Growth policies. The PSCP provides overall coordination and fiscal management of the State school construction funding programs.

Each year, Maryland's 24 LEAs submit Educational Facility Master Plans (EFMPs) along with local Capital Improvement Programs that include school construction project requests to the IAC. The list of projects is analyzed by each of the agencies in the IAC. The PSCP then prepares a recommended State Capital Improvement Program for submission to the IAC. The IAC then approves, defers, or modifies the recommended CIP, and submits the recommended Statewide CIP to the Board of Public Works for approval.

The solution to adult problems tomorrow depends on large measure how our children grow up today

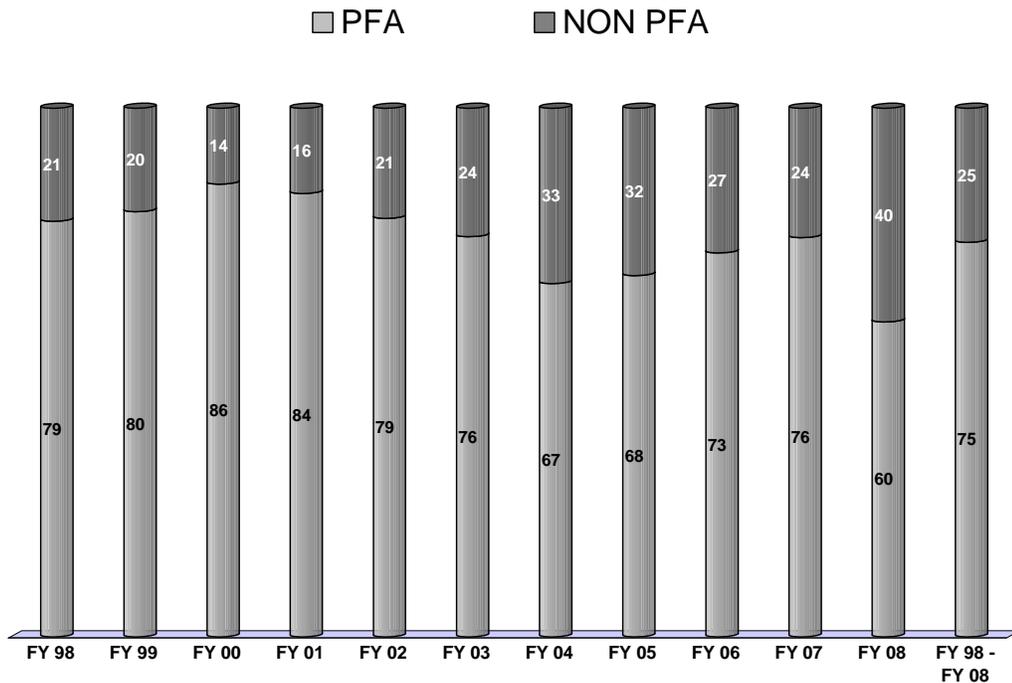
— *Margaret Mead*

Maryland School Construction Trends — PFA and Non-PFA

Priority Funding Areas (PFAs) are indicators of the Smart Growth status of public school construction. Since the implementation of Maryland's Smart Growth and Neighborhood Conservation Act in FY1997, Maryland has had a mixed record in relation to the expenditure of public school construction dollars inside and outside of PFAs. The table below includes percentage funding for new school construction, school replacement, additions and renovations.

Between FY1998 and FY2008, one quarter of State public school construction funding was allocated to public school construction projects that are located outside of county-certified PFAs.

Percentage of Funding for School Construction Projects



Trend data indicate that the percentage of total public school construction funds allocated within PFAs peaked in FY 2000 at 86 percent. Funding levels within PFAs fell in both FY 2004 and in FY 2008.

Maryland has a legacy of public schools that were constructed outside of PFAs in the years prior to 1998. In the past, schools were constructed in a variety of locations not all of which were in or adjacent to established communities. Some public schools were constructed in agricultural areas between two towns with the intent to serve students from both communities. Also, schools were sometimes located on acreage near to, but outside of, community growth boundaries due to decreased land costs. Regardless of location, all school buildings eventually require systemic projects, renovations and other upgrades, as well as routine maintenance. Increase in school capacity of schools outside of planned growth areas/PFAs remains an area of concern in terms of State growth policies.

Replacement of schools outside of PFAs is also an issue to the State. While not encouraged by the State, protection of existing public school investments has been considered a priority by the IAC and LEAs and a number of replacement schools outside of PFAs have been approved since 1998.

An analysis of approved State Capital Improvement Program (CIP) funding allocations from FY 1998 through FY 2008 for new school construction, school replacement, additions and renovations indicate that \$482 million dollars have been allocated for major projects located outside of county-certified PFAs. Of particular concern is that 40 percent of approved funding for major school construction projects in FY 2008 was for projects that were located outside of PFAs. This is important since a number of large projects shifted the funding balance.

The table below indicates funding for new, replacement, and renovation/addition school projects. Gyms, science labs, systemic projects, relocatable classrooms and limited renovation projects are not included:

Annual State Funding for School Construction Projects: PFA vs. NON PFA

FY 1998 CIP - FY 2008

(\$000 omitted)

Fiscal Year	PFA	NON PFA	STATEWIDE	% PFA	% NON PFA
FY 98	\$ 95,160	\$ 25,848	\$ 121,008	79	21
FY 99	\$ 139,312	\$ 33,846	\$ 173,158	80	20
FY 00	\$ 160,247	\$ 26,858	\$ 187,105	86	14
FY 01	\$ 134,623	\$ 25,870	\$ 160,493	84	16
FY 02	\$ 161,779	\$ 42,555	\$ 204,334	79	21
FY 03	\$ 85,036	\$ 27,279	\$ 112,315	76	24
FY 04	\$ 47,810	\$ 23,706	\$ 71,516	67	33
FY 05	\$ 64,374	\$ 29,797	\$ 94,171	68	32
FY 06	\$ 164,171	\$ 61,819	\$ 225,990	73	27
FY 07	\$ 180,963	\$ 58,601	\$ 239,564	76	24
FY 08	\$ 185,540	\$ 125,825	\$ 311,365	60	40
FY 98 - FY 08	\$ 1,419,015	\$ 482,004	\$ 1,901,019	75	25

Above figures reflect funding for new, replacement, and addition/renovation projects.

Funding for the following types of projects was excluded from this table:

1. Systemics
2. Gyms
3. Science Labs
4. Limited Renovation
5. Relocatables

Since implementation of the Smart Growth and Neighborhood Conservation Act in 1998, trends indicate that public school site selection and the application of State funding by the IAC and the Board of Public Works has been only peripherally related to whether a school facility is located within PFAs. Likewise, projects submitted by many of the Local Education Agencies (LEAs) from FY1998 to FY 2008 often have unclear linkages to local growth management plans and Smart Growth goals:

- Do local funding school requests address areas where growth is planned, or do the requests accommodate development in areas which are not planned for growth?
- Do local school capacity project requests seek to address areas with Adequate Public Facility Ordinance (APFO) restrictions or other school-related development moratoria?
- Is there full coordination between LEAs and county and municipal planning and zoning departments so that school funding projects are related to locally adopted comprehensive plans?
- How are municipalities involved in planning for school capacity projects and the location of new schools?

Maryland's Planning Act and Smart Growth Law and Neighborhood Conservation Act of 1997

The 1992 Economic Growth, Resource Protection and Planning Act was one step in the process to locate growth and development within planned population centers and away from areas of resource conservation and agriculture. The Eight Visions of the 1992



Planning Act set State goals for growth and development throughout Maryland. The Planning Act sought to address both State and local roles in guiding growth and facilitating development. Growth should be "directed to existing population centers and away from rural resource areas."

The Smart Growth and Neighborhood Conservation Act of 1997 furthered the process of locating State spending within population centers.

Subtitle 7B of the State Finance

and Procurement Article addresses "Priority Funding Areas," setting forth a category of "Growth-related projects" and defining "Growth-related projects" to include most capital projects in the Transportation Article, categories of housing funding, assorted economic development and industrial assistance, categories of water and environmental assistance, and other State capital funding programs. Public School construction is not specifically addressed as a "growth-related project" in this article, though school construction clearly has an impact on residential growth and development in most of Maryland.

Smart Growth Issues and Public School Construction

One area that is in need of change is the separate or "silo oriented" efforts of county and municipal planning departments and public school facility planning staff. In Maryland, it is essential that school officials and county/municipal planning officials more fully integrate school facility planning into land use, transportation and park planning, as well as into capital improvement programming. School and local planning officials must decide together where growth (including student growth) will occur in each jurisdiction and develop a strategy (and school capital project requests) consistent with the growth shown in the comprehensive plan.

Schools are vitally important public resources and represent sizeable expenditures of public tax dollars. A finer level of cooperation and coordination must occur during the planning for schools and the communities they serve.

-
- 1 Kats, Gregory, "Greening of America's Schools: Costs and Benefits." October 2006.
 - 2 Council of Educational Facility Planners International and U.S. Environmental Protection Agency, 2004. "Schools for Successful Communities: An Element of Smart Growth." September 2004.
 - 3 Smart Growth America, Environmental Protection Agency, National Trust for Historic Preservation. "Smart Growth Schools," "Children and Schools." <http://www.smartgrowthamerica.org/children.html>
 4. Maryland Department of Planning. "Writing the Municipal Growth Element," Models and Guidelines No. 25. May 2007.

Chapter Two

Public Health, Walkability, Safe Routes to Schools and Active Community Environments

A comprehensive school facility program should take into account public health and pedestrian access to planned and existing schools. Since the late 1990's, the nation's leading public health institutions have advocated for changes in the planning and the location of schools to address public health issues related to childhood obesity and the lack of physical activity in school age children.

Public health guidelines state that adolescents need at least 20 minutes a day of sustained physical exercise. Younger children need at least an hour of exercise. Walking and bicycling are methods of physical exercise that provide both recreation and transportation. In 1969, according to the National Household Travel Survey, nearly 50 percent of students walked or biked to school. By 2001, less than 15 percent of students traveled to school by walking or bicycling. ^[1]



Today roughly one-third of students ride the school bus, and half are driven in a private vehicle. ^[2]

Studies indicate that boys who walked to school expended forty-four more calories a day and girls expended thirty-three more calories a day than did their peers who were driven. If this is projected over the course of a school year, or 200 days, this additional physical activity could account for a two to three-pound difference between those who walk to school and those who do not, all other things held constant. ^[3]

Recent public health findings indicate that the obesity trends for Maryland are on the rise. The 2003-2004 National Survey of Children's Health indicates that Maryland ranked 29th among the states for childhood obesity in children aged 10 to 17. ^[4] This is important because the obesity trend both in Maryland and nationally is increasing to a point that a variety of federal and local policy changes are recommended to battle what is now considered an epidemic.

We learn from statisticians that the average school child by the time he reaches 12th grade has spent 15,000 hours watching television, which is about as much time as he spends sleeping, and often the two activities are indistinguishable.

– William F. Buckley

Public schools have a vital role to play in childhood health and obesity. The location of public schools and the provision of sidewalks have been shown to have an impact on student travel. ^[5] Students with shorter walk and bike times to school are more likely to walk and bike. It is important that school facility planners and local governments work together to encourage active commuting by children. This can be done by improving pedestrian and biking safety, adding bike racks and crossing guards, mapping safe and secure routes to schools, building new schools or renovating older schools in residential neighborhoods, and forming such programs as the Walking School Bus, Bike Trains, Safe Route to School, and National Walk Our Children to School Day.

A report produced by the Trust For America's Health and the Robert Wood Johnson Foundation contains recommendations for promoting physical activity that include activities related to school sites: ^[6]

- Modifications to the built environment surrounding schools to increase safety for physical activity;
- Crossing guards at major intersections; and
- Safe, accessible bike racks and storage areas.

Safe Routes to Schools

The Maryland Safe Routes to Schools Program is a participant in the Federal Highway Administration's Safe Routes to Schools Program. Maryland's program is located in the Maryland Highway Safety Office of the State Highway Administration. This program provides funding to facilitate projects and activities that improve safety and reduce traffic, fuel consumption and poor air quality in the vicinity of elementary and middle schools. Annual Safe Routes to Schools Grants are awarded to State, local and regional agencies, as well as non-profit organizations that help to make walking and bicycling safer and more appealing transportation alternatives to and from Maryland schools. Safe Routes to Schools funds can be used for engineering improvements such as upgrades to crosswalks, traffic signals, sidewalks, and signage, as well as educational and enforcement efforts. Infrastructure projects must take place within two miles of an elementary or a middle school. Additional information can be obtained at: <http://www.saferoutespartnership.org/maryland>.

Case Study

For several years, the City of Rockville has coordinated Safe Routes to School programs in their schools. The goal of the programs is to improve the safety of the children walking and bicycling to school. In 2007, Rockville received \$435,500 in federal grant funds through the Maryland Safe Routes to Schools Program to target speeding and pedestrian safety issues at six schools.

With the education portion of the grant, Rockville's Recreation and Parks Department is coordinating a pedestrian and bicycle safety training program taught to kindergarten through fifth graders in which students use a mock street course designed for practicing pedestrian and bicycle safety.

For the enforcement portion of the grant, the Rockville Police Department conducts enforcement activities within the walk zones of the schools. This is an effort to decrease the number of speeders and to increase proper motorist yielding behavior at crosswalks. Under a separate program, there are 16 speed cameras at locations close to elementary, middle and high schools throughout Rockville.

For the transportation improvements portion of the grant, Rockville's Public works Department is working to improve pedestrian safety by eliminating key sidewalk gaps, installing crosswalks, and pedestrian countdown signal heads at traffic lights.

Since the initial programs were implemented in Rockville many improvements have been noticed. The law enforcement presence has reduced vehicular speeds in school zones. The speed cameras have caused drivers to avoid the area, which has decreased traffic congestion around the schools. ^[7]

For additional information contact:

Rockville Department of Public Works Traffic and Transportation Division Rockville, Maryland
240-314-8529.

Walkable Schools and Safe Routes to Schools programs have been shown to encourage physical activity among the student population.^[8] Additionally, community-centered schools that have co-located other uses into the facility also promote physical activity by some of the adults in the communities they serve. These actions accomplish related planning goals such as reducing traffic congestion near school campuses and reducing the amount of vehicle-related air impacts including particulate matter.

Walking and bicycling to school become feasible if schools are located in or adjacent to neighborhoods with a density of at least three/four units per acre or better. The greater the number of households located within one half mile of the school, the greater the likelihood that students, parents, and other users will walk to the school. Likewise, the availability of nearby public transit provides more flexibility to students who generally rely on parents for transportation to school.

