

## **School Siting in Middle Tennessee**

### Policy Memo

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### **Problem Statement**

The placement of schools or “school siting” is a topic that has received minimal attention within policy communities. School districts across the United States have adopted policies and practices that are widely varied regarding the process of locating or relocating school facilities. The practice of siting schools has implications for the health of America’s children, in the realms of air quality, asthma rates, childhood obesity and the growth and development of communities. Where schools are placed directly influences infrastructure (sidewalks, bike lanes, access to transit) available to children and families in traveling to and from school. Though an increased emphasis has been placed upon so called “smart growth” principles in community planning, little is known about building practices within the realm of school construction. As communities grow and change in respond to demographic shifts, it is important to assess how school districts are implementing smart growth principles in decisions regarding school siting.

Though the topic of school siting has received little coverage in education scholarship, it has received much attention within the field of community planning and at the state policy level. A number of studies have been done, including a 2008 study by Lees and colleagues that looked at specific examples of state policies that have attempted to bridge the gap between city planners and the education system.<sup>1</sup> In Lees’ study of Lee County, Florida we see an example of a state level policy that is, though not without faults, effective in mandating communication between planning authorities and local

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<sup>1</sup> Lees, E., Salvesen, D., & Shay, E. (2008). *Collaborative School Planning and Active Schools: A Case Study of Lee County Florida*. *Journal of Health Politics, Policy and Law*.

school districts. In effect the Florida example shows one particular circumstance where the problem of school siting has been addressed through the use of interlocal agreements and where community planning and education are now in communication. Noreen McDonald has conducted a number of studies on the connection between where schools are built and how that impacts the children's ability for non-motorized transport and the long-term implications upon the health of youth.<sup>2</sup> In McDonald's study on transportation to school from 1969-2001, a marked decline in the number of children walking and biking to and from school is shown. Both Lees' and McDonald's studies express the importance of examining local practices regarding school siting. In the Lees case study we see a situation where intergovernmental communication was lacking and was subsequently improved by way of policy mandating collaboration between community planners and education. In McDonald's study we note the decline in active transport to school exhibiting the need to conduct research on the local level to find out exactly what practices are occurring and how they relate to smart growth.

In examining the issue of school siting there are a number of different policy actors. Of those actors, two are of particular importance: school districts and community planning authorities. Community planning authorities could include individuals in cities and municipalities responsible for transportation, housing, or development decisions. Community planners are individuals who are responsible in large part for developing comprehensive, long range plans for how and by what means communities will respond to demographic shifts. School districts in many senses have the same charge, planning for and addressing changes in student enrollment, staffing patterns and placement of

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<sup>2</sup> McDonald. N. 2007. *Active Transportation to School: Trends Amongst Schoolchildren, 1969-2001*. American Journal of Preventative Medicine, 32(6), 509-515.

schools over the long term. Many school districts also have similar long range plans, as well as committees whose sole purpose is handling the building, renovating or closing of schools. The Council of Educational Facilities Planners International (CEFPI) and the U.S. Environmental Protection Agency (EPA) met in September 2004 to establish guidelines that both policy communities could abide by, including principles such as, locating schools in community centers, taking advantage of compact building designs, investing in walkable communities, making development decisions fair and transparent and encouraging stakeholder collaboration amongst others.<sup>3</sup> Numerous policy documents exist stating a need for those individuals who are planning communities at large and those who are responsible for school development to be in constant communication. In light of such policy recommendations and the dearth of information regarding school siting practices, more systematic research is needed to figure out intergovernmental barriers to communication and the values, attitudes and beliefs of those in charge of making decisions. In the face of policy and scholarship that indicates the best practices and smart growth principles regarding school siting, the lack of contribution on this topic from an education policy perspective and the absence of information about the state of Tennessee, specifically the Metropolitan Nashville region, this policy memo will seek to set forth a few recommendations in the realm of school siting.

