



Building a Movement to Reconnect Children & Nature

November 11, 2008

Committee on LEED for Neighborhood Development
U.S. Green Building Council
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Dear Colleagues:

As representatives of the Children and Nature Network and allied organizations that specialize in research and design to improve the quality of environments for children and all ages, we submit the following suggestions. We understand that the USGBC has a well-developed structure and process for consideration of changes and additions to the LEED Rating System. We offer these proposed points to highlight the importance of an approach in which the LEED-Neighborhood Development Rating System will promote neighborhoods where children and their families can safely and conveniently reach resources like schools, parks and natural areas through bicycling and walking. This requires the provision of close-to-home resources and connected networks of bicycle and pedestrian paths.

Research shows that when children play outside they are likely to be more physically active, which results in lower rates of overweight and obesity.¹ Outdoor play needs to be supported by attractive open spaces and green spaces near children's homes.² Access to nearby green spaces like parks and natural areas is also associated with better health, sense of well-being, greater ability to concentrate and cope with life challenges, and lower levels of stress among both children and adults.³ People who report childhood play in nature are more likely to care for the environment in later life.⁴ When schools can be reached via sidewalks, paths, separated bike lanes or designated streets with low volume traffic, children are more likely to bicycle to school and arrive ready to learn.⁵ Motor vehicle accidents are the leading cause of child death after infancy and child pedestrians account for a quarter of these fatalities.⁶ Therefore neighborhood features that facilitate safe outdoor activities and independent mobility are critical elements of child and family-friendly design.

For neighborhoods that promote children's health, well-being, and connection with the natural world, based on research evidence, we recommend that the following features receive credit in the LEED-ND Rating System.

Safe and well-connected streets and paths

Children's independent mobility by foot and bicycle requires safe networks and connectivity. The LEED-ND rating system should recognize multiple ways of achieving these goals:

1. Low volume, low-speed traffic on residential streets, which can be achieved by:
 - a. Traffic calming techniques such as neck downs, central refuges, speed bumps and short blocks with stop signs.⁷
 - b. Designated "home zones" or *woonerven* where children and other residents are recognized as primary users of the street and cars have secondary status.⁸
 - c. Grid networks that locate homes for families with children on narrow streets and alleys. A comparison of street widths and traffic accidents found that 36-foot wide streets had four times more collisions per mile per year than 24-foot wide streets.⁹
 - d. Cul-de-sacs and dead-end streets, which can be connected by bike and pedestrian pathways to provide connectivity. Parents favor cul-de-sacs with good reason, as research shows that cul-de-sacs have substantially lower accident rates than grid systems—a critical consideration for children's safety.¹⁰ Although cul-de-sacs by themselves reduce connectivity, when they are part of a hybrid network that includes connecting paths, they encourage biking and walking. In addition, hybrid systems of this kind generate significantly less paved surface than grid systems, potentially contributing to the preservation of green space.¹¹
2. Continuous sidewalks where pedestrians are protected from the street by vegetated buffers or parking areas
 - a. Trees in planting strips. Children living in areas with more street trees have lower prevalence of asthma.¹²
 - b. Distance between sidewalks and high-volume traffic to reduce exposure to harmful air pollutants. Proximity to traffic-related pollutants contributes to respiratory disease and allergies in children.¹³
3. Separate pedestrian and bicycle paths that provide high connectivity between homes, schools, parks, natural areas and other amenities, achieved by:
 - a. Mid-block paths that run parallel to but separate from the street system
 - b. Paths that connect cul-de-sacs and dead-end streets to each other and to a comprehensive pathway system
 - c. Greenways along rivers, stream corridors and stormwater channels
 - d. Connector paths that join all parts of a community pathway system

- e. Adequate bike racks at destinations
- 4. Safe crossings for children who must cross connector and arterial streets, achieved through:
 - a. Underpasses and overpasses
 - b. Neck downs and central refuges that narrow crossing distances
 - c. Well marked pedestrian crossings
 - d. At crossings of busy streets, flashing caution lights that even a young child can activate

Nearby green spaces and natural areas

- 5. Central courtyards and greens that are overlooked by windows of frequently used rooms, where children can play in traffic-free areas within sight and calling distance of their homes
- 6. Access to nature for children's play and exploration, woven into the fabric of residential neighborhoods in a variety of ways:
 - a. Landscape for nearby nature play in and around housing units and sites
 - b. Preserve existing clusters of trees, boulders, prairie and other natural features wherever possible, and when they have been destroyed, restore examples of local natural habitats
 - c. Place signs that indicate where children's play is expected in natural areas
 - d. Connect natural areas with green corridors and greenways, which should be considered natural areas in their own right
 - e. Whenever possible, site child care centers and schools adjacent to parks, greenways and natural areas so that nature play and nature study can be integrated into educational programs
 - f. Include appropriate space for community gardens in neighborhoods

Accessible schools, parks and other amenities

- 7. Schools, childcare centers, parks, playgrounds, natural areas, libraries, and other attractions and amenities for children and their families should be located along pathways or greenways for pedestrians and cyclists.
- 8. Distance strongly influences whether children will walk or bike to school.¹⁴ To minimize travel distances, communities should construct and maintain neighborhood schools that children can reach on foot or by bicycle, rather than

busing children to distant centralized locations on the periphery of towns and cities. This policy is supported by research which indicates that children perform better in small schools,¹⁵ as well as studies that show adverse health impacts on children when schools are sited near major roadways.¹⁶

For a recent publication that presents neighborhood examples of the preceding principles and that synthesizes the research on this subject, we recommend “Healthy planet, healthy children: Designing nature into the daily spaces of childhood” by Robin Moore and Clare Cooper Marcus.¹⁷

Although this letter has focused on the needs of children, it should be noted that their needs often coincide with those of other family members, including older adults, who also depend on nearby resources in their neighborhood, seek green spaces and cultural resources like libraries for recreation and leisure, need to be able to walk, bicycle and take mass transit as alternatives to driving, and have limited abilities to safely cross and navigate streets with high speed, high volume traffic.