Case Study

Baltimore City Public Schools has a long-established contractual agreement with the Maryland Transit Administration (MTA) to provide no-cost bus service to eligible middle and high school students who attend Baltimore City schools (elementary school students and special education students are eligible for yellow school bus service). Efforts by Baltimore City to provide transit service to city students date back to 1939. The current program involves the purchase of monthly ticket books from MTA. Individual tickets are surrendered by students to MTA bus drivers for both morning and afternoon trips. This service is provided at a cost to Baltimore City, although when compared to the operation and maintenance of additional school buses, they are offset. According to Federal Transit Administration guidelines, all bus stops must also be accessible to the general public as well as students. This school transit program serves between 25,000 and 28,000 students in the Baltimore City school system. There is currently consideration of replacing the monthly ticket books with an electronic "easy pass" type of system.

Walkability and Safety

Safety and security of children walking to and from schools is an important topic of discussion in regard to school location and Safe Routes to Schools programs. How can children safely walk to school when perceptions of "stranger danger" and vehicular safety are predominant themes in local news headlines? Parents and administrators are often left with the impression that few places are safe for walking in the communities in which they live.

Neighborhood oriented schools make a difference by engaging the community. If schools are fully incorporated into communities, they are by design, walkable. Residences are located on the street and neighbors are often aware of activity that occurs in front of their homes and businesses. Sidewalks are provided and maintained and intersections are designed or redesigned to safely accommodate pedestrian travel. Neighborhood schools are planned as active community hubs on school days, evenings and on weekends. People

walk in neighborhoods and they are familiar with the comings and goings along their streets. Neighborhood schools are community resources and security is heightened because the residents of the community are engaged, neighbors are vigilant and the eyes are on the street. Additionally, travel to and from school primarily occurs within defined time periods each school day. School children are encouraged to walk with friends and parents, adding another layer of safety. Statistically, the chance of the abduction of a child is lower than that of other accidents or dangers, however, perceptions to the contrary persist.^[9] Regardless of perceptions of crime and safety, fully safe walking and biking conditions are vital components of the success of neighborhood schools. Safe walking conditions and opportunities for mischief and criminal activity can undo participation in any walk to school program. These must be addressed. What we do know is that opportunities for criminal activity vary with different land use types and in different neighborhood settings.



In order to establish effective Safe Routes to Schools programs in Maryland communities, it is highly recommended that complete walkability audits of travel and safety conditions to and from schools be conducted and preventative measures taken by municipal and county governments, school administrators, and law enforcement officials. Safety problems including lack of sidewalks, unsafe pedestrian crossings and other problem areas need to be identified in the audit. Following this, funding should be programmed and law enforcement officials should direct efforts to mitigate unsafe

walking conditions or problem areas in the neighborhoods or on trails and primary travel routes that were identified in the walkability or bicycle audit.

Many approaches are used in communities to promote safe travel to and from schools, including the use of school crossing guards at all key intersections and "walking school buses" where parents and other members of the community chaperone elementary school children on walking trips to and from schools. On-site school security professionals and parents are also used in some jurisdictions to assist in off-site travel through adjacent neighborhoods and across key intersections. In these instances, travel to and from school becomes a community endeavor where both school officials and parents take a role in promoting child safety.

It is important that neighborhood safety and security form a central aspect and that measures are taken to improve walking and bicycling conditions along streets and at intersections within defined distances of schools. It is important that these efforts are coordinated with community residents and local law enforcement officials so that improved security and safety measures are programmed in school walkability and Safe Routes to Schools efforts. This includes addressing intersection improvements near schools so that they are programmed and funded to promote safe and effective pedestrian and bicycle travel.

Sidewalks and Bicycle Access

The completion of sidewalk networks within two miles of schools is important both for school and planning and zoning staff. An EPA study showed that the proportion of streets with sidewalks was the most consistent predictor of whether students walked or biked to school. ^[10] An ongoing planning process and dialog must be achieved between school staff and county/municipal planning and zoning staff that moves in the direction of providing sidewalks and other facilities, such as designated bike routes and lanes, within the vicinity of existing and planned public school facilities.

Merely providing sidewalks or addressing safety issues at intersections won't be effective in all cases. School facilities and sites should be designed to encourage pedestrian travel from nearby neighborhoods. Principle entrances of schools should be oriented with sidewalks, walkways and marked pedestrian crossings to encourage use by walkers and bicyclists, rather than walled off with a focus on parking lots and idling areas for buses. Direct access from sidewalks to school entrances that does not force students to walk across a bus or an auto lane is needed.

Bicycle racks or lockers should also be prominent near school entrances and not isolated in locations away from public view. This is necessary both for surveillance and to encourage the use of racks and lockers by students. As an added dimension of security, students are encouraged to lock their bicycles in the provided areas.

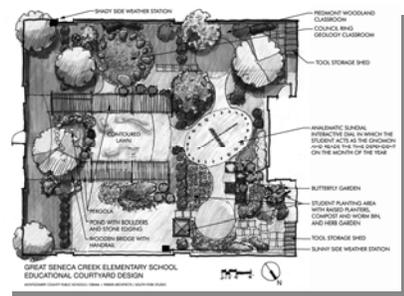
The following is a checklist for walkable schools. Priority should be given to the following characteristics for school site selection, site design and building design:

School Site Selection

- in a neighborhood with a complete sidewalk network.
- in or adjacent to a neighborhood that has a residential or mixed use zoning classification greater than three units per acre.
- on or near streets with posted speed limits under 30 mph.
- in locations with clearly defined pedestrian crosswalks.
- on two lane streets that have parallel parking.
- within one quarter of a mile of a transit stop.
- in neighborhoods where windows and doors face the street and sidewalk.

School Site Design

- should serve the community and encourage pedestrian access from neighborhoods.
- should locate the most important school building near the principal roadway serving the facility.
- should place parking lots and bus queuing lanes at the sides or rear of school facilities.
- should design building entrances near the principal roadway and should be architecturally distinctive and easily identified from a distance, and should be accessible from the roadway by uninterrupted sidewalks.
- should connect sidewalk and trail facilities with neighborhood sidewalks and trails.
- should locate bicycle parking structures near the main entrance to the school.



Remember that site size guidelines are not mandatory minimums. Explore smaller sites to encourage better interaction with residents of the neighborhood.

School Building Design

- The building should be designed as a prominent element of the community, exhibiting design characteristics that enhance adjacent and nearby uses.
- The school building should incorporate space to accommodate co-location of community and public uses.
- The main entrance should be easily accessible from the street and from the sidewalks.
- All access routes to the main building entrance and all drop-off areas, including the drop-off area for buses, should be visible from the main office and entry area.
- There should be no hidden spots, e.g. recessed entries, along any route that could be traveled by a child who is walking or bicycling to school.
- Building up instead of out should be prioritized in the school facility planning process.
- Renovating rather than replacing existing community-centered schools should be a priority.

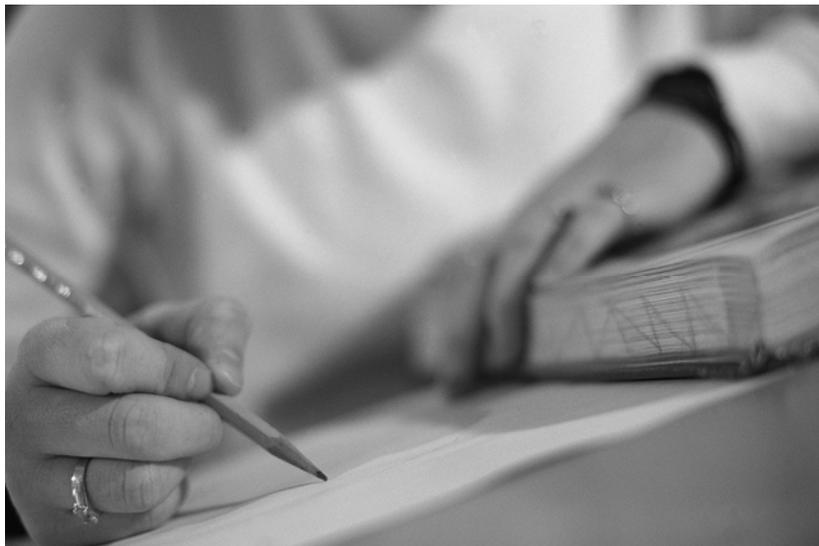
Active Community Environments and Schools

Schools that are designed to incorporate a variety of travel options also encourage walking and biking as routine forms of physical exercise in their communities.

Increasing routine daily physical exercise is a public health goal according to the Maryland Nutrition and Physical Activity Plan of 2006.^[11] This plan, which was prepared by Maryland's Department of Health and Mental Hygiene in association with the Centers For Disease Control (CDC), identifies program goals and measurable objectives intended to "encourage and enable the citizens of Maryland to lead physically active lifestyles throughout the lifecycle" and to "reduce levels of obesity." In the area of Active Community Environments, the Maryland Nutrition and Physical Activity Plan includes the following objectives: "Increase the number of physical activity opportunities in communities by focusing on the built environment"; and "Promote non-motorized transportation, public transit, pedestrian and bicycling initiatives in communities to increase physical activity opportunities." The Plan includes the following as Strategies and Action Steps for Active Community Environments: "Advocate for integration of land use and school site planning so that school and residential areas are within walking and biking distances of each other" and "Support Safe Routes to Schools Initiatives." According to the Plan, these Strategies/Action Steps are recommended to be in place in Maryland by June 2011.



-
- 1 Safe Routes to Schools National Partnership. Safe Routes to School: 2007 State of the States Report. October 2007
 - 2 "Obesity Still a Major Problem." National Center for Health Statistics, Centers for Disease Control and Prevention, April 2006.
 - 3 "A Nation at Risk — Childhood Obesity Sourcebook" (Physical activity levels among children aged 9-13 years- United States, 2002.
 - 4 National Center for Health Statistics. 2003 National Survey of Children's Health. Centers for Disease Control.
 - 5 Ewing, Reid; William Schroyer and William Greene. "School Location and Student Travel: Analysis of Factors Affecting Mode Choice." Transportation Research Board. 2004.
 - 6 Trust For America's Health, Robert Wood Johnson Foundation. "F as in Fat: How Obesity Policies are Failing in America." 2007. 1
 - 7 National Center For Safe Routes to Schools. SRTS Case Study: Rockville, Maryland. Rockville's Safe Routes to Schools Program. <http://www.saferoutesinfo.org/case>
 - 8 Morris, Marya, AICP. American Planning Association. "Rethinking Community Planning and School Siting to Address the Obesity Epidemic." Prepared for the NEIHS Conference on Obesity and the Built Environment: Improving Public Health Through Community Design. May 2004.
 - 9 National Center For Bicycling and Walking. <http://www.bikewalk.org/links.php>
 - 10 Dover, Kohl and Partners and Chael, Cooper and Associates, PA. "Design Guidelines for Pedestrian Friendly Schools." Prepared for the City of Raleigh, NC. 2005.
 - 11 Maryland Department of Health and Mental Hygiene. "Maryland Nutrition and Physical Activity Plan. May 2006.

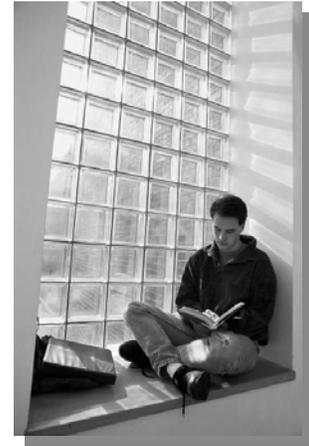


Chapter Three

Energy Efficiency, Green Schools and Sustainable Sites

The design and construction of public school buildings that function as healthy and energy efficient structures over the long term is of significant interest in Maryland. Across the country, Green Schools/high performance schools have been shown to be energy efficient as well as productive learning environments for students and teachers alike.

Research now indicates that Green/high performance Schools offer healthy indoor environments while providing an average energy savings of 33% over standard school designs. ^[1] The long-term energy efficiency of geothermal ground source heating and cooling systems and related green building construction practices is of significant interest to the State. In the past, one deterrent to building green or high performance schools has been the additional costs associated with green construction practices. It is now shown that Green Schools/high performance school design can be more fiscally prudent and less risky than conventional building design. Benefits range from energy savings over the life of the building, to emission reductions, water and wastewater savings, asthma reduction and teacher retention. ^[2]



Financial Benefits of Green Schools

FUNCTIONAL AREA	\$/SQ.FT.
Energy	\$9
Emissions	\$1
Water and Wastewater	\$1
Increased Earnings	\$49
Asthma Reduction	\$3
Cold and Flu Reduction	\$5
Teacher Retention	\$4
Employment Impact	\$2
TOTAL	\$74
COST OF GREENING	(\$3)
NET FINANCIAL BENEFITS	\$71

Kats, Gregory, "Greening of America's Schools: Costs and Benefits."
October 2006.

What we need to do is really improve energy efficiency standards, develop in full scale renewable and alternative energy and use the one resource we have in abundance, our creativity.

– Lois Capps

High Performance Buildings Act

In 2008, the Maryland General Assembly, with the support of Governor Martin O'Malley, passed the High Performance Buildings Act which addresses the issue of sustainable, energy efficient, Green building design in the construction of State buildings. ^[3] This includes new public school construction that receives State public school construction funds. New public school buildings shall be constructed to be high performance schools. A High Performance Building" refers to a building that "meets or exceeds the current version

of the U.S. Green Building Council's LEED (Leadership in Energy and Environmental Design) Green Building Rating System Silver Rating, or achieves at least a comparable numeric rating according to a nationally recognized, accepted, and appropriate numeric sustainable development rating system, guideline, or standard approved by the Secretaries of Budget and Management and General Services.”

The High Performance Buildings Act of 2008 requires that the construction of new schools that have not initiated requests for proposal for selection of an architectural and engineering consultant on or before July 1, 2009 shall be constructed to be a high performance building.

For fiscal years 2010 through 2014 only, the High Performance Buildings Act specifies that the State shall pay 50% of the local share of the extra costs, as identified and approved by the IAC, that are incurred in constructing a new school to meet the high performance building requirements. Additionally, the Board of Public Works shall establish a process to allow a school system a waiver from this regulation per recommendation of the IAC.

Benefits of Green/ High Performance School Construction

Typical energy efficient enhancements for school structures include more efficient lighting; greater use of daylight; improved heating and cooling systems; the use of geothermal technologies that "mine the earth" for heat and use the earth as a heat sink for cooling; improved indoor air quality; water conservation technologies, improved walls, cabinet and desk materials; and more effective materials and insulation for roofs and walls. While green schools, on average, use one third less energy than conventional schools, air emission reductions are also a tangible community-wide benefit resulting from reduced use of electricity and natural gas.

LEED For Schools is a green building rating system developed by the U.S. Green Building Council for K-12 schools and higher education buildings. ^[4]

The LEED For Schools Rating System emphasizes:

- Classroom acoustics;
- Master planning;
- Indoor air quality;
- Mold prevention;
- Energy efficiency; and
- Water conservation.