### **Brief Review of the Literature**

In examining the literature on school facilities planning, a vast body of research surfaces in the area of health and transportation as they relate to school siting. In this section of the policy memo, I will examine the literature that exists upon health,

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<sup>3</sup> EPA/CEFPI: Schools for Successful Communities: An Element of Smart Growth, 2004. Accessed via the web: <http://www.epa.gov/schools/siting.html>

transportation and air quality as it relates to school siting. I will then examine the incredibly brief amount of literature that exists on the relationships between smart growth and school facilities planning. A point that should be made clear in examining the following research studies is that school building placement directly influences or “touches” all areas of research mentioned below. As such, further investigation into decision-making related to school siting is critical.

### *Impact of Physical Activity on Health and Obesity*

In a 2007 CDC report on health in the State of Tennessee, we witness alarming statistics notably that 37% of the adult population is considered overweight and an additional 31% are considered obese. Childhood health statistics are no better reporting an 18% overweight rate and 17% obese rate within students in grades 9-12 in Tennessee.<sup>4</sup> These children are at an increased risk for developing health problems such as heart disease, diabetes, cancer, and hypertension. Activity levels for many children have declined because of a built environment that is unsafe for walking and bicycling, the low percentage of children who take physical education in school, and the popularity of sedentary leisure-time activities. Undoubtedly, the siting of school facilities in locales that are unwalkable and/or unbikeable certainly eliminates an opportunity for children to engage in physical activity on a regular basis.

Examining school facilities placement and school siting as way to create environment, policy, and behavioral changes is one way to increase physical activity and promote the health of both children and adults. This area of research takes a look at the academic literature that examines the relationship between health and physical activity with a particular focus upon walking as a mode of transportation to and from school.

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<sup>4</sup> <http://www.cdc.gov/obesity/stateprograms/fundedstates/tennessee.html>

Additionally, the research examines the impact that the opportunity for physical activity has upon childhood obesity. This area of research has incredible implications for the need for further research on school facilities planners examining specifically how their decisions on the built environment are impacting the physical health of youth.

In its 2009 report from “The Measures Project,” the CDC recommended and identified a number of obesity prevention strategies and measurements that local government and communities could use to monitor, implement and plan initiatives that relate to obesity rates in children. Within the strategies that they suggested, six of includes areas that could be addressed through school facilities planning, namely a more conscientious approach to school siting. The six strategies the CDC mentioned in this report are: enhancing infrastructure supporting bicycling, enhancing infrastructure supporting walking, supporting locating schools within easy walking distance of residential areas, improving access to public transportation, zoning land for mixed-use development, enhancing personal safety in areas where there is potential for physical activity and enhancing traffic safety in areas where there is potential for physical activity. Though only one of the points above directly mentions the topics of school siting it is clear that thinking about school siting in a way that would enhance the other five points is possible.<sup>5</sup>

Faulkner and colleagues reviewed, in their 2009 study, the literature that exists on active school transport, looking at thirteen studies that explored whether children who actively commuted to school had increased levels of physical activity or lower body

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<sup>5</sup> Khan, Laura Kettel, Sobush, Kathleen, Keener, Dana, Goodman, Kenneth, Lowry, Amy, Kazietek, Jakub, and Zaro, Susan. “Recommended Community Strategies and Measurements to Prevent Obesity in the United States.” Center for Disease Control. (2009): 58(RR07); 1-26.

weights. The studies as a whole, while mixed in their conclusions, found that students who walked or biked to school substantially increased their daily levels of physical activity. Important to note is the possibility of other factors that could have contributed to the mixed results of the study, namely food intake of participants. Further, the mere fact that there were some studies within the thirteen reviewed that suggested that children could benefit from being able to walk to school suggests that further research in this area is needed.<sup>6</sup>

In a 2008 article, Davidson and colleagues compiled a literature review on the health consequences of active commuting to school and evaluated programmatic efforts related to increasing walking and bicycling such as Safe Routes to School and the Walking School Bus programs. The article found again that children who walk and bicycle to school have higher levels of daily physical activity and better cardiovascular fitness than children who engage in motorized transport to and from school. Their review of the literature concluded that a wide range of factors impact children's commuting behaviors including demographic factors, individual and family factors, school factors, social factors and physical environmental factors. Safe Routes to School and Walking School Busses were two programs that were suggested in this literature review as efforts that were both viewed positively by parents and families as well as having favorable effects upon children's active commuting to school.<sup>7</sup>

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<sup>6</sup> Faulkner, Guy E., Buliung, Ron M., Flora, Parminder K. and Fusco, Caroline. "Active School Transport, Physical Activity Levels and Body Weight of Children and youth: A Systematic Review." *Preventive Medicine*. 48 (2009): 3-8.

