An Expert Review on the Strength of the Public Health Data in Support of Proposed Community Design Standards in LEED for Neighborhood Development

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1. Executive Summary

Executive Summary

LEED-Neighborhood Development is a national leadership standard for sustainable land developments jointly developed by the Congress for the New Urbanism, the Natural Resource Defense Council, and the United States Green Building Council. The draft standard is scheduled to be revised at the conclusion of its pilot phase that started in April, 2007 and will run through 2008. During the pilot phase, the LEED-ND Core Committee, the fifteen authors of the standard, will monitor certifying projects for opportunities to strengthen and streamline the standards. This expert review of proposed community design standards provides another opportunity for the Core Committee to strengthen the standards as they pertain to public health.

History of project

In 2004, the Centers for Disease Control provided a grant to prepare a literature research on linking public health, land use, and urban design. The resulting study, LEED-ND Public Health Criteria Study, was distributed to the Core Committee, and was used to guide the LEED-ND draft standards. This "expert review" project came about in recognition of the fact that there was very little public health input during the drafting of the standards. Another reason for initiating this study was the opportunity for directing future research toward applied research in support of ever-improving criteria in LEED-ND. While the public health and land use division of the CDC and a large group of university-based public health researchers are making great strides in this infant stage of research, conclusive, comprehensive findings are years, and possibly decades, away. The immediate need to improve LEED-ND led to this expert review.

Assembling experts

In conceiving of the expert review, Dr. Andrew Dannenberg of the CDC and Doug Farr of Farr Associates thought it prudent to convene an interdisciplinary panel. The invitees were selected to achieve a broad representation from the public health and land use research community, drawing on members from the Public Health Department at the CDC and the leadership and staff associated with the LEED-ND project. In the end, nearly twenty experts met for two days, on May 21st and 22nd, at the CDC in Atlanta.

LEED-ND Overview

The meeting started with an overview of the goals and objectives of the project and of the LEED-ND program. The drafting of the LEED-ND standards started in 2003 and produced a completed draft in late 2005. A public comment period of forty-five days was followed by months and months of re-evaluation and re-drafting criteria. Final criteria emerged in early 2007. The LEED-ND criteria follow the structure and format of the standards of the overall LEED rating system. This includes a system of prerequisites (mandatory requirements) and credits (optional requirements). The standard is further structured to include successive levels of certification—Certified, Silver, Gold, and Platinum—earned by amassing increasing numbers of credits. Each prerequisite and credit is structured to include a statement of intent, a brief description of goals and requirements—specific, quantified performance criteria to be met by the project. In the case

of LEED-ND, no minimum or maximum project size, cost, or complexity has been set, but the likely market for this leadership standard are mixed-use projects consisting of multiple buildings and new streets and infrastructure.

Process of review

In order to achieve a great benefit in a very short time, an expert evaluation process was conceived. Following this protocol, public health experts would be presented with specific design and performance thresholds from draft LEED-ND criteria and evaluate the criteria based on their expert knowledge of the state of research. In an interactive session, each participant would simply identify a researcher and/or citation that they knew from memory that linked to the standard under review. After a period of discussion, the group would be asked to classify the proposed standard according to the following choices: supported by data, consistent with data, supported by expert opinion, no or insufficient data, or in conflict with data. In addition, opportunities for further research and existing sources of available data would be discussed and recorded.

Findings

The LEED-ND Pilot Criteria consist of 9 prerequisites addressing the location of a project within a region, avoiding sensitive lands or habitats, open communities, minimum densities and erosion control. Only four of the nine prerequisites were considered to be relevant to this expert review. These included Smart Location, Wetland and Water Body Conservation, Open Communities and Compact Development. The Smart Location and Compact Development Prerequisites were judged to be consistent with public health data. The Wetland and Water Body Conservation and Open Community Prerequisites were judged to have no or insufficient data and therefore opportunities for future research. In summary 50% (two of the four) prerequisites reviewed were consistent with data.

The LEED-ND Pilot Criteria consist of credits covering 47 different topic areas that can contribute to earning up to 100 points toward a project certification. The credit topics are diverse rewarding a broad range of initiatives from increased density to affordable housing, and high performance infrastructure. A total of 21 were considered to be relevant to this expert review. These twenty-one credits, and their several optional compliance paths, were individually reviewed by the assembled experts. Of these 3 were judged to be supported by data, 9 were consistent with data, 7 were supported by expert opinion and 2 were judged to have no or insufficient data and therefore opportunities for future research. In summary, 57% (12 of 21) were either supported by or consistent with data, 33% (7 of 21) were supported by expert opinion and 9% (2 of 21) had insufficient data. Stated another way, approximately 90% of the credits reviewed were either supported by or consistent with data or by expert opinion.

It is important to note that there were a number of instances where metropolitan locations or urban design interventions associated with positive health outcomes were linked with known harmful conditions. Also, in a number of cases the methodology and measures currently being used by the LEED-ND criteria were inconsistent with research metrics and methodology.