Other high performance ratings systems applicable to schools include CHPS (Collaborative for High Performance Schools) initiated in California and now used by three other states; and Green Globes, administered by the Green Building Initiative (GBI).

Case Study

Great Seneca Creek Elementary School in the Germantown area of Montgomery County is the first public school in Maryland to be certified by the U.S. Green Building Council with its LEED (Leadership in Energy and Environmental Design) rating system. ^[5]

Great Seneca Creek Elementary School which opened in September 2006 is the first school in the Montgomery County Public Schools System (MCPS's) Green Building Program built to green, high-performance design standards that also pursued LEED certification.

Great Seneca Creek is an 82,500-square-foot facility equipped with a geothermal mechanical system that harvests the constant temperature of the earth for heating or cooling the building. This is expected to reduce energy use by more than 35%, for an estimated \$60,000 in annual energy savings. The building's plumbing uses no-flush technology and low-flow water fixtures that will reduce drinking water demand by at least 43 percent compared to other buildings of its type—an estimated savings of 360,000 gallons of water each year.

Green signs and school tours create a hands-on connection between the building and its users. Students and staff, neighbors and the Germantown community at large are learning how a building and its features affect the environment and how negative impacts can be reduced or even avoided by building greener. The school is also piloting a healthy, high performance "green cleaning program," in which several cleaning products have been replaced by healthier alternatives.

A report sponsored by the American Institute of Architects, American Lung Association, American Federation of Teachers, and the Federation of American Scientists, shows that construction of healthy, high performance school facilities can be more fiscally prudent over the long term than building conventional school buildings. ^[6]

LEED certified schools: ^[7]

- Use 30-50% less energy than conventional schools, which lowers utility bills.
- Use 30% less water.
- Have better lighting and temperature controls which promote higher student achievement, more comfortable indoor environments, and improved ventilation and indoor air-quality—all of which contribute to health benefits, including reduced instances of asthma, colds, flu and absenteeism.
- Reduce harmful CO₂ emissions by 40%, which helps turn back the clock on global climate change.
- Have higher teacher retention.

Green/high performance schools cost less money to operate and use less water and energy.

- Green schools on average save \$100,000 per year. This is enough to hire two new teachers, buy 500 new computers, or purchase 5,000 new textbooks.
- Cost can average less than \$3 per square foot more to build. This is an investment that can be returned in the first few years of operations based on energy savings alone.

A Green/high performance school does not have to be a new school. It should be kept in mind that the most efficient Green school is the school that is already built as preservation is a tenet of green building design. Renovating existing buildings and making the most efficient and least disruptive use of land, water, energy and related resources are guiding principles. Therefore, renovation of existing schools can and should take

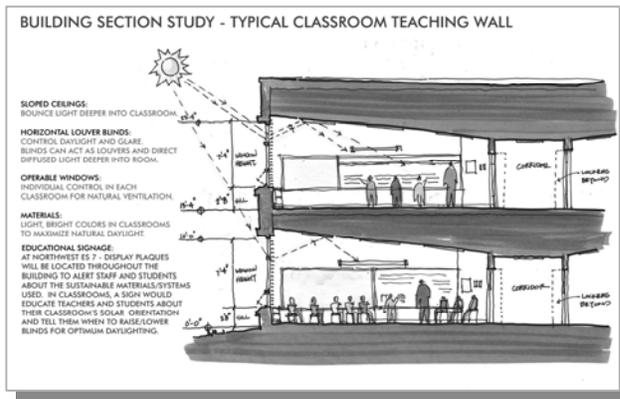


precedence over school replacement when educationally appropriate.

In July 2006, the Green Building Task Force was authorized by the Maryland General Assembly to evaluate and recommend incentives and disincentives to implementing a green building program, and recommend best practices to improve communication regarding green building programs to communities, businesses, and developers. The Green Building Program Final Report of December 2007 made a variety of recommendations in regard to low impact development and green building practices. Among these was a recommendation that a public education campaign with emphasis on renovation of existing buildings be carried out by the State. [8]

Sustainable Sites

Sustainable sites are also part of the energy efficiency equation as it relates to public school construction. In this case, energy savings can be obtained from transportation efficiencies.



Sustainable sites involve community orientation in the siting of new schools. They also involve renovation of existing school sites within communities to encourage safe and effective pedestrian access to and from the neighborhoods they serve.

The LEED for New Schools and Major Renovations includes "Sustainable Sites" as part of the LEED rating system. LEED Sustainable Sites credits encourage Smart Growth oriented best management practices along with sustainable environmental

measures for school sites. Strategies in the LEED for Schools rating system include credits for development density and community connectivity; brownfield redevelopment; public transportation access, bicycle and pedestrian use; use of low emitting and fuel efficient vehicles; minimizing and co-use of parking capacity, protection and restoration of habitat; maximizing open space; storm water quantity and quality control; reducing heat island effect; and light pollution associated with a school site. For additional information see the U.S. Green Building Council's LEED for Schools for New Construction and Major Renovations. [9]

Achieving Sustainable Sites

The connections to the surrounding community, both on and off-site are a critical aspect of school facility and design. This type of planning requires effective coordination between school facility planners, county and municipal planning staffs, and public works departments to assure the programming and funding for sidewalks, trails, bicycle facilities and transit access to serve the school facility. These improvements should be prioritized in local Capital Improvement Programs (CIP's).

Sustainable sites can also include upgrades and revitalization of the school sites. It is also important that a Pedestrian and Bicycle Access Plan be incorporated into site designs for new construction and for existing schools. When sidewalks are missing is important to construct them both on school sites and also in areas leading to them. Sidewalks are a vital component of school construction that is sometimes not addressed. Safe and accessible pedestrian road crossings must also be addressed up front in this process. This

involves local departments of public works and transportation, and can include coordination with the State Highway Administration.

School siting research indicates that the proportion of arterials and collectors with sidewalks proved to have the most significance on walking to/from schools.[10] Sidewalks must be a priority funding consideration along all main routes leading to the public school facility. Sidewalk connectivity should be considered by the State and LEAs in the CIP process for new construction, replacement schools, additions and renovations.

In addition to new construction projects, retrofitting school sites to encourage student walking and bicycling should be a priority for School Boards and to local governments. It is an essential component of creating walkable and bikable environments for students and residents of neighborhoods. This in turn is shown to contribute to overall energy efficiency of the school facility by lowering transportation costs associated with busing and other motorized student travel.

-
- 1 Kats, Gregory. "Greening of America's Schools: Costs and Benefits." October 2006.
 - 2 Kats, Gregory. "Greening of America's Schools: Costs and Benefits." October 2006.
 - 3 Maryland General Assembly, Senate Bill 208, High Performance Buildings Act. April 2008.
 - 4 U.S. Green Buildings Council. "LEED For Schools for Schools Reference Guide," 2007.
 - 5 Montgomery County Public Schools Public Announcement. "Great Seneca Creek ES Earns LEED Certification." April 25, 2007.
 - 6 Kats, Gregory. "Greening of America's Schools: Costs and Benefits." October 2006.
 - 7 Hylton, Thomas. "Renovate or Replace? The case for restoring or reusing older school buildings. Pennsylvania Department of Education and Pennsylvania School Boards Association. 2007
 - 8 U.S. Green Building Council: LEED for Schools for New Construction and Major Renovations. Washington, DC , April 2007.
 - 9 Maryland Green Building Task Force. 2007 Final Report of the Green Building Task Force. December 2007.
 - 10 Ewing, Reid; William Schroyer; and William Greene. "School Location and Student Travel: Analysis of Factors Affecting Mode Choice."



Chapter Four

Community-Centered Schools, School Siting and School Site Size



Size and location matter when creating community-centered schools. If a school site is large and car-oriented, it will require an edge-of-town location or a site in an agricultural area not designated for growth. In this case, the school is more likely to be surrounded by a large parking lot than a walkable neighborhood. For smart growth, smaller school sites are often superior to larger ones. Regardless of size, schools should be integrated into the neighborhoods of their communities.

Over the past century, neighborhoods and schools have been part of the vernacular in American planning and architecture schools. American architect and planning pioneer Clarence Stein was an advocate for towns in which schools were the centers of neighborhoods. Stein wrote that centrally located schools reinforce community life and spirit due to the accessibility to residents in neighborhoods. ^[1] In the 1920 New York Regional Plan, Clarence Perry defined a neighborhood as a component of a town and defined its size based upon a five minute walking radius. ^[2]

In all but two Maryland counties, municipalities play a central role in relation to community-centered schools. For many decades, schools were built in towns and cities in Maryland in close proximity to the student population they served. These municipal school facilities have received renovations, additions and systemic upgrades over the years. Likewise, new schools have been located within municipalities to serve existing and new residents. Municipal elected officials are not directly responsible for capital improvement programming for county school systems. Capital investments for school construction are the function of county School Boards and county executive and legislative processes. Different needs and agendas can be involved in the decisions of county and municipal arms of government. While not all schools need be located in municipalities, the future of community-centered schools in Maryland requires close working relationships between counties and municipalities. House Bill 1141 was enacted in the 2006 session of the General Assembly and addressed better planning and coordination for infrastructure in relation to municipal annexations. This legislation requires more effective infrastructure planning between municipalities and counties through the use of municipal growth elements within comprehensive plans. Better school planning to accommodate projected growth within municipalities is a requirement under HB 1141.

The future depends in part on what we do in the present.
-- Mohandas Gandhi

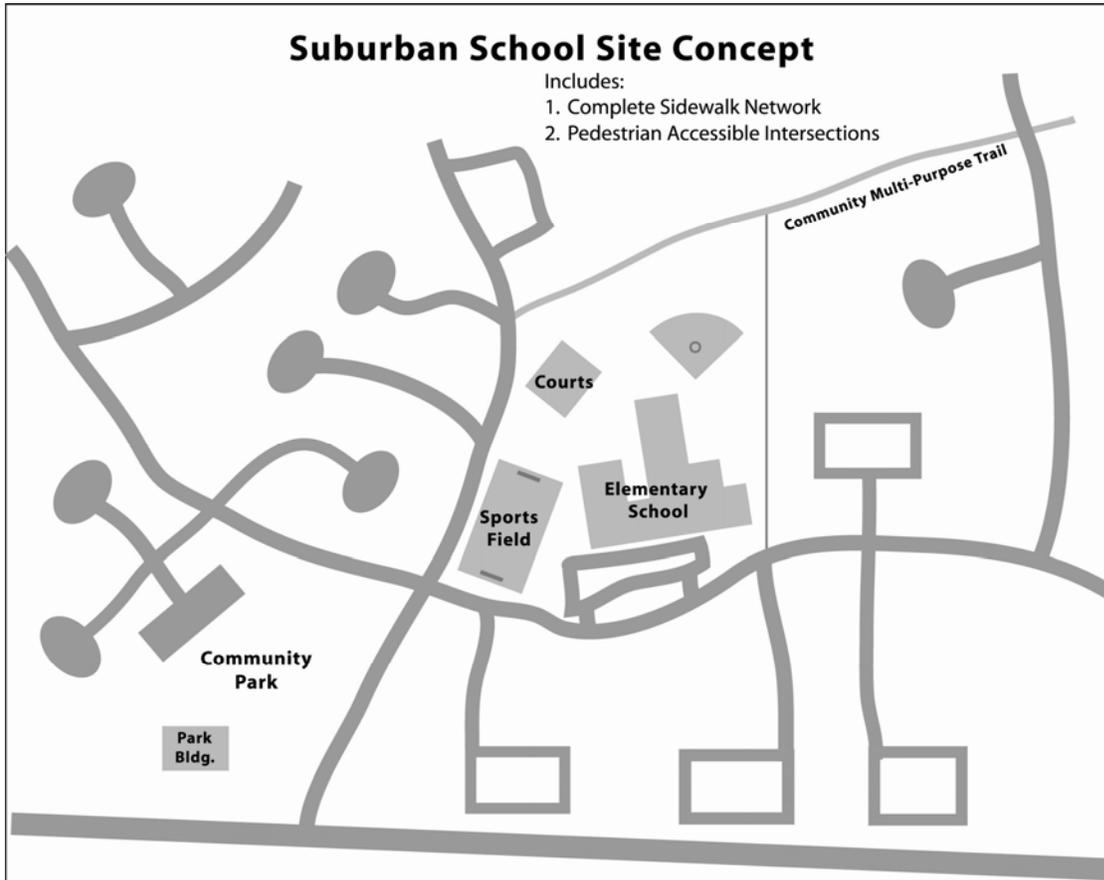
School districts and county and municipal planning departments should incorporate these guiding principles as they relate to school location decisions:

The School Should be a Community Focal Point

Decisions to site schools as neighborhood anchors and community focal points add to their role as places to educate students. The proximity of schools to neighborhoods actually encourage the participation of parents in school and after-school activities, and permit community members to use the facility after school hours. Building locally puts the school among the residents it serves and allows the community access to the facility. Residents have a sense of ownership in the school.

School Siting Decisions Should Benefit the Entire Community

In addition to educating students, community-centered schools can serve additional local functions, often without the need for motorized travel. They provide places to gather for community events, public health or related activities, sporting events, and cultural activities. Co-location and shared use of senior centers, libraries, fitness centers and a variety of other public uses increases this utility. Locating a school in a neighborhood provides students and residents alike with exercise opportunities within their community, often a walk away from their homes.



The School Should Connect to Existing Infrastructure

Use of existing water and sewer, sidewalks, road network, and power resources, reduces physical and financial impacts on the school system, the local government and the environment. Preserving historic school buildings and adaptive reuse of existing structures helps maintain community identity as well as long-valued community landmarks. Building on existing infrastructure reduces land consumption, avoids development in areas not planned for growth, and reduces landfill burdens for disposal of building waste. It is fiscally prudent to make the best use of existing infrastructure and to reduce the need for future infrastructure investments on the periphery or completely outside the community.