<sup>7</sup> Davison, Kirsten K., Werder, Jessica L. and Lawson, Catherine T. "Children's Active Commuting to School: Current Knowledge and Future Directions." *Preventing Chronic Disease*. 5.3 (2008): A100

Just as the planning community, as will be discussed at the end of the literature review, is coalescing upon the idea of responsible school siting and smart growth, so is the research community in the field of health coming to a consensus upon the relationship between physical activity and health in youth. The aforementioned studies are just a small sampling of a larger body of literature can be summarized in a few important points. First, the built environment has real impacts upon the ability of children and adults to adopt non-motorized travel behaviors. Though research findings are mixed, it is important to examine the ways in which we are or are not setting individuals up for opportunities for physical activity. Finally, though not explicitly mentioned, examining school siting and making more judicious decisions regarding school facility placement might be one potential solution to the lack of physical activity problem.

#### *Relationship Between Physical Activity, Weight and Academic Achievement*

This next section examines the relationship between physical activity, weight and academic achievement. Though the body of knowledge is limited of the relationship between weight and academic achievement, evidence is starting to emerge that seems to suggest that access to opportunities for physical activity could result in gains on achievement tests and increased grade points averages. Understanding the relationship between physical activity, body weight, and academic achievement can help provide schools and organizations with the evidence needed to appropriately design academic and physical activity programming. Further, this evidence provides yet another angle through which we might be able to question, research and attempt to understand the decisions that school facilities planners are making in terms of creating environments that are conducive to physical activity.

In their 2009 study, Brandi Eveland-Sayers and colleagues examined the relationship between physical fitness and academic achievement in 134 3<sup>rd</sup> through 5<sup>th</sup> grade children. Data was collected on levels of fitness, mathematics and reading on the children in the study. The study found a negative association between the one mile run times and mathematics scores and a positive relationship between muscular fitness and mathematics. Though more research is needed, this study seems to suggest that there is indeed a relationship between fitness and achievement in elementary school children.<sup>8</sup>

In his 2007 study, Andrew Geier and colleagues looked at the relationship between relative weight and school attendance among 1,069 4<sup>th</sup> to 6<sup>th</sup> grade elementary school children in Philadelphia. The study found that students who were in the “obese” classification remained a significant contributor to the number of days absent category even after controlling for age, race and ethnicity and gender. The data in this study seem to suggest that heavier children have a greater predisposition to school absenteeism than their normal weight peers.<sup>9</sup> Though not directly related to academic achievement, clearly absenteeism in large amounts would be detrimental to a child’s school performance. From a school siting perspective, this is yet another example of a research study that supports investigating the values, attitudes, practices and beliefs of school facilities planners, making sure that a multitude of factors are considered in school siting outside of mere financial cost and parcel size.

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<sup>8</sup> Eveland-Sayers, Brandi M., Farley, Richard S., Fuller, Dana K., Morgan, Don W., and Caputo, Jennifer L. “Physical Fitness and Academic Achievement in Elementary School Children.” *Journal of Physical Activity and Health*. 66 (2009):99-104

<sup>9</sup> Geier, Andrew B., Foster, Gary, Womble, Leslie G., McLaughlin, Jackie, Borradi, Kelly E., Nachmani, Joan, Sherman, Sandy, Kumanyika, Shiriki and Shults, Justine. “The Relationship Between Relative Weight and School Attendance Among Elementary Schoolchildren.” *Obesity*. 15 (2007): 2157-2161.