Next steps

This report includes three subsections devoted to next steps. The first is very specific recommendations for the LEED-ND Core Committee to consider as they revise the standards and focuses on opportunities to strengthen the links between known public health interventions and the LEED-ND criteria. Secondly, a subsection of this report highlights opportunities for further research. Finally, another subsection calls out opportunities for strengthening the ties between the LEED-ND project and the larger public health community.

2. Project Goals and Objectives

Project Goals and Objectives

The project was conceived with several intended outcomes, pertaining both to the proposed standards and the course of future research. The outcomes have been met and are summarized in this report. The intended goals and objectives included:

1. Inform Revisions to LEED-ND Standards Under Development

The LEED Neighborhood Development project is pioneering design and performance criteria for sustainable communities. The standard is currently in its pilot phase and will be revised after the pilot period, likely in early 2008. This expert review will contribute to those revisions.

Two specific objectives were identified to accomplish this goal:

a. Survey Experts on the Strength of Data

Survey public health research experts on the strength of data in support of proposed LEED-ND community design standards.

b. Compile Readily-Known Research/Researchers

Compile a list of readily-known research and/or researchers whose work is relevant to the draft LEED-ND standards.

2. Inform Future Research on the Design of Healthy Communities

The members of the Core Committee of LEED-Neighborhood Development believe that there is a need for further research to refine our understanding of the public health impacts from various land use and urban design criteria. We believe that this session can help shape future research agendas. A memo will list the promising areas of research identified during the workshop.

3. Strengthen Ties between Research and Practitioner Communities

The scientific research establishment is cautious in drawing firm conclusions from this emerging field of research. Meanwhile, planners, developers and municipal officials make land use and urban design decisions on a daily basis without the benefit of any public health research. We believe that through dialogue between researchers and practitioners that we can accelerate the pace and relevance of applied research.

3. Group Information: Photo and Short Descriptions of Participants

From left to right: Dr. Karen Lee, Dr. Howie Frunkin, Tracy McMillan, Margo Younger, Doug Farr, Susan Spivey, Dr. Emil Malizia, David Goldberg, Ken Rose, Katie Sobush, Heather Morrow-Almeida, Susan Mudd, Jen Henry, Dr. Jim Sallis, Dr. Larry Frank and Dr. Andrew Dannenberg.

List of Expert Participants

Howard Frumkin, MD, MPH, DrPH

Director, National Center for Environmental Health (NCEH), at the Centers for Disease Control and Prevention in Atlanta, GA

Andrew L. Dannenberg, MD, MPH

Associate Director for Science

Division of Emergency and Environmental Health Services National

Center for Environmental Health Centers for Disease Control and

Prevention

Katie Sobush, MS

CDC Foundation Research Fellow

Division of Nutrition and Physical Activity

National Center for Chronic Disease

Prevention & Health Promotion

David Goldberg

Smart Growth America

Jen Henry

Program Manager

U.S. Green Building Council

Karen Lee, MD., MHSc, FRCPC

Deputy Director, Bureau of Chronic Disease Prevention & Control

The City of New York

Department of Health & Mental Hygiene

Susan Mudd

Attorney, Urban Planner, CNU

Susie Spivey

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Steven Skowronski

Federal Cochair, The MSG SubGroup, at the Centers for Disease Control and Prevention in Atlanta, GA.

Kenneth Rose, MPA, Associate Director

Office of Policy, Planning and Evaluation

The Centers for Disease Control and Prevention in Atlanta, GA.

Susan Hobson, MPH, ORISE Fellow

National Center for Environmental Health (NCEH) at the Centers for Disease Control and Prevention in Atlanta, GA.

Heather Morrow-Almeida, MPH, PHPS Fellow

National Center for Environmental Health (NCEH) at the Centers for Disease Control and Prevention in Atlanta, GA.

Margo Younger

National Center for Environmental Health (NCEH) at the Centers for Disease Control and Prevention in Atlanta, GA.

Lawrence Frank, B.L.. Arch, M.Sc., Ph.D.

Chairholder, Sustainable Transportation

University of British Columbia

School of Community and Regional Planning and Institute for Resources, Environment and Sustainability.

James F. Sallis, Ph.D.

Professor of Psychology, San Diego State University

Director, Active Living Research

Emil Malizia, M.R.P., Ph.D., AICP

Professor and Chair, Department of City and Regional Planning

UNC Chapel Hill

Tracy McMillan

Assistant Professor, Department of Civil, Architectural and Environmental Engineering

The University of Texas at Austin, Cockrell School of Engineering

4. Results of LEED-ND Standard Review

Smart Location & Linkage

SLL Prerequisite 1: Smart Location

Intent: Encourage development within and near existing communities or public transportation infrastructure. Reduce vehicle trips and miles traveled and support walking as a transportation choice.