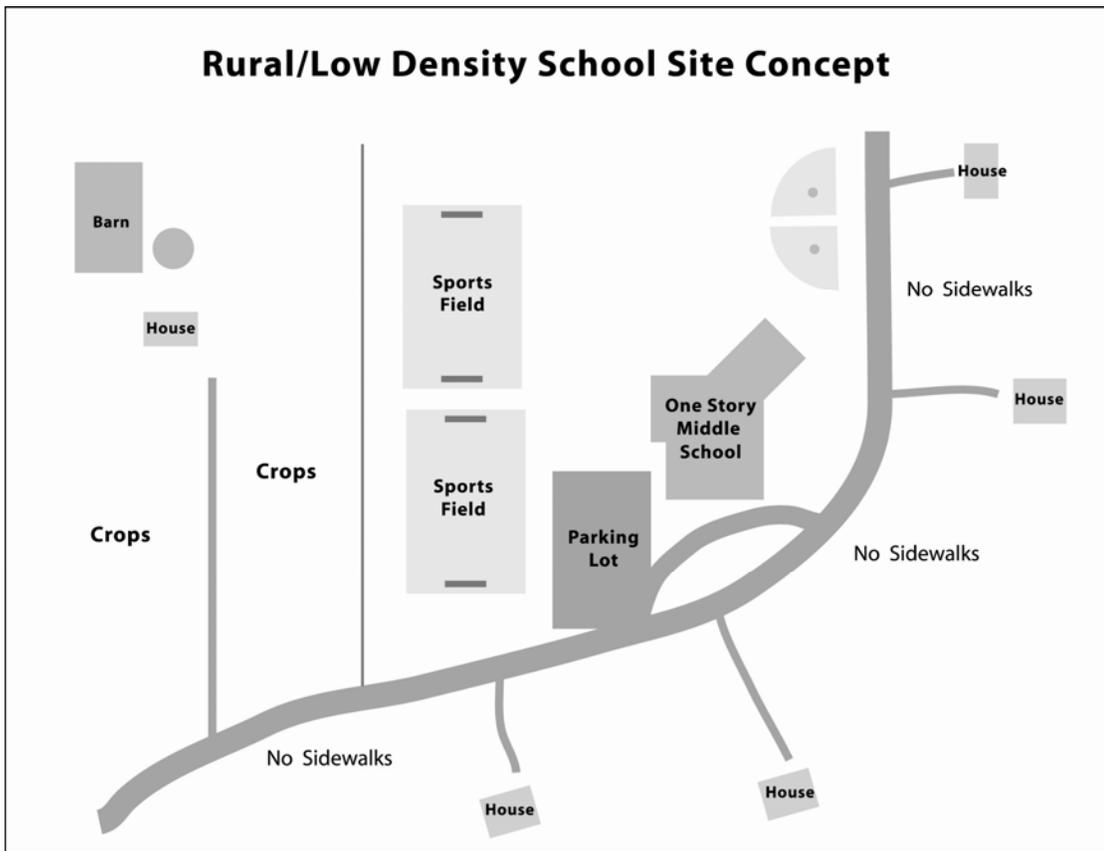
The School Should be Easily and Safely Accessible by Walking, Biking and by Transit

An essential characteristic of community-centered schools is the option for students and residents to walk, bike or use transit to access the school. A properly sited school gives children a variety of transportation choices to and from the school. It provides an important opportunity for daily exercise and for children to develop healthy lifestyles and life-long habits regarding physical activity and transportation.

School Siting Criteria

During the process to select a site for a new school, school systems should use the following criteria for specific site evaluation:

- The proximity to the student population that will be served and the schools that will be relieved of overcrowding, if any
- The availability of public water and sewer service
- The Priority Funding Area (PFA) status of the potential site
- Suitability of the site to support the proposed educational program of the school with respect to size, configuration, access, areas for preservation of the natural environment
- The ability to maximize walking and biking to the school
- The distance between the potential school site, parks, libraries, museums and other public facilities
- The proximity of local transit service
- An estimate of future transportation costs associated with the school site
- The potential for joint use of parks, libraries, museums, community health centers, and other public uses
- The proximity of residential development and village centers to the school site
- Completeness of the local sidewalk or trail network that will serve the school



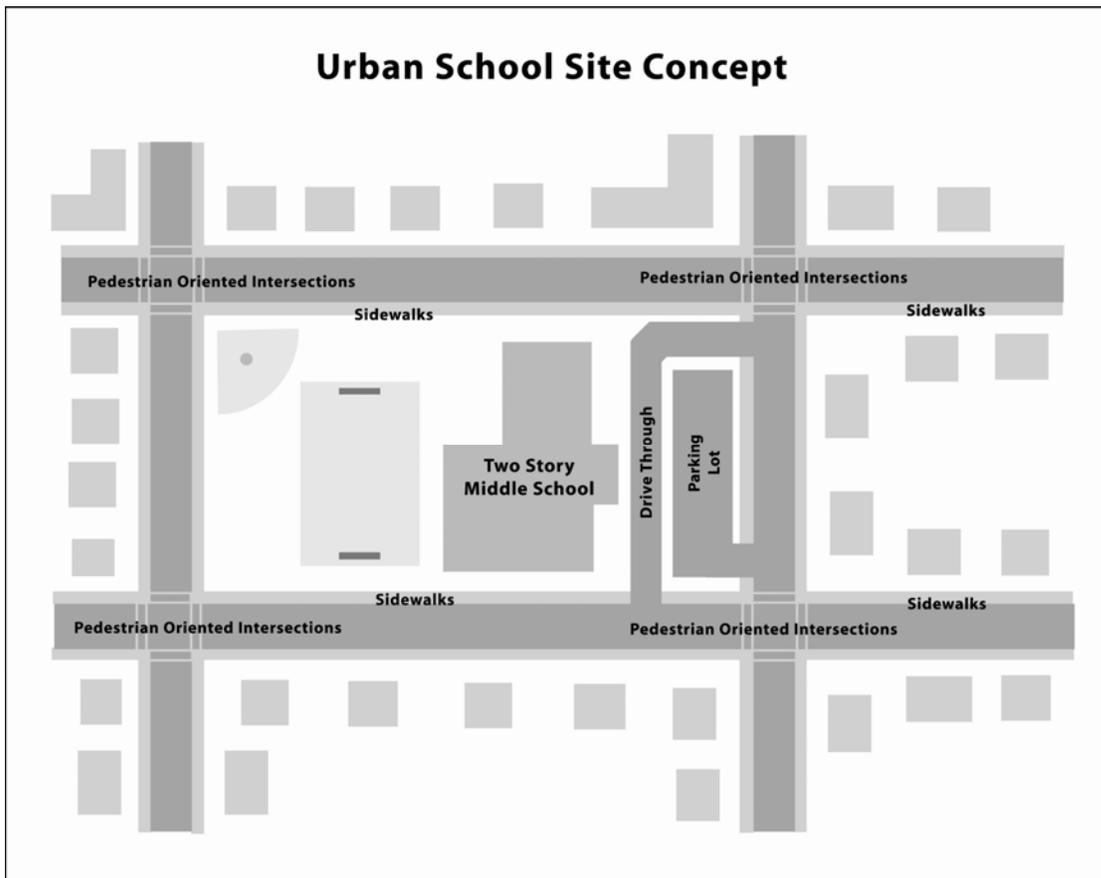
Community Centered Schools

Historically, school facilities have been among the most prominent public structures in Maryland's towns and cities: This was not just happenstance but was by design. For well over a century, Maryland leaders have been aware of the functionality and community presence that school facilities provide and are reflected in the locations of schools that were constructed prior to 1960 across the State. It should be noted that in subsequent

decades good intentioned efforts have been made to locate schools within communities. These efforts have sometimes met with mixed results in a number of Maryland jurisdictions.



Centrality in a municipal or in a community setting involves many factors including centrally located school sites and the prominence of school structures. Older school buildings were usually located in established neighborhoods or, in the case of high schools, set on primary roads accessible to different neighborhoods. In most cases, school sites were not overly large and were often located adjacent to a community park or recreational area.



Community-centered schools may be new facilities, renovated structures, historic building retrofits, and more modern structures specifically adapted to house educational programs.

Each community-centered school may have a different appearance and the site may be configured differently, but most have the following traits: ^[3]

- **Promote a sense of safety and security**

Community-centered schools can reduce isolation and alienation in the student population. Students also develop independence and responsibility through their daily travel to and from school, instead of being chauffeured by parents and guardians.

- **Build connections between members of the school and the community**

Community-centered schools have been shown to foster increased involvement in the school by residents of the community. This is shown to have a positive role in the success of students. ^[4]

- **Instill a sense of local pride**

Community-centered schools can reinforce a "sense of place" or unique character to a neighborhood because they blend into the fabric of the community. In contrast, schools separated from communities, isolated on large acreage sites, often have little design context upon which to draw. They are removed from the students, families and the neighborhoods that they serve.

- **Engage students in learning**

It has been shown that strong connections between community-based schools, local businesses and community organizations allow students to apply skills at nearby businesses, offices, museums, libraries and other prospective employment venues.

- **Encourage strong parental involvement**

Research has shown that as students participate more in school, so do their parents. There appears to be a high correlation between parental involvement and student achievement. When their parents are involved in school activities, students stay in school longer and perform better. ^[5]

- **Improve public health and sense of responsibility**

Local students are encouraged to travel by non-motorized means to and from school increasing physical activity and improving overall health. Also, students develop interdependence and responsibility by walking and bicycling to school, activities that are vital to public health and overall student development.

- **Foster environmental stewardship, energy efficiency, and a community-oriented smart growth ethic**

Community centered schools have been shown to be excellent teaching tools regarding the protection of the natural environment and livable communities and for instilling a sense of environmental stewardship. Schools that incorporate high performance energy efficient technology and are integrated into neighborhoods through Smart Growth and livable community design principles are often used as educational and instructional tools in school curricula. There are few better ways to teach stewardship than by incorporating these concepts into schools. The school and site serve as a living classroom.

The Maryland Department of Planning strongly encourages and promotes the development as well as the retention of community-centered schools throughout the State.

School Site Size



The school campus is a community focal point. School sites should be incorporated into the neighborhood rather than isolated from the community that it will serve. Excessively large school sites are very difficult to locate within established or planned communities. Large school sites discourage transportation choices and remove the possibility of the school serving as a center of a neighborhood or a community.

Community-centered schools utilizing compact design concepts in existing or planned

neighborhoods offer students an opportunity to walk, bike or take public transportation to school. In 2004, the Council of Educational Facility Planners International indicated that Smart Growth-oriented compact design principles could be used on smaller sites as school sites are used more efficiently. ^[6]

In past decades, excessively large minimum site sizes became the benchmark for many new schools nationally. Site size minimums ultimately discouraged the construction of community-centered schools in many communities and forced school location to the peripheries of towns and planned growth areas: Why does a new elementary require 20 or more acres or a new middle school 30 to 40 acres?

The ratio of building footprint to overall school site can be 1:10 or greater on excessively large school sites. What is the rationale for a building to grounds ratio that is in excess of 1:6 or 1:8?

There are schools in existing communities in Maryland that have building to grounds ratios less than 1:5. In instances where school sites exceed a building to grounds ratio of 1:8 or 1:10 it should be asked what the additional land is intended for. Are excessively large school sites serving a park and recreational service in addition to their educational function? How are athletic fields being coordinated with local parks departments? Can schools and parks departments achieve increased synergies by combining resources and co-locating parks and schools?

Unlike many states, Maryland does not impose acreage standards for school sites. Maryland counties use a variety of formal acreage standards. Still, some counties use outdated standards from the Council of Educational Facility Planners International (CEFPI) which were rescinded by CEFPI in 2004. It is important that locally adopted site size standards be amended if they do not support innovative school design concepts on smaller sites.

School site size minimums are undergoing review by State and national facility planner's organizations. Current thought dictates that through the use of creative design concepts, schools can be multi-level and require less total parking and overall acreage. A 2004 study of schools and livable communities in Oregon indicates that smaller school sites are a preferred option since compact sites are much easier to integrate into neighborhoods. ^[7]

Montgomery County currently uses a school site standard of 12 usable acres per elementary school, 20 usable acres per middle school, and 30 usable acres per high school. These are merely guidelines as school site sizes reflect educational and community needs independent of arbitrary acreage standards. ^[8]

What purpose does the additional school acreage serve? Often it is for additional parking, bus queuing, athletic fields and courts, outdoor play areas, space for future structures, stormwater management, and buffers between athletic fields. The need to balance increased educational specifications and an assortment of athletic areas means that economy of space is not often a central priority in the school site design process.

The State of Maryland decided to abandon school acreage requirements in the 1970s. This was done when the state recognized that acreage standards would force older cities like Baltimore to close most of their schools. Even with this measure, local school site size requirements often weigh in favor of new facilities on the edge of communities. It should be noted that this site reduction effort has not led to noticeable reductions in the size of school sites within Maryland.

These are areas where site size adjustments can be considered in new school construction projects:

- Use of multi-story construction;
- Shared athletic facilities and reduced buffers;
- Joint use or off-site athletic facilities;
- Shared parking with adjacent institutional uses;
- Off site or roof top play areas; and
- Off site, above ground or underground parking structures.

Nationally, school districts are choosing to optimize resources for urban and suburban schools by sharing facilities. These can include sports facilities, auditoriums, libraries, gymnasiums, and parks. They can be located adjacent to school facilities or in nearby locations. ^[9] The sharing of community facilities, such as parks and athletic fields, allows existing public facilities to be placed to their highest and best use while reducing the need for massive school sites. It should be noted that if joint use occurs during school hours, the size of the site may increase due to additional parking requirements.

In some Maryland counties, public park facilities are located adjacent to school sites reducing the need for a larger site. In fact, some models of efficient school and public park co-location can be found in Montgomery County, Baltimore City and Baltimore County. These are models that deserve further attention since they provide for smaller school sites and for adjacent recreational and parkland that is provided by another public agency.

School site size should be researched further. Other states are experimenting with elementary school sites of three to five acres. Maximum school site size is an area of interest in several states. ^[10] It is now accepted that flexibility of site size is essential in order to move schools from the peripheries of communities to the neighborhoods they serve.

For community-centered schools to be viable in Maryland, it is important that school site sizes be reduced in order for buildings and grounds to be contained within or adjacent to neighborhoods. Smaller site sizes are seldom achieved in areas designated for agricultural use and natural resource uses.

Connecting Schools and Neighborhoods

School districts play a role in neighborhood design. Successful school and neighborhood integration strategies include: ^[11]

- Acquiring and land-banking future school sites within communities before they are needed;
- Removal of barriers such as fences around school athletic fields. If fences are required due to security issues, include gates so that residents can have access to the school and associated facilities;
- Building and extending sidewalks, trails, and bike paths to connect neighborhoods to schools;

- Managing bus and auto movements so that they do not create safety conflicts with pedestrians and bicyclists;
- Designing on-site parking so as not to create a barrier for pedestrians to the main entrances to schools;
- Re-engineering nearby intersections and street crossings and rebuilding inadequate sidewalks to promote safe pedestrian access to and from schools.

-
- 1 Stein, C. The writings of Clarence S. Stein: Architect of the planned community. The Johns Hopkins University Press, Baltimore, MD. 1998.
 2. Perry C. "The Neighborhood Unit" in the Regional Plan of New York and Its Environs, vol. 7, Neighborhood and Community Planning. 1929.
 - 3 Council of Educational Facility Planners International and U.S. Environmental Protection Agency, 2004. "Schools for Successful Communities: An Element of Smart Growth." September 2004.
 - 4 Blank, Martin J., Atelia Melaville and Bela P Shaw. "Making the Difference: Research and Practice in Community Schools. Washington, D.C.: Coalition for Community Schools. May 2003.
 - 5 Blank, et. al.
 - 6 Council of Educational Facility Planners International and U.S. Environmental Protection Agency, 2004. "Schools for Successful Communities: An Element of Smart Growth." September.
 - 7 The Oregon Transportation and Growth Management Program, Planning For Schools & Livable communities: The Oregon School Siting Handbook. 2004.
 - 8 Montgomery County Public Schools
 - 9 Hylton, et al.
 - 10 Maine State Planning Office. "My School is a Smart Growth Honor School: State School Construction Policy." Presentation, October 9, 2003.
 - 11 The Oregon Transportation and Growth Management Program, Planning For Schools & Livable communities: The Oregon School Siting Handbook.2004.