In their 2008 study Trudeau and Shephard examine whether or not an increased emphasis upon physical education results in academic achievement gains. The data in their study suggests that additional curricular emphasis upon physical education results in small absolute gains in grade point average and strongly suggests a relative increase in performance per unit of academic teaching time. Overall the study seems to suggest that physical activity has positive impacts upon academic achievement in youth.<sup>10</sup>

From the three studies examined here we see yet another example of how the research community weighs in upon the relationship between schools, achievement and physical activity. The first section, more squarely focused upon health indicators, is complementary to this section, which examines more closely school level data on health and its relationship to academic performance. In an era of assessment and accountability, it is clear that the connection between school siting, access to physical activity and test scores must be made. The research herein leaves us with yet another impetus to research decision making on the topic of school siting. If research suggests that physical activity and obesity have an impact upon student academic achievement, then we must come to understand the rationale of decision makers how those decisions work either in concert or against the aforementioned research.

### *Influence of the Built Environment Upon Travel Behaviors*

The built environment—which includes buildings, streets, parks, and other man-made physical surroundings—affects a child’s choice regarding opportunities for physical activity and the safety of engaging in physical activity. Clearly in the realm of school facilities planning, the physical location bears upon a parent’s decision of whether

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<sup>10</sup> Trudeau, Francois and Shephard, Roy J. “Physical Education, School Physical Activity, School Sports, and Academic Performance.” *International Journal of Behavioral Nutrition and Physical Activity*. 5.10 (2008).

or not a child will walk, bike or be driven to school. The decision to walk or bicycle for short trips often depends on time, purpose, or environmental factors. Research examined herein will suggest that features of the built environment such as sidewalks, streetlights, traffic, hills, and overall walkability and bikeability are related to travel behaviors. Ultimately, if the environment is built in a way that makes physical activity impossible, that decision could potentially have a detrimental impact upon children in terms of access to opportunities for physical activity.

Melicia Whitt-Glover and colleagues examine in their 2009 article public policies related to the built environment's impact upon youth, specifically as it related to racial and ethnic minorities. This article suggests that public policies, informed by research, that support population-level approaches to increase physical activity, is needed to increase physical activity opportunities to racial/ethnic minority communities. The authors' research suggests that by creating better schools in low-income neighborhoods, children would be more likely to live within walking distance to school and choose active transportation to and from school. As a potential policy solution the authors suggest building infrastructure that includes sidewalks, walking trails, bicycle lanes, and increased availability of reliable public transportation in racial and ethnic minority communities would support and allow engaging in active forms of transportation and physical activity.<sup>11</sup>

In a watershed article, Zhou and colleagues investigate the characteristics of student travel behaviors before the implementation of a Safe Routes to School program

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<sup>11</sup> Whitt-Glover, Melicia C., Crespo, Carlos J. and Joe, Jennie. "Recommendations for advancing opportunities to increase physical activity in racial/ethnic minority communities." *Preventive Medicine*. 49.4 (2009): 292-293.

and identified the influential factors affecting the number of children who walk or bike to school. In the study parents reported a number of concerns contributing to their decision regarding transport to school. The five primary indicators were distance, traffic speed along the route, traffic amount along the route, violence or crime and intersection safety. Additionally, parents reported the following five factors as those that would change their decision and allow their children to walk or bike to school: distance, safety of intersections and crossings, weather or climate, presence of an adult co-walker and convenience of driving. Finally, the survey asked the respondents to examine their beliefs on walking and biking. These activities were viewed widely by both parents and children and both beneficial and fun. This study exposes the wide and subjective attitudes that exist in parental beliefs and needs around walking and biking. It seems that distance is a major factor that parents point to as something that inhibits them from allowing their children to walk and bike. Therefore, if research has built a case for the positive role of physical activity in the lives of youth, then we must acknowledge and seek to understand the role that school facilities planners play in the process of either creating or inhibiting physical activity.<sup>12</sup>

In their 2009 study, Larsen and colleagues examine the sociodemographic and environmental influences upon a child's mode choice between home and school. The study, which was conducted in Canada, showed that 62% of students living within 1.6 kilometers (0.994 miles) of their school used active transportation methods to get to school, with 95% of that group selecting walking. The study also found that active

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<sup>12</sup> Zhou, Huaguo, Zhao, Jiguang, Hsu, Peter, and Rouse, Jeanette. "Identifying Factors Affecting the Number of Students Walking or Biking to School." *Institute of Transportation Engineers Journal*. 79.10 (2009).