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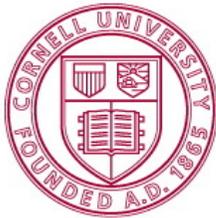
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- ¹ Hinkley, T., Crawford, D., Salmon, J., Okely, A. D. and Hesketh, K. (2008) Preschool children and physical activity—a review of correlates, *American Journal of Preventive Medicine*, 34(5), 435-441; Sallis, J. F., Prochaska, J. J. and Taylor, W. C. (2000) A review of correlates of physical activity of children and adolescents, *Medicine and Science in Sports and Exercise*, 32(5), 963-975.
- ² Babey, S. H., Hastert, T. A., Yu, J. K. and Brown, E. R. (2008) Physical activity among adolescents—when do parks matter? *American Journal of Preventive Medicine*, 34(4), 345-348; Spence, J. C., Cutumisu, N., Edwards, J. and Evans, J. (2008) Influence of neighborhood design and access to facilities on overweight among preschool children, *International Journal of Pediatric Obesity*, 2(3), 109-116.
- ³ Kuo, F. E. and Miller, E. (2008) Vitamin G for healthy human habitat, Implications, 6(2), retrieved from www.informedesign.umn.edu; Taylor, A. F. and Kuo, F. E. (2006) Is contact with nature important for healthy child development? State of the evidence, in C. Spencer and M. Blades (Eds.), *Children and their environments*, Cambridge University Press.
- ⁴ Chawla, L. (2007) Childhood experiences associated with care for the natural world, *Children, Youth and Environments* 17(4), 144-170. Retrieved from www.colorado.edu/journals/cye.
- ⁵ Beaumont, C. E. and Pianca, E. G. (2002) *Why Johnny can't walk to school*, National Trust for Historic Preservation, Washington, DC; McMillan, T. (2005) Urban form and a child's trip to school, *Journal of Planning Literature*, 19, 440-456.
- ⁶ Johnston, B. D. (2008) Planning for child pedestrians: Issues of health, safety and social justice, *Journal of Urban Design*, 13(1), 141-145.
- ⁷ Department of Transport (2007) *Manual for streets*, Thomas Telford Publishing, London (distributed by ASCE Press, Reston, VA); special issue of *Children, Youth and Environments* on "Increasing Children's Freedom of Movement," 16(1), 2006, www.colorado.edu/journals/cye.
- ⁸ Ben-Joseph, E. (1995) Changing the residential street scene: Adapting the shared street (*woonerf*) concept to the suburban environment, *Journal of the American Planning Association*, 61(4), 504-515; Biddulph, M. (2002) *Home zones: A planning and design handbook*, The Policy Press, Bristol; www.london.gov.uk/mayor/strategies/play/homezones.jsp.
- ⁹ Swift, P. (1998) *Residential street typology and injury accident frequency*, Swift and Associates, Longmont, CO.
- ¹⁰ Southworth, M. and Ben-Joseph, E. (2004) Reconsidering the cul-de-sac, *Access*, 24, 28-33.
- ¹¹ Girling, C. and Kellett, R. (2005) *Skinny streets and green neighborhoods*. Washington, DC: Island Press, p. 80.
- ¹² Lovasi, G. S., Quinn, J. W. et al. (2008) Children living in areas with more street trees have lower prevalence of asthma, *Journal of Epidemiology and Community Health*, 7(62), 647-649.
- ¹³ Nordling, E., Berglund, N. et al. (2008) Traffic-related air pollution and childhood respiratory symptoms, function and allergies, *Epidemiology*, 19(3), 401-408; Wilhelm, M., Meng, Y-Y. et al. (2008) Environmental public health tracking of childhood asthma using California Health Interview Survey, traffic, and outdoor air pollution data, *Environmental Health Perspective*, 9(116), 1254-1260.
- ¹⁴ Nelson, N. M., Foley, E. et al. (2008) Active commuting to school—how far is too far? *International Journal of Behavioral Nutrition and Physical Activity*, 5(1), www.ijbnpa.org; Wen, I. M., Fry, D. et al. (2008) Factors associated with children being driven to school: implications for walk to school programs, *Health Education Research*, 23(2), 325-334.

¹⁵ McRobbie, J. (2001) *Are small schools better? School size considerations for safety and learning*, WestEd Policy Brief, San Francisco; Slate, J. and Jones, C. (2005) *Effects of school size: A review of the literature and recommendations*, National Clearinghouse for Educational Facilities, University of South Carolina at Aiken.

¹⁶ Appatova, A. S., Ryan, P. H., LeMasters, G. K. and Grinshpun, S. A. (2008) Proximal exposure of public schools and students to major roadways: a nationwide U. S. survey, *Journal of Environmental Planning and Management*, 5(51), 631-646.

¹⁷ Moore, R. C. and Cooper Marcus, C. (2008) Healthy planet, healthy children, in S. R. Kellert, J. H. Heerwagen and M. Mador (eds.), *Biophilic Design*, John Wiley and Sons, New York, pp. 153-203.