Chapter Five

Co-Location and Shared Use of School Facilities

Community-centered schools are creative schools where innovation and multiple uses thrive. The "economies of scale" that can be obtained from joint use of public school facilities are too large to ignore and a number of Maryland counties have adopted these shared-use practices. The same taxpayer dollars that support school construction can bring benefits to the community from the portion of the project that meets specific community needs. This is both fiscally responsible public sector decision-making and wise community planning.

The concept: Co-locate the school with a public library, fine arts center, senior center, community college branch, soccer stadium, public park, museum, or health clinic. Share one highly efficient building by putting public services together gaining cost savings for all agencies involved. Co-location increases public use of underused public facilities during evenings and weekends. The most compelling feature is that co-location can be financially rewarding and can result in collaboration among agencies that may be competitors in the governmental budgetary process.[1] Even more compelling are the mutual benefits that can be achieved by students and community residents through having facilities available that they wouldn't normally use, such as a middle school with a community-use gym or an elementary school with a full-court basketball



facility. The Stafford Learning Village in Stafford County, VA includes the co-location of a high school, an elementary school, elderly housing, a university building, and a YMCA. There are educational synergies between the schools and other functions as well as a significant savings in site development. <http://www.ncppp.org/cases/stafford.shtml> ^[1]

Public school districts do not have unlimited resources and have a list of projects in their CIP that far exceeds current funding capabilities. Similarly, other agencies and departments have capital projects to support their specific program requirements. In localities across Maryland, different government agencies work and plan independently, but collaboration among agencies should be promoted where co-location and sharing of facilities at public schools can more effectively deliver services. Cost savings can be realized by both entities when there is shared-use of a school facility. Savings include site acquisition costs, design fees, construction or renovation costs, operating expenses, and maintenance costs that can be achieved through co-location and shared use of school facilities.

Case Study

In 1952 Baltimore County pioneered the concept of the dual use school-recreation center. Over the past half century this approach has proven to be both effective and economical in providing the citizens of Baltimore County with an exemplary system of facilities for both education and recreation.

The Department of Recreation and Parks contributes to the acquisition and development of school-recreation center sites and shares in the maintenance and repair of the facilities. As a result of this joint effort, Baltimore County residents benefit by minimizing tax expenditures and maximizing the service delivery system for both education and recreation.

We are a nation of communities... a brilliant diversity spread like stars, like a thousand points of light in a broad and peaceful sky.
--George H.W. Bush

Creativity is essential in developing viable shared-use and co-location opportunities. Community-centered schools can fulfill multiple community needs including recreation, health and human services, libraries, social services, and other neighborhood-oriented services.

Some Maryland jurisdictions actively pursue cooperative arrangements for shared-use of park and athletic facilities adjacent to schools. In Montgomery County, several thousand acres of parkland are shared with public schools providing elementary, middle and high school children with quality playing fields and playgrounds.

Recognizing that shared-use is important both for budgetary reasons and to co-locate public uses, Maryland's school districts are encouraged to fully examine the many opportunities for developing shared-use of public school facilities. These include leasing.

Case Study ^[2]

In 1999, Natomas, California, needed a high school, a library, community college space, and a regional park. Carol Shearly, then a planner for the nearby city of Sacramento, proposed developing a community "power center" by leasing one community complex to four different entities: a public school in the daytime, the community college at night, a public library, and a regional park. She said this was a way to bring all of the educational needs together on one campus, saving land, public dollars, and enhancing services. These all were proposed to be located on the same 150-acre campus.

Shearly was promoted to Natomas manager. She, the School Superintendent, the Library Director, and the local community college President met every Monday morning at a local Starbucks. They created the Natomas Town Center consisting of a 2,000-pupil high school, a community college, a joint-use public library for the school, college, and community, all surrounded by a regional park.

The result was one highly efficient building that placed all the public services together, with a cost savings for the agencies involved. It also provided an increase in public use for the high school which is usually one of the most underused types of public facilities.

Some Maryland jurisdictions actively pursue cooperative arrangements for shared use of park and athletic facilities adjacent to schools. In Montgomery County, several thousand acres of parkland are shared with public schools. These provide elementary, middle and high school children with quality playing fields and playgrounds. Park and recreational area sharing can be more aggressively pursued by other Maryland school facility planners and local school boards.

Case Studies

Shared Use of Adjacent Parks and Athletic Facilities in Montgomery County: Piney Branch Elementary School and Wood Acres Elementary School.

Piney Branch Elementary School

Constructed 1973; 99,706 sq.ft. site. SRC-562; 9/30/06 Enrollment: 478. Nearby recreational area owned by the Maryland-National Capital Park and Planning Commission (M-NCPPC). See *map on page 33*

Wood Acres Elementary School

Constructed 1952/Complete Renovation 1975; 73,138 sq.ft. site. SRC-545; 9/30/06 Enrollment: 613. Adjacent recreational area owned by M-NCPPC. See *map on page 34*

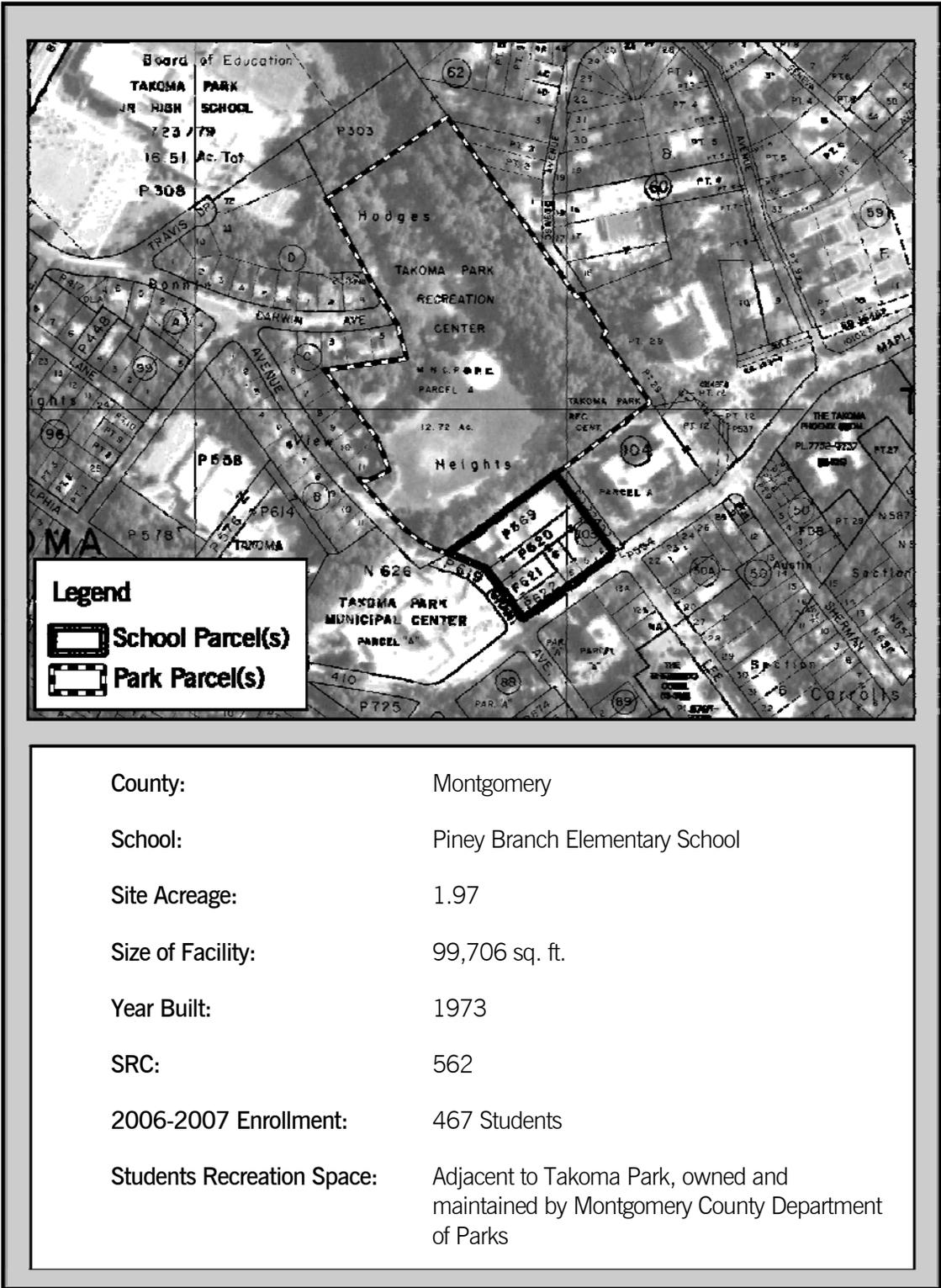
To be effective, the square footage allocation for shared community use needs to be flexible to allow more space to be dedicated for non-school related community uses in larger school facilities. While 3,000 sq.ft. for community use space may be appropriate for an elementary school, additional community use space should be considered for middle

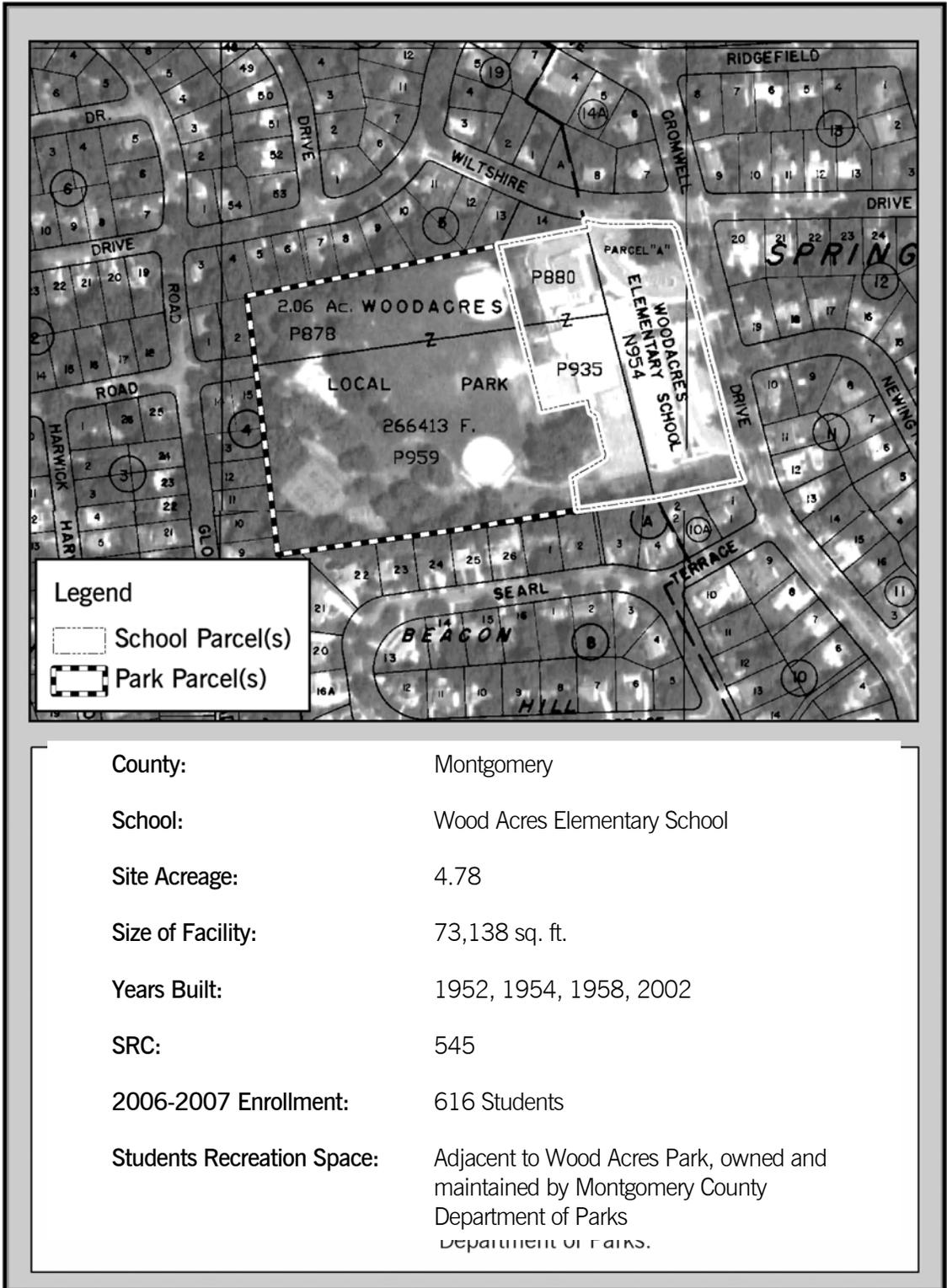


schools and high schools. It is recommended that a sliding scale based on the total amount of space in a school should be considered by the State to encourage quality co-location of community uses in Maryland schools.

It is important for counties and municipalities to plan early to incorporate shared use of facilities and perform cost comparisons. Shared-use and co-location concepts apply equally to new construction, additions, building renovations, and to adaptive reuse of existing structures.

-
- 1 Steve Donnelly, AICP, *A Toolkit for Tomorrow's Schools: New ways of bringing growth management and school planning together*. October 2003.
 - 2 Dr. Phillip E. Geiger, Ph.D. *School Planning & Management. Natomas Superintendent Seizes Opportunity Thinks Outside the Box*. June 2003





County:	Montgomery
School:	Wood Acres Elementary School
Site Acreage:	4.78
Size of Facility:	73,138 sq. ft.
Years Built:	1952, 1954, 1958, 2002
SRC:	545
2006-2007 Enrollment:	616 Students
Students Recreation Space:	Adjacent to Wood Acres Park, owned and maintained by Montgomery County Department of Parks.



Chapter Six

School Transportation: Choices, Costs and Energy Efficiency



Energy efficiency associated with schools is an area of increasing interest to Maryland. Energy efficiency includes building and design as well as energy associated with school-related transport over the functional lifetime of a school facility. The costs associated with transporting students and the number of miles that school buses can be expected to travel to serve a school are also factors that should be considered during the planning of locations of new school facilities as they have consequences for local governments and for taxpayers.

Schools that provide a greater range of transportation choices, particularly walking and bicycling, reduce energy consumption, lower the transportation costs incurred by public school systems, reduce air emission impacts, and also reduce the amount of parking lot pavement on site which provides water quality benefits. An additional factor is that schools usually generate the most vehicular traffic during the morning peak rush period adding to traffic congestion.