transport is 10% greater on the way home from school when compared to morning school travel. An analysis of survey data showed, confirming the results from the Zhou study, that distance was noted as the number one factor in mode choice, supporting the argument that school siting and location has real implications, perhaps a direct impact, upon the choices that parents and children make for trips to and from school.<sup>13</sup>

It is clear from the aforementioned three studies on the influence of the built environment upon the travel behaviors of youth that the impact of school siting upon access to opportunities for physical activity is incredibly real. Notable in the studies is the numerous times that distance is mentioned by both parents and students as the top factor influencing mode choice. If substantial data exists establishing the linkage between physical activity and health, as well as distance and mode choice, what are the primary factors for school facilities planners in siting schools? As will be discussed in the next and final section of the literature review, the case for responsible school siting extends into the recent movement towards smart growth, but a lack of information leaves us questioning the frame of reference that school facilities planners are using in making siting decisions.

### *Smart Growth and Schools*

A large amount of information exists, via policy reports and recommendations that would lead one to believe that there are ways in which the recent smart growth movement, by way of LEED certification translates into the construction of new school buildings. In analyzing two central documents that are representative of smart growth

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<sup>13</sup> Larsen, Kristian, Gilliland, Jason, Hess, Paul, Tucker, Patrick, Irwin, Jennifer and He, Meizi. "The Influence of the Physical Environment and Sociodemographic Characteristics on Children's Mode of Travel to and From School." American Public Health Association. 99.3 (2009): 520-526.

practices as they relate to new school construction and renovation, it becomes incredibly clear what the apparent “best practices” are within the field of school facilities planning.

The U.S. Green Building Council (USGBC) is the body that is responsible for providing recommendations for and certifying green buildings in the United States, including schools. The Council and the individuals who are responsible for creating and recommending standards for buildings to abide by in order to be considered “LEED certified” is comprised of knowledgeable architects, civil engineers, and urban and regional planners, experts in their respective fields. This field of experts is responsible for the development of the “LEED for Schools” certification guidelines. The guidelines, all of which will not be discussed here, include such areas as sustainable sites, water and energy efficiency, materials and resources, indoor environment quality and innovation and design processes. Of particular interest in this research study is the area of “sustainable sites” which is the LEED building process is worth 24 of 110 possible points. Under this rating category, we find such indicators as access to public transit, bicycle storage and changing rooms, and overall infrastructural connectivity. It is clear by the mere inclusion of these principles in the LEED standards that they are considered important in school facilities planning. Further, the linkages between connectivity and opportunity for physical activity, as discussed by the other articles within the literature review seem intuitive and clear. This begs the question of what prohibits or encourages school facilities planners to either opt in or opt out of LEED for Schools standards. Further, in choosing to opt out of LEED for Schools standards does that in some way deviate from accepted best practice?<sup>14</sup>

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<sup>14</sup> U.S. Green Building Council’s: LEED for Schools Website:  
<http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1586#v3>

Finally, the document that is clearly central to defining best practices in the field of school facilities planning is the 52 page handbook put out in 2004 by the Environmental Protection Agency (EPA) and the Council for Educational Facilities Planners International (CEFPI) entitled, “Schools for Successful Communities: An Element of Smart Growth.” In this document, the principles of the booming smart growth movement are applied directly to schools and include mix land uses, compact building design, investing in walkable neighborhood, creating a variety of housing options, fostering distinctive attractive communities with a strong sense of place, strengthening and directing development towards existing communities, providing a variety of transportation choices, and making development decisions transparent.<sup>15</sup> In addition to the twelve indicators that the manual provides, the guidebook also goes into great depth in attempting to clarify common misconceptions in the practice of school facilities planners. One such example is that of the “minimum acreage requirement.” Historically the CEFPI had used very general, not well-researched guidelines calling for large acreages in which to build schools. With the advent of the green building practices and further research, such acreage requirements have become in many ways obsolete and ineffectual.

### **Current Practice in Middle Tennessee: Interviews with School Facilities Planners**

For the purposes of this policy memo, a number of school facilities planners in the Nashville MPO region were interviewed. Through the interview process the hope was to achieve an understanding of the practices that exist regarding school facilities planning on a district-by-district basis since Tennessee has no state level policy on school siting.