School siting significantly impacts the transportation network. For instance, a newer school that holds 2600 students can generate approximately 6000 vehicle trips per day. In Maine between 1970 and 1995, school busing costs rose from \$8.7 million to over \$54 million. Much of this is associated with changing land use patterns as well as a move away from neighborhood schools. ^[1] School siting policies have major impacts on public school budgets because of the busing required.

School Transportation Choices

A balanced transportation system that incorporates a variety of travel options including auto, bus, transit, walking, and biking, and that is supported by land use patterns, increases the transportation choices available to students.

An Environmental Protection Agency study of the relationships between school location, the built environment, transportation choices for trips to school, and air emissions resulted in the following findings: ^[2]

1. The proximity of schools to students matters. Those with shorter walk and bike times to or from school are more likely to walk or bike.
2. The built environment influences travel choices. Students traveling through higher-quality environments which feature residences, street front businesses, and sidewalks and multi-purpose trails that connect to schools are more likely to bike or walk. Built environments that are predominantly auto-oriented and feature large parking lots or areas lacking pedestrian amenities are unlikely to have students who bike or walk to school.
3. Because of travel behavior differences, school location has an impact on air emissions. Centrally located schools that can be reached by walking and bicycling reduce air pollution.

The study results suggested that actions to support student walking environments and neighborhood schools will result in increases in student walking and biking to school. As stated previously, school location research indicates that the proportion of arterials and collectors with sidewalks proved to have the most significant impact on walking to and from schools. ^[3]

School Transportation Costs

A 2007 study of growth rates in school busing and its costs in Maryland by 1000 Friends of Maryland indicated a trend toward more dispersed growth patterns and a shift of focus away from community-centered schools in several jurisdictions. ^[4] The report found that from 1992 to 2006, the total number of miles traveled by all county school buses in Maryland increased by 25%. In 2006, school buses in Maryland traveled over 117.2 million miles. This represents a 23 million mile increase over 1996. The report highlights that decisions related to school location can reduce the rate of increase in local school busing and related costs and that the encouragement of walking and bicycling to and from schools is an option that deserves more policy focus in Maryland communities.



Peripherally located sprawl schools incur higher transportation costs. Trends in school busing costs are an energy efficiency indicator as well as an indicator of growth trends. For energy conservation as well as good air quality, it is important for Maryland to seek reductions in growth rates in student busing costs. A consistent rise in busing and energy costs should be examined thoroughly and addressed by building in more transportation choices into

school facility planning and local land use planning processes. It is recommended that school systems survey student travel patterns (mode shares) and travel costs to and from public schools in each Maryland jurisdiction. Surveys in consecutive years should indicate where additional costs are incurred and specific actions should be considered by School Boards to minimize the rates of increase in student-related transportation costs.

Energy efficiency isn't just a free lunch, it's a lunch you are paid to eat.
– Amory Lovins

Energy Efficiency in School Transportation

Like it or not, taxpayer dollars that support school construction projects will be called on throughout the life of the building to meet transportation costs associated with the school. Increases in fuel costs for student-related travel call for new ways to address student transportation.

A variety of sustainable long-term solutions can be considered to reduce the rate of growth in school transportation costs and to improve transportation-related energy efficiency. Strategies include a combination of design and technological innovations such as use of hybrid-electric or CNG buses, community-centered school design, Safe Routes to Schools programs, and sidewalk installation within one mile of school sites or other approaches. It is important to address school transportation early in the school planning process in order to manage energy costs.

Again, it is recommended that a survey of student travel patterns (mode shares) and travel costs to and from public schools be conducted in each jurisdiction in Maryland. A variety of approaches should be considered by Maryland School Boards to improve energy efficiency and decrease transportation costs in public school transportation. Among these: community-centered school siting and design; increased use of sidewalks and trail systems to serve schools; better reliance on public transit for teachers, staff and students; and stepped up development of Safe Routes to Schools programs. All are strongly recommended and encouraged in school districts throughout Maryland.

-
- 1 Maine State Planning Office. "Making Schools Important to Neighborhoods Again: A Joint Report of the State Board of Education and the State Planning Office." May 2001.
 - 2 Ewing, Reid. "Travel and Environmental Implications of School Siting." U.S. Environmental Protection Agency. October 2003.
 - 3 Ewing, Reid; William Schroyer; and William Greene. "School Location and Student Travel: Analysis of Factors Affecting Mode Choice."
 - 4 1000 Friends of Maryland. "Yellow School Bus Blues." October 2007.



Chapter Seven

Integration of School Facility Planning and Community Planning

Public Schools are the most expensive and complex service provided by local governments in Maryland. Unfortunately, there is an occasional disconnect between school planning and local growth management planning. It is imperative to fully coordinate the school planning, enrollment projection, land banking, budgetary, and smart growth functions among the separate agencies that have control of them.



Decades of discrete school facility planning and land use planning have resulted in a "silo oriented" approach where there is often only minimal coordination between the separate government programs. Only a handful of county planning departments work with county educational facility planners to acquire and "bank" future school sites, work together on a bi-weekly or monthly basis to coordinate demographic projections, or achieve concurrence between school capacity and growth management plans or capital improvement plan (CIP) funding to address Adequate Public Facility Ordinance (APFO) moratoria.

***Insanity: Doing the same thing over and over again and expecting different results.
– Albert Einstein***

In many cases there is only minimal coordination between the staffs of county planning and zoning departments and county boards of education on matters pertaining to public schools, APFO's and growth management. Land banking for future school sites is often an afterthought or not performed at all by county and municipal planning and zoning departments. The result is that school sites are purchased on an "as needed" basis, usually at considerably more expense than through a well coordinated land banking process where a site can be obtained and held (banked) for ten or 15 years before the site is needed for a school. Development proffers of future school sites during annexation and subdivision processes should be pursued. Special attention should be made so that school site development proffers are centrally located and suitable for buildings.

Likewise, coordination of CIP requests between public schools and other public agencies often appears to be disassociated. The opportunity for co-location of schools with other public services is not often pursued since different CIP processes operate for public schools and other public agencies. Coordination of school siting, APFOs, land banking, and co-location of public uses needs to be fully addressed in many Maryland counties. Through better collaboration between public school agencies and county planning and zoning departments it is possible to share CIP review and oversight by both agencies as well as perform land banking for future school sites and achieve adopted growth management goals.

In some Maryland counties, non-coordinated approaches to school location and growth management has had noticeable effects on land use. The result has been APFO development moratoria that have halted residential development in areas planned for growth, thereby encouraging low density residential development in designated agricultural and resource conservation areas.

Often, this lack of coordination is magnified between county educational facility planners and municipal officials where there may be only minimal or vary rare discussions related to school needs and school siting in the municipality.

It is vitally important that municipalities and school planners work hand in hand so that annexations and approved municipal subdivisions include school site reservations as well as land banking of future school sites.

School facility planning and community planning/growth management are not separate disciplines. Where they are done well, school planning and local planning officials actually plan together to locate schools are located where population growth is planned and will occur in a jurisdiction. There is a joint effort to develop local growth plans and school capital budget requests that are consistent with growth shown in local comprehensive plans.



Lack of coordination among agencies should be addressed. It is important for school boards and county planning departments to work cooperatively and aggressively in the acquisition and banking of potential school sites in and around existing and planned neighborhoods. Land banking should be coordinated with the planning efforts for communities as found in local sector plans within counties. It is essential that municipal planning officials be involved in the school site banking process with county agencies. Land banking for school sites

should be programmed and sites acquired a decade before they are actually needed, otherwise site costs escalate and add to the costs of schools.

An integrated school and growth management process should involve common agency planning efforts. This should involve agency collaboration to curtail APFO moratoria with capacity investments in APFO impact areas, common population/household projections and enrollment projections, common land banking of future sites, and common funding strategies among different public agencies.

The future could be better schools, better communities, better cost management practices, and improved linkages between schools and the residents of the communities they serve.

It should be noted that planning for services such as parks and recreation, senior citizen outreach, transportation, health care, and library services often take place in different agencies resulting in additional silo effects. These separate plans and budget decisions should be better coordinated with the decisions to renovate, add to or build a new school facility. School planning should not be isolated from these other public planning and budgetary processes. Coordination can result in co-location and cost sharing between agencies and these can produce efficiencies across many layers of government. Such coordination has been shown to improve the efficiency and the effectiveness of the expenditure of taxpayer funds while providing benefits for a broader cross-section of the residents of a community. ^[1]

Case Study

Florida School Planning and Coordination: School Concurrency ^[2]

Legislation enacted by the 2005 Florida Legislature (Senate Bill 360, Laws of Florida 2005-290) mandates a comprehensive focus on school planning by requiring local governments and school boards to adopt a school concurrency system. School concurrency ensures coordination between local governments and school boards in planning and permitting developments that affect school capacity and utilization rates.

With the passage of Senate Bill 360, school facilities concurrency is no longer optional in Florida. To implement school concurrency, local governments and school boards are required to:

- Update existing public school interlocal agreements and the Intergovernmental Coordination Element to include coordinated procedures for implementing school concurrency;
- Adopt a Public School Facilities Element (P.S.F.E.) into the comprehensive plan;
- Adopt level-of-service (L.O.S.) standards to establish maximum permissible school utilization rates relative to capacity, and include L.O.S. standards in an amended Capital Improvements Element of the comprehensive plan and in the updated interlocal agreement;
- Establish a financially feasible Public School Capital Facilities Program and include this program in an amended Capital Improvements Element of the comprehensive plan;
- Establish proportionate-share mitigation methodology and options to be included in the P.S.F.E. and the interlocal agreement;
- Establish public school Concurrency Service Areas (C.S.A.s) to define the geographic boundaries of school concurrency, and include the C.S.A.s in the updated interlocal agreement and in the supporting data and analysis for the comprehensive plan.

Failure to adopt the Public School Facilities Element, to enter into an approved interlocal agreement, or to amend the comprehensive plan as necessary to implement school concurrency will subject the local government to prohibition from adopting comprehensive plan amendments that increase residential density, and will subject a school board to withholding of funds equivalent to the available funds for school construction.

Faced with complex school capacity, educational requirement, enrollment projection, and local growth management issues, Maryland public schools are undergoing changes that undermine old ways of doing business and open new opportunities for collaborative planning with other public agencies. Quality education, cost savings in the public sector, energy conservation, wise-use of transportation, improvement of public health and safety, and enhancement of neighborhoods go hand in hand.

The location of a school contributes a great deal to the life of communities. The availability of parks, libraries, recreation areas as well as sidewalk networks, bike lanes and public transit leads to vibrant and successful schools and active community environments. The energy efficiencies to be obtained from community-centered schools, LEED schools and the availability of transportation choices are shown to be beneficial and economically wise. These are smart uses of local and State resources and funding that enhance Maryland communities.

-
- 1 National Trust for Historic Preservation. "Recommended Policies for Public School Facilities." May 2005.
 - 2 Florida Department of Community Affairs. Division of Community Planning. School Planning and Coordination.

A Community-Centered Approach to School Planning, Location and Construction in Maryland

The following is a public schools location planning scenario for the fictional Warfield County, Maryland. It is based upon concepts discussed in the preceding chapters. The scenario describes a location process for a future middle school outlining recommended steps, coordination and cost sharing strategies, and additional elements to be considered in the school site location process.

This is followed by a recommended model for analysis, design, cost sharing, reinvestment, renovation and construction of community-centered and Green/high performance/energy efficient schools in Maryland.

Children are the world's most valuable resource and its best hope for the future.
– John F. Kennedy

Scenario

Warfield County is an emerging growth county in Maryland with a 2007 population of 176,380. The County is projected to grow to 184,100 by 2010. There are four municipalities in Warfield County: Harrington, the county seat with a population of 17,500; McKeldin, population 7,221; Lowndes, population 3,341; and Bradford, population 5,800. There are several unincorporated townships in the County. Primarily agricultural in land use, Warfield County has experienced moderate growth pressures typical of Central Maryland and will continue to do so through 2030. County 2007 population projections indicate an estimated population growth of 74,500 between the year 2000 and 2030.

Retaining viable agricultural and farming base industries is a priority in Warfield County. The county has been a leader in agricultural and resource protection through the use of restrictive zoning (1 dwelling unit per 20 acres) and through effective use of State and local agricultural easement programs.

In 1999, Warfield County adopted a Countywide Comprehensive Plan that focuses development in incorporated towns and the adjoining designated Growth Area surrounding unincorporated communities. This comprehensive plan contains language addressing the need for investments to maintain adequate public facilities in the municipalities and the unincorporated communities in the county in order for residential development to be directed to these planned growth areas.

The adopted 1999 comprehensive plan took a proactive stance to conserve the agricultural resources and protect the heritage of rural communities within Warfield County. The County's community preservation policies for the smaller unincorporated rural villages have received state and national attention. This is a result of quality land use planning policies involving a mixture of historic and agricultural easements allowing for new development complimenting the historic character of the villages and communities. Schools are integrated into the fabric of these communities.

Similarly, considerable efforts have been made by Warfield County to integrate the County Comprehensive Plan with the adopted land use plans of the municipalities of Harrington, McKeldin, Lowndes, and Bradford. Consistency between the adopted comprehensive plans, growth boundaries and water/sewerage service areas is a priority in Warfield County.

To a great extent, these planning goals are being achieved.

Goals of the Adopted Warfield Countywide Comprehensive Plan

- I. Provide Quality Growth Management Practices in Warfield County
- II. Conserve the County's Agricultural and Cultural Heritage Resources
- III. Provide a Quality Living Environment for All Citizens
- IV. Direct Development Toward Existing and Planned Communities
- V. Provide Quality Public Infrastructure in Existing and Planned Communities that Meets Future Needs in Warfield County
- VI. Promote Economic Balance, Diversity and Sustainability in Warfield County

County Population Trends

	1990	2000	2005	2010	2015	2020	2025	2030
Warfield County	121,472	151,007	169,150	184,106	192,900	202,075	214,200	225,500

Per the 2000 Census, 74% of housing units in Warfield County were single-family detached dwelling units. Single family attached units made up 14% and multi-family units made up 12% of the housing stock. Nearly 70% of the single family attached and multifamily housing is located within the incorporated municipalities.

Warfield County Public Schools

The Warfield County Public Schools currently administrate over 40 public schools consisting of elementary, middle, and high schools; along with a career and technology center and special needs facilities for a growing population.

Since the 1990's Warfield County public schools have consistently achieved high educational standards. This is the result of the development of high quality educational curricula and two decades of substantial investments in staff, facilities and program development in the County.

Substantial educational achievement in Warfield County Schools has been good for the County, although it has been a double-edged sword. The high academic performance of Warfield County schools has gradually drawn new residents from the Washington and Baltimore metropolitan areas. The reputation for high academic achievement has resulted in the need for additional school capacity to meet burgeoning demand from new residents.