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<sup>15</sup> EPA/CEFPI: Schools for Successful Communities: An Element of Smart Growth, 2004. Accessed via the web: <http://www.epa.gov/schools/siting.html>

Since a standard protocol was used in all interviews, responses are included below in a bulleted format. District practices were fairly consistent and as such individual districts are not identified for the purposes of this memo.

- Most school districts surrounding Davidson Metro Nashville are experiencing a period of high growth, in many cases on the order of 3-7% per school year. This is subsequently causing a period of fast growth for school districts in terms of capital projects, as well as the building of schools that have high enrollment capacities to accommodate the influx of new students into the district.
- The process of planning new schools involves multiple actors. In most cases, school facilities planners in Middle Tennessee consult with architects, engineers and planners before bringing a proposal to the Board of Education. Once approved by the Board, the proposal would then move forward to the City or County Commission.
- Collaboration between comprehensive plans of the city and the school district are not always working in tandem. It seems as though the urgency of building schools fast to accommodate growth impedes this process.
- The most important factor for school facilities planning is cost. Additionally, school facilities planners that were interviewed cited life safety, as well as providing an instructionally appropriate environment as other essential factors of a “good school.”
- Schools are sometimes placed in strategic locations within a rural county, for example between two cities, or between two schools that are over capacity. This

process may often times not consider long term implications for growth or access to sidewalks/transit.

- Many districts in Middle Tennessee, while not going for LEED certification are using “green building practices” in the construction of new schools. Interviewees cited the cost of becoming LEED certified as a major barrier.
- Districts, specifically those experiencing large amounts of growth, are using the same “building footprint” for multiple schools in an effort to lower costs as well as get schools built in an expedited manner.
- School facilities planners cited numerous instances in which they planned for sidewalk and bike lane access on the school grounds, noting that often times cities, municipalities or developers are the ones who choose to not to continue the sidewalk, etc, thereby prohibiting the possibility of children walking and biking to school.
- Most districts in our region are not faced with the problem of having to decide upon whether or not to close a school since there exists a large amount of economic growth. In many instances, school facilities planners were able to talk about renovations or repurposing of historic schools in our region.

In summation, our findings indicate that a lack of coordination, a lack of transparency in the school siting process as well as the problem of cost are key factors in school siting decision making within Middle Tennessee.

### **Policy Recommendations**

Based upon the literature base on the topic, and the context of the problem ascertained by interviews of local school facilities planners, the following policy

recommendations are set forth as starting point for improved school siting within Middle Tennessee:

- ✓ **Intergovernmental Collaboration:** School districts, wherever possible should coordinate with community planners and other governmental entities. In addition to community planning agencies, agency such as transportation, health, historic preservation should be invited to participate in school siting decisions. Regular, publicly advertised meetings should be held.
- ✓ **Transparent Policy and Process:** School districts in concert with city and county commissions should make every possible effort to make the process of siting a new school, or renovating an existing school as transparent as possible. This includes but is not limited to publicly advertising for bids for building contracts, allowing the public to be involved in siting decisions at all stages of development, maintaining accessible public records on school siting and having regular contact with the community.
- ✓ **Schools as Centers of Community:** School facilities planners, whenever possible, should select locations that are accessible by means of non-motorized transport or in areas where there is the possibility or plans for access to such infrastructure. Additionally, schools should be sited in locations where public transit access is available. At the very least, school sites should have sidewalks and bike lane facilities on the property in schools are sited in remote or rural locations.
- ✓ **Incentives to Building Well Sited Schools:** This may be viewed as either a local or perhaps statewide objective. School facilities planners currently operate in a

budget climate that rewards them for building low cost and often remotely located schools. Examining ways in which districts can support school facilities planners in an effort to work with transit, parks, transportation and health policy communities would be extremely beneficial.

- ✓ **Policies Requiring Developers and Cities to Build Infrastructure:** School facilities planners are, in many cases, working extremely hard to make sure that appropriate sidewalks and bike lanes are developed on new school sites. As such, a similar expectation should be placed upon cities or developers so that children have connective thoroughfares to and from school.