Over the past two decades, school facility planning in Warfield County has become more technically sophisticated to meet increased residential demand and the resulting need for newer and more advanced school facilities. This has placed many demands on a burdened facility planning staff to keep up with enrollment projections and demand, often in diverse areas of the County.

One shortcoming involves the acquisition and banking of future school sites. For reasons that were unforeseen two decades ago, County Public Schools and County Planning were not able to meet the growing demand for new school sites. Increasingly, the County began to rely on the developer dedication process for new schools rather than the acquisition of sites in existing communities. The increase in acreage requirements and the costs involved in the acquisition and banking of prospective school sites has led to a process where public schools are located on the periphery of communities in areas to be annexed or developed in the future.

Warfield County also has a legacy of existing school structures that were located many decades ago in areas between incorporated towns. There were two high school facilities that were originally intended to meet demand from municipalities which had only slight

growth at the time. The areas where they were located were entirely farming areas located away from the municipalities. Over time, with several additions and renovations, these public school enclaves have spawned some unplanned low-density residential land use changes. This process involved several three and four lot subdivision of agricultural remainder properties from larger farms. They came about through remaining agricultural development rights, large lot household location choices, individual homebuilder decisions, and pressures on local planning commissions to acquiesce to rural subdivision pressure.

These areas consist of scattered large lot homes and an occasional rezoned lot for a non-agricultural business within a mile of the school enclave. Every few years, there have been requests for public water service to be extended to one of these agricultural school enclave areas to address the issue of failing septic systems or well inadequacy. Up to now, these requests have not met with approval by the County since these areas were not planned for growth.

School System Goals and Facility Objectives

The Educational Facility Master Plan outlines the following System Goals and Facility Planning Objectives.

System Goals

- Ensure success for every student in Warfield County
- Provide effective instructional programs to achieve academic growth
- Strengthen public partnerships for education
- Create a positive and sustainable work environment
- Provide high quality business partnerships that are essential to educational success



Facility Planning Objectives

- Implement facility plans that support the continuous improvement of educational programs in the school system
- Meet long term and interim capacity needs
- Modernize schools through an effective master plan and capital improvement program
- Provide schools that are environmentally safe, secure, functionally efficient, and that promote academic achievement
- Provide access to modern information technologies
- Support partnerships for multipurpose use of schools
- Meet a variety of special education space needs

Warfield County retains an inventory of newer and older schools with some structures that date back over 60 years. Larger municipalities retained schools during a period of school consolidation. The policy at that time was to close several older schools within municipalities and non-incorporated towns in favor of construction of larger schools with added capacity on larger acreage sites. Additionally, efforts were made beginning in the 1970's to locate some school facilities to campus locations outside of communities to address growing population needs in outlying areas that were undergoing conversion to rural subdivision, low-density types of residential development.

In general, the acreage associated with newer schools in Warfield County exceeds that associated with schools constructed prior to the 1970's.

Enrollment Projections: Total Public School Enrollment Grades K-12 for Warfield County

2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
28,507	28,502	28,490	28,501	28,520	28,550	28,670	28,810	29,080	29,380	29,820

Public school enrollment projections indicate growth of 1,313 students (K-12) between 2005 and 2010. The Warfield County Public Schools Educational Facility Master Plan details school capacities and enrollments in clusters by planning zones. School capacities and projected enrollments and efforts are made to address projected capacity issues within zones.

Site for a New Middle School

Warfield Public Schools currently operates nine middle schools. The Facility Needs Summary indicated that five middle schools currently exceed 110% rated capacity and two others are projected to exceed capacity within five years. The Educational Facility Master Plan for Warfield County Public Schools calls for construction of a new middle school in an upcoming budget year to relieve capacity in or near to Planning Zone 3. The current Educational Facility Master Plan anticipates the opening of the middle school within five years. The County's proposed Capital Improvements Plan lists "New Middle School — Zone 3" in the top five priorities of Warfield County Public Schools. Zone 3 covers a broad area including approximately one-fifth of the land area of the County, including the Town of McKeldin.



In the site location process, Warfield County Public Schools appointed a School Site Selection Team to conduct a thorough site search involving over a half dozen prospective middle school sites. A set of site selection criteria was used to analyze prospective middle school sites, including land costs, other pertinent factors involving land use, energy efficiency, cost sharing, distance from other public facilities, availability for adaptive reuse of existing structures, possibility of Green/high performance school design, transportation usage and costs. Additionally, the School Site Selection Team considered overall

countywide planning goals.

The School Site Selection Team reduced the list to three prospective middle school sites, including: a community location within the Town of McKeldin, from which former farm-related businesses have relocated; a suburban site in an area proposed for future annexation to the Town of McKeldin; and a site several miles outside of McKeldin located in an agricultural area adjacent to a high school that was constructed in the 1960's.

The School Board and County Commissioners, meeting jointly, requested additional study of the three prospective middle school sites prior to a final recommendation from the County Public Schools.

Prospective Sites: New Middle School – Zone 3

Site Number 1

Existing site in the Town of McKeldin consisting of two adjacent properties: A 7.3 acre former commercial site with an existing structure and a 2.6 acre adjacent city park site.

Site Number 2

Proposed school site to be dedicated in a planned annexation proposal to the Town of McKeldin. The proposed 32-acre site is predominantly open with two abandoned agricultural buildings.

Site Number 3

Existing acreage adjacent to an existing elementary school and high school located near a crossroads of state highways approximately seven miles from McKeldin. The site is currently a farm and is used for a variety of crops since conversion from a dairy farm two decades ago.

Warfield County Site Analysis: New Middle School – Zone 3

	Site Number 1 Urban	Site Number 2 Suburban	Site Number 3 Rural
Size of Site	10 acres	32 acres	45+ acres
Public Water Service	Existing Service	Future Service	No
Public Sewer Service	Existing Service	Future Service	No
Comprehensive Plan Designation	Community Growth Area	Future Annexation Area	Agriculture
Priority Funding Area	Yes	No	No
Estimated Site Costs	\$1.2 million	Proposed Site Donation Through Annexation and Subdivision	\$750,000
Residential Density within one mile	Six dwelling units per acre	Proposed for 3.5 dwelling units per acre	One dwelling unit per 20 acres
Ratio of Proposed Building and Developed Grounds	1:2	1:6	1:9
Distance from Parks/Recreation Areas	Adjacent to site	Proposed Community Park as an Annexation Condition	Regional Park within two miles
Fire and Rescue Service	Within One Mile	Within Three Miles	Within Five Miles
Public Library	Within four blocks of site	Within three miles of site	Within six miles of site
Sidewalks within one mile radius	On all existing roads	To be a condition of Annexation and Site Approval	None Proposed
Bicycle Lanes & Multipurpose Trails within two mile radius	No existing bike lanes – State Highway has Bicycle Route Signage	None yet proposed	One nearby State Highway has Bicycle Route Signage and wide asphalt shoulders
Accessibility for Safe Routes to Schools Program	Highly Accessible	Can be Designed to be Moderately Accessible	Not Safely Accessible
Availability of Public Bus or Other Transit Service	Bus stop within one block of the site	Not yet available	None proposed
Possibility for Co-Location and Community Joint	Possible Performing Arts Complex	Possible Technology Center Agreement with	Possible Soccer Field Complex Agreement with County Parks and

	Site Number 1 Urban	Site Number 2 Suburban	Site Number 3 Rural
Use at Site	Agreement with County Library	Community College	Recreation
Possibility for Adaptive Reuse of Historic Structures or Resources	Existing Commercial Buildings on Site to Be Explored for Adaptive Reuse	Existing Agricultural Outbuildings on Site to be Explored for Adaptive Reuse	Presently Cropland. No Existing Buildings on Site.
School Capacity Will Address an Identified APFO Need for Additional School Capacity in a Planned Growth Area.	Yes	No	No
Commercial establishments within one mile	12	A proposed strip shopping center	One Service Station/Convenience Store
Estimated Percentage of Students to be Transported by School Bus to Site Within Three Years of Operation	45%	75%	90%
Estimated Percentage Increase or Decrease to Overall County School Bus Transportation Expenditures Within Three Years of Operation	1%	3%	5%

The School Site Selection Team conducted a full analysis of the three proposed sites and recommended the following:

1. Proposed Site No. 3, the 45-acre rural site should be removed from future consideration as a result of poor performance in nearly all recommended site criteria. Its lack of water/sewer availability, distance from parks and public amenities, overly large ratio of buildings to developed land, lack of walkable access, and the increase in school related transportation costs were noted.
2. Proposed Site No. 1, The 9.9-acre urban school and park site should be considered and contracted for land acquisition for the middle school site. The Selection Team noted the current availability of public services, density of existing residential neighborhoods, sidewalk connectivity, ratio of proposed buildings to developed site, availability of public bus service, possibility of adaptive reuse of historic structures on site, suitability of site for cost sharing/co-location agreement with Public Library, student public health benefits, and lower future transportation

costs which will offset upfront land costs associated with Site No. 1 within eight years. The Selection Team also noted that the adopted comprehensive plan for the Town of McKeldin recommends location of the future middle school within the corporate limits of the Town. The Team noted that additional middle school capacity in McKeldin will address an APFO school issue that has recently halted the approval of new residential subdivisions within the Town. The Study Teams recommendations also discussed the many public comments in support of site No. 1 from neighborhood residents and from the Warfield County Public Library.

Additionally, they noted that the Warfield County Public Health Department agreed to co-sponsor a Safe Routes to Schools program for the future middle school and agreed to match funding from the Maryland State Highway Administration to establish and continue this public health endeavor in the Town of McKeldin.

3. Proposed Site No. 2, the 32-acre suburban site should be contracted as a backup site to Site No. 1. The site is located within a proposed annexation area, proposed for water and sewer and PFA designation, will be located within residential neighborhoods, and is suitable for co-location of a technology center with Warfield County Community College. It may have potential for a future Safe Routes to Schools program provided that the inclusion of sidewalks and trails will be the prerequisite of annexation and subdivision approvals. The lower cost for the site will be offset by the increase in future school bus transportation costs associated with the suburban oriented site.

The Warfield County Commissioners, jointly with the Warfield County Public Schools, Warfield County Department of Planning and Zoning, and the Town of McKeldin Town Council and Planning Commission made a formal request to the Maryland Department of Planning, the Interagency Committee for School Construction and the Maryland Board of Public Works for Site Planning Approval for Site No. 1 located in the Town of McKeldin.

Creating more neighborhood schools ... makes sense from a learning standpoint, an economic standpoint, and it makes sense if you want to have schools that are part of a community's fabric as opposed to part of its sprawl.
– Governor Mark Sanford, South Carolina

Model

The model outlines a process and lists recommended criteria to be used in the school site selection process to achieve optimal use of public funding in the selection of school sites and the construction of school facilities for academic excellence for our children and for the future of Maryland's communities.

A key decision that all LEAs must make involves school site selection. School site selection should be evaluated on both the present characteristics and the future characteristics of a site and its surrounding land uses. A variety of factors should be included as criteria for school site locations. These are described below.

School site selection involves many factors including location, public health, safety, size and cost. Other factors that should be examined are: current and future energy efficiency, potential for co-location and cost sharing, availability of water and sewer, PFA status, pedestrian accessibility, transportation costs and choices, compatibility with adopted comprehensive plans, and current or proposed residential density in nearby communities.

In jurisdictions with adopted Adequate Public Facility Ordinance (APFO) regulations, Public School Capital Improvement Programs (CIPs) should direct new schools and additional school capacity to planned growth areas that are currently undergoing residential development moratoria related to lack of school capacity or that are projected to experience school capacity related APFO development moratoria within three (3) years. Addressing APFO school capacity moratoria within planned growth areas should be a priority for local governments and School Boards.

The Maryland Department of Planning encourages all public agencies, including School Boards, to avoid acquiring land that is designated in the locally adopted comprehensive plan for agricultural use or that is outside of current or proposed water and sewer service areas.

Site Selection Study Team and Municipal Coordination Process

The Maryland Department of Planning recommends that a School Site Selection Team process be used by all LEAs in Maryland. Additionally, the team should evaluate at least three (3) sites per new school using performance based site criteria. Careful assessment is of utmost importance in the site decision process so it is recommended that meticulous attention be given to all of the recommended criteria in the site alternative evaluation process.

It is important that full coordination be achieved with municipal officials. When the need for additional schools is anticipated through growth or programmatic requirements, school facility planners and Boards of Education should work with municipalities to acquire and bank prospective school sites years in advance of proposed school construction projects. Priority consideration should be given to sites within municipalities in the site selection process.

Public Comment Period

It is also highly recommended that a public comment period of no less than eight weeks be a part of the site selection process and that this be advertised in a manner to reach the broadest spectrum of the general public in the school district and affected communities. This is in order to receive comments from the general public and impacted communities in regard to proposed alternatives and assist in the recommendation of potential sites.



Recommended Screening and Ranking Criteria for Public School Sites

1. Public Water Availability
2. Public Sewerage Availability
3. Local Comprehensive Plan Designation
4. Priority Funding Area Status
5. Suitability of the Site to Support the Educational Program: Usable Size, Configuration, Access
6. Estimated Site Costs
7. Residential Density Within One Mile
8. Ratio of Proposed Buildings to Developed Grounds
9. Distance from Parks/Recreation Areas
10. Distance of Fire and Rescue Service
11. Distance of Public Library
12. Sidewalks within One-Mile Radius
13. Bicycle Lanes & Multipurpose Trails Within Two-Mile Radius
14. Accessibility for Safe Routes to Schools Program
15. Availability of Public Bus or Other Transit Service
16. Possibility for Co-Location and Community Joint Use at Site
17. Possibility for Adaptive Reuse of Historic Structures/Resources

18. More School Capacity Will Address an Identified Adequate Public Facility Ordinance Need for Additional School Capacity in a Planned Growth Area.
19. Commercial Establishments Within Two Miles
20. Estimated Percentage of Students to be Transported by School Bus to Site Within Three Years of Operation
21. Estimated Percentage Increase or Decrease to County School Bus Transportation Costs Within Three Years of Operation

Integration of School Facility Planning and Comprehensive Planning for School Location and Site Acquisition

The land use planning process and the school facility siting process must be effectively integrated in order to achieve results that ensure quality education for children and school facilities located in communities where growth is actually planned. A process such as this must involve common growth management plans, common population projections and enrollment projections, common land banking of future sites, common funding strategies, and possibly common development review bodies. The Maryland Department of Planning highly recommends this interagency approach to school planning.



It is important that proposed school site location and site acquisitions be coordinated years in advance with County planning departments and that they meet growth management goals of local comprehensive plans, including municipal comprehensive plans.

Municipal coordination is of vital importance in public school planning. Sites should be acquired and banked in municipalities years in advance of need. Priority consideration should be given by boards of

education to sites that are located within municipalities for acquisition during the site selection process.

Acquisition and Banking of School Sites

School boards and county and municipal planning departments should work cooperatively and aggressively in the acquisition and banking of potential school sites in and around existing and planned neighborhoods. Land banking must be coordinated with the planning efforts for communities and in local sector plans. It is essential that municipal planning officials be involved in the school site banking process with county agencies. Land banking for school sites should be programmed and sites acquired up to a decade before they are actually needed, otherwise site costs escalate and add to the costs of schools.

Educational Facility Master Plans

It is recommended that local Educational Facility Master Plans (EFMP) be fully reviewed and approved by both County elected officials and local planning departments. Future enrollment projections should coincide with county population forecasts by the county. Certification of the review process and approval by all agencies should accompany the EFMP submission to the State.

Considering the next 10 years, the EFMP should state the LEAs plans for school district attendance areas. What are the County's adopted comprehensive plans for the areas? How are the schools plans and the comprehensive plans consistent? Where are new schools being planned, where is additional capacity being planned and where are major renovations being planned in relation to County comprehensive plans for designated growth areas, areas for resources conservation and future or existing recreation and open space?

The EFMP should also account for school buildings that have been closed due to declining enrollment for their potential reuse as public schools or for non-educational space. This includes buildings that are used for other administrative or central office purposes by the board of Education..

The EFMP should outline a process to reduce future school energy costs through Green/high performance School technologies or other means. It is recommended that a strategy be incorporated in the EFMP addressing building energy efficiency and transportation-related energy efficiency measures at schools. Likewise, the EFMP should also outline a strategy to reduce the rate of growth in bus vehicle miles traveled as well as transportation expenditures associated with school busing.

Capital Improvement Programs

It is recommended that Public Schools Capital Improvement Programs (CIP) address the above site criteria for proposed planning and new construction projects that are recommended in the CIP. Likewise, planning and funding requests for new schools and school capacity additions should be fully linked to the adopted comprehensive plans for the jurisdiction and municipalities. The CIP should identify school capacity projects that remedy APFO needs for additional school capacity in planned growth areas. Also, it is important that the CIP requests be consistent both with the submitted EFMP and with the Goals and Objectives of the adopted comprehensive plans.



The CIP should support EFMP recommendations to reduce future school energy costs through Green/high performance School technologies or through other means.

Conclusion and Recommendations

Capital investments in school construction represent a major challenge and opportunity in Maryland. The community-based benefits to be gained from better planning for facilities are too large to ignore. Community growth areas, PFAs and municipalities are the areas where public infrastructure and facilities exist or are planned and where the majority of students reside. These locations are where public schools have traditionally been located, where they serve a community function and where they are most readily accessible to the residents of the neighborhoods they serve.

Public health concerns related to school location are ignored at the peril of Maryland's children. Schools should be walkable and integrated into existing or planned communities. Walkable Schools and Safe Routes to Schools programs have been shown to encourage physical activity among the students. Maryland's Safe Routes to Schools program provides funding to facilitate projects and activities that improve safety and reduce traffic, fuel consumption and air quality in the vicinity of elementary and middle schools. It is important to increase participation in this program among Maryland's LEA's

Energy efficiency in the construction of new schools is now a requirement for State public school construction funding. Green/high performance building construction practices must now be accounted for in the planning process for future new schools.

Excessively large school sites work counter to the ability to locate new public schools in communities and municipalities. It is important for many reasons to locate schools in neighborhoods and municipalities rather than in isolated locations far from the students served. One Maryland county uses a school site standard of 12 usable acres per elementary school, 20 usable acres per middle school, and 30 usable acres per high school. Similar school site size standards are recommended throughout Maryland. Athletic fields can be co-located and shared with county and municipal parks and recreation agencies to reduce overall size requirements for new school sites. Size inflation can be tied to State capital investments for school construction. This could include an examination of financial incentives for smaller community-oriented school sites. Such a policy change should be explored by the Interagency on School Construction and the Board of Public Works.

Co-location and shared use are strongly encouraged at Maryland's public schools. The opportunities for co-location and cost sharing between schools and other agencies/service deserve additional exploration. In many cases, the cost sharing benefits of co-location can reduce the fiscal impact of service provision. Creativity is important in developing viable shared-use and co-location opportunities at Maryland schools. Community-centered schools can fulfill multiple needs including recreation, health and human services, libraries, social services, and other neighborhood-oriented services. Co-location should be conducted with an awareness of the specific needs of the community, the mutual benefits for the student population and the community. Issues with security and safety can be resolved through careful site design and building practices.

To be effective, the State should examine the square footage allocation for community use with an eye toward additional flexibility to permit more space to be dedicated for non-academic related community uses in larger school facilities, including larger middle and high schools.

Transportation aspects of school location and increased energy costs are ignored at the peril of future operating budgets. Taxpayer dollars that support school construction projects will be called on throughout the life of the building to meet transportation costs associated with it. A survey of student travel patterns and travel costs to and from public schools conducted in each jurisdiction in Maryland is recommended. A variety of approaches should be considered by Maryland School Boards to improve energy efficiency and decrease transportation costs in public school transportation. Among these, community-centered school siting and design; increased use of sidewalks and trail systems to serve

schools; better reliance on public transit for teachers, staff and students; and stepped up development of Safe Routes to Schools programs.

School facility planning and local planning and zoning for growth management are not separate disciplines. An integrated school planning and community planning process must involve coordinated efforts between the staff of Boards of Education and county and municipal planning and zoning departments. Also, local parks and recreation departments should be included in these decision processes.

Agency collaboration is needed for the acquisition and long-term banking of future school sites, for the use of common population/household projections and enrollment projections, and to direct school capacity investments to curtail APFO moratoria in areas planned for residential growth.

In Maryland, local governments are the fiscal authorities for local school systems. Local school boards have no taxing authority of their own. The independence of local school boards from the political winds is one factor that is cited for a separate approach to capital improvement programming from county government. Still, common funding approaches are needed in some jurisdictions to achieve increased coordination between school planning agencies and planning and zoning departments. School funding decisions should support local comprehensive planning efforts. School capacity projects should be directed to existing communities and areas planned for growth.

Capital investments in existing school buildings and expanding capacity in existing facilities through renovations and additions should be emphasized. This is important not just in terms of growth management but also in terms of equity throughout the school system.

Changes in school planning and construction practices offer Maryland an unprecedented opportunity to improve both the quality of schools and their communities while conserving resources and land. To do otherwise is not fiscally prudent over the long term and does not reflect wise community planning, energy management or public health practices.

American Association of State Highway and Transportation Officials. (2004). Guide for the planning, design and operation of pedestrian facilities." (July).

American Association of State Highway and Transportation Officials. (1999). Guide for the development of bicycle facilities.

Beaumont, C. & Pianca, E. (2002). Why Johnny can't walk to school: Historic neighborhood schools in the age of sprawl. National Trust for Historic Preservation. October. Available at: <http://atfiles.org/files/pdf/WalkToSchoolRpt.pdf>

Bingler, S., Quinn, L., & Sullivan, K., (2003) Schools as centers for communities: A citizen's guide for planning and design. U.S. Department of Education. (October). Available at: http://www.edfacilities.org/pubs/scc_publication.pdf

Bingler, S. (2003). Community-based school planning: if not now, when? Edutopia, The George Lucas Educational Foundation (September). Available at: <http://www.edutopia.org/community-based-school-planning-if-not-now-when>

Blank, M., Aetelia M., & Shah, B. (2003). Making the difference: research and practice in community schools. Coalition for Community Schools, Washington, D.C. (May). Available at: <http://www.communityschools.org/mtdhomepage.html>
California Department of Education. (2001). Small School Site Policy (May).

Centers for Disease Control, National Center for Health Statistics. Prevalence of obesity and overweight adults: United States, 1999-2000. Data from National Health and Nutrition Examination Survey 1999-2000. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/16595758>

Council of Educational Facility Planners International and U.S. Environmental Protection Agency, 2004. Schools for successful communities: An element of smart growth. (September). Available at: <http://www.epa.gov/dced/schools.htm>

Della Valle, B. (2003). My school is a smart growth honor school: State school construction policy. Maine State Planning Office Presentation to the State of States Smart Growth Conference. Burlington, VT. (October 9). Available at: <http://www.maine.gov/spo/landuse/techassist/speeches/schools/schools/intex.php>

Donnelly, S. (2003). A toolkit for tomorrow's schools: New ways of bringing growth management and school planning together. American Planning Association. Available at: <http://www.tricc.org/docs/APAschools.pdf>

Dover, Kohl and Partners, & Chael, Cooper, & Associates, PA. (2005) Design guidelines for pedestrian friendly schools. Prepared for the City of Raleigh, NC. Available at: www.raleighnc.gov/publications/Planning/Guides,_Handbooks_and_Manuals/School_Design_Guidelines.pdf

Ewing, R. (2003). Travel and environmental implications of school siting. U.S. Environmental Protection Agency. Available at: http://www.epa.gov/livability/school_travel.htm.

Ewing, R., Schroeder, W. & Greene, W., School location and student travel: Analysis of factors affecting mode choice. Transportation Research Record: Journal of the Transportation Research Board, No. 1895, TRB, National Research Council, Washington, D.C., 2004, pp. 55-63. Available at: http://www.icfi.com/Markets/Transportation/doc_files/school-location.pdf

Federal Highway Administration. (2001). National Household Travel Survey. Available at: <http://nhts.ornl.gov/2001/pub/STT.pdf>

Frumkin, H. , Lawrence, F. & Jackson, R. (2004). Urban sprawl and public health: Designing, planning and building for healthy communities. Washington D.C: Island Press

Gurwit, R., Governing.com (2004). Edge-ucation: What compels communities to build schools in the middle of nowhere? Available at: <http://www.governing.com/textbook/schools.htm>

Hylton, T., (2007). Renovate or replace? The case for restoring or reusing older school buildings. Pennsylvania Department of Education and Pennsylvania School Boards Association. Available at: <http://www.saveourlandssaveourtowns.org/neighborhoodschools.html>

International City/County Management Association, U.S. Environmental Protection Agency and the Smart Growth Network. (2008). Local Governments and Schools: A community-oriented approach." Available at: <http://icma.org/documents/SGNReport.pdf>

Jones & Stokes. (2007) . Summary report. First summit on school planning and siting. December 2006. (J&S 61022.06.) Olympia, WA. Prepared for the Office of the Superintendent of Public Instruction. February. Available at: <http://www.k12.wa.us/SchFacilities/pubdocs/SummitSchoolSitingReportMay2007.pdf>

Kats, G., (2006). Greening of America's schools: Costs and benefits. October. Available at: <http://www.cap-e.com/ewebeditpro/items/O59F12807.pdf>

Levi, J., Gadola, E., & Segal, L., (2007) F as in fat: How obesity policies are failing in America Trust for America's Health, Robert Wood Johnson Foundation. Available at: <http://www.rwjf.org/files/research/fasinfat2007.pdf>

Maine State Planning Office, (2003). My school is a smart growth honor school: State school construction policy. Presentation, (October 9). Available at: <http://www.maine.gov/spo/landuse/techassist/speeches/schools/index.php>

Maine State Planning Office. (2001). Making schools important to neighborhoods again: A joint report of the State Board of Education and the State Planning Office. May. Available at: <http://www.maine.gov/spo/landuse/docs/schoolrpt.pdf>

McCann, B. & Beaumont, C. (2003). Build smart. American School Board Journal. (October) Available at: <http://www.smartgrowthamerica.org/SGA%20School%20Sprawl.pdf>

Michigan Land Use Institute. (2003). Hard lessons: Cases and consequences of Michigan's school construction boom. Beulah, MI. Available at: <http://www.mlui.org/downloads/hardlessons.pdf>

Michigan Land Use Institute. (2004). Michigan's school construction boom: The real costs of new public schools." February. Available at: <http://www.mlui.org/print.asp?fileid=16633>

Morris, M. (2006). Integrating planning and public health: Tools and strategies to create healthy places. American Planning Association, National Association of County and City Health Officials, Planning Advisory Service Report 539/540). October.

Morris, M., (2004). Rethinking community planning and school siting to address the obesity epidemic. American Planning Association. Prepared for the NEIHS Conference on Obesity and the Built Environment: Improving Public Health Through Community Design. May. Available at: <http://www.niehs.nih.gov/news/events/pastmtg/2004/built/docs/overview/morris.pdf>

National Trust for Historic Preservation. (2003). Smart growth schools: A fact sheet. Available at: http://www.preservationnation.org/issues/historic-schools/additional-resources/schools_smartgrowth_facts.pdf

National Trust for Historic Preservation. (2005). Recommended policies for public school facilities. May. Available at: <http://www.21csf.org/csf-home/publications/modelpolicies/SchoolsCentersCommunitiesSectionMay2005.pdf>

- Oregon Planning and Growth Management Program. (2005) Planning for schools and livable communities: The Oregon school siting handbook. June. Available at: <http://www.oregon.gov/LCD/TGM/docs/schoolsitinghandbook.pdf>
- Raker, J. (2004). Grow smart by improving school siting and development on the urban-rural fringe. Newsletter of the Intergovernmental Affairs Division of the American Planning Association. March.
- Srinivasan, S., O'Fallon, L., & Deary, A. (2003). Creating healthy communities, healthy homes, healthy people: Initiating a research agenda on the built environment and public health." American Journal of Public Health. 93: 1446-50. Available at: <http://www.ajph.org/cgi/content/abstract/93/9/1446>
- Surface Transportation Policy Project. (1999). High mileage moms. Washington, D.C. Available at: <http://www.activeliving.org/node/794>
- Stein, C. (1998). The writings of Clarence S. Stein: Architect of the planned community. The Johns Hopkins University Press, Baltimore, MD
- Torma, T., (2005). Planning Commissioners Journal. Back to school for planners. Available at: <http://www.plannersweb.com/wfiles/w179.html>
- Tudor-Locke, C. et al, (2003): Objective physical activity of Filipino youth stratified for commuting mode to school. Medicine & Science in Sports & Exercise 35, no. 3 465-71.
- U.S. Green Buildings Council (2007). LEED For Schools. Available at: <http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1586>
- U.S. Green Building Council. (2007). LEED for schools for new construction and major renovations. Washington, DC. April Available at: http://www.responsiblepurchasing.org/UserFiles/File/LEEDforSchools_2007.pdf
- Vogt, J., (2004) Capital budgeting and finance: A guide for local governments . ICMA, Chicago
- Weihls, J. (2003) School site size: How many acres are necessary? ISSUETRAK. Council of Educational Facilities Planners International.
- 1000 Friends of Maryland. (2007) Yellow school bus blues. October. Available at: <http://www.friendsofmd.org/>





Martin O'Malley, Governor
Anthony G. Brown, Lt. Governor

MDP

Maryland Department of Planning

Richard Eberhart Hall, AICP, Secretary
Matthew J. Power, Deputy Secretary