LEED-ND Standard Requirements	Expert Vote	Citations
OPTION 1 Locate the **project** on an **infill site**;	**Consistent with Data**	Experts agree this was consistent with data, but no citation was provided.
	Noted Exception: Experts identified a public health risk at infill sites located within 300 feet of a highway.	*Transcript Quotes* 1) *Andrew L. Dunnenberg*: One report 300 feet from a really busy road where the air pollution starts to get lethal… 2) *Lawrence Frank*: I was in a meeting 2 weeks ago where - where new evidence showing this is really more of a health problem than we understood.
OPTION 2 Locate the project near existing or planned **adequate transit service** so that at least 50% of dwelling units and business entrances within the project are within ¼ mile **walk distance** of bus or streetcar stops or within ½ mile walk distance of bus rapid transit stops, light or heavy passenger rail stations and ferry terminals. In the case of planned service, show that the relevant transit agency has committed in a legally binding warrant that **adequate transit service** will be provided at or before the beginning of the transit agency's first service year after 50% of the dwelling units and/or businesses within the project are occupied and has identified all funding necessary to do so;	**Consistent with Data**	1) A. V. Moudon, C. Lee, A. D. Cheadle, C. Garvin, D. Johnson, T. L. Schmid, R. D. Weathers, L. Lin. "Operational definition of walkable neighborhood: empirical and theoretical insights." Journal of Physical Activity and Health 2006, 3, Suppl 1, S99-S117. © 2006 Human Kinetics, Inc. 2) Aytur, S., Rodríguez, D.A. and Evenson, K.R. Promoting Active Community Environments Through Land Use and Transportation Planning, American Journal of Health Promotion, 36 pages 3) Khattak, A., and Rodríguez, D.A. 2005. Travel behavior in neo-traditional neighborhoods: A case study in USA. Transportation Research Part A, 39:6, 481-500. 4) Lee, C, A. V. Moudon. Environmental correlates of walking for transportation or recreation purposes. Journal of Physical Activity and Health. Supp. Issue 2006. 5) M. Boarnet and M. Greenwald, "Land Use, Urban Design, and Non-Work Travel: Reproducing for Portland, Oregon Empirical Tests from Other Urban Areas," Transportation Research Record, (2001). 6) M. Boarnet and R. Crane, Travel by Design: The Influence of Urban Form on Travel, Oxford University Press, 2001. 7) M. Greenwald and M. Boarnet, "The Built Environment as a Determinant of Walking Behavior: Analyzing Non-Work Pedestrian Travel in Portland, Oregon," Transportation Research Record, 2002. 8) Rodríguez, D., Khattak, A.J., and Evenson, K.R. 2006. Can New Urbanism encourage physical activity? Comparing a New Urbanist neighborhood with conventional suburbs, Journal of the American Planning Association, 72:1, 43-56.

OPTION 3 Locate the project near existing neighborhood shops, services, and facilities so that the **project boundary** is within ¼ mile walk distance of at least four, or within ½ mile walk distance of at least 6, of the **diverse uses** defined in Appendix A (p. 152). Uses may not be counted in two categories, e.g an office building may be counted only once even if it is also a major employment center. A mixed use building containing several uses as distinct enterprises would count each as a separate use, but no more than half of the minimum number of diverse uses can be situated in a single building. A single retail store of any type (such as a big box retail store that sells both clothing and household goods) may only be counted once even if it sells products associated with multiple use types;	**Consistent with Data**	1) C. Lee and A. Vernez Moudon. (2006). Correlates of Walking for Transportation or Recreation Purposes. Journal of Physical Activity & Health. 2) Frank, Lawrence (Lawrence Frank & Company, Inc.): "A Study of Land Use, Transportation, Air Quality, and Health (LUTAQH) in King County, WA: Executive Summary" September 27, 2005, Submitted to King County officials. 3) Hoehner CM, Brennan Ramirez LK, Elliott MB, Handy SL, Brownson RC. Perceived and objective environmental measures and physical activity among urban adults.. Am J Prev Med. 2005 Feb;28(2 Suppl 2):105-16. 4) McCormack GR, Giles-Corti B, Bulsara M. The relationship between destination proximity, destination mix and physical activity behaviors. Prev Med. 2007 Feb 8 5) Moudon, A. V.; Lee,C.; Cheadle, A.D.; Collier, C.W.; Johnson, D.; Schmid, T.L. and Weather, R.D. (2005). Cycling and the built environment, a US perspective. Transportation Research Part D-Transport And Environment. 6) Pikora TJ, Giles-Corti B, Knuiman MW, Bull FC, Jamrozik K, Donovan RJ. Neighborhood environmental factors correlated with walking near home: Using SPACES. Med Sci Sports Exerc. 2006 Apr;38(4):708-14. *Transcript Quotes* *James Sallis*: Yes. There a couple of specific studies I can think of with Andrew Dunn. A paper just came out from Billie [Giles-Corti] she found that people in their neighborhood with each increment of category of use available. *Transcript Notes* "Andrew Dunn" mentioned as possible citation: None Found

OPTION 4 Locate the project within a region served by a Metropolitan Planning Organization (MPO) and within a transportation analysis zone for which MPO research demonstrates that the average annual home-based and/or non-home-based rate of **Vehicle Miles Traveled (VMT)** per capita is lower than the average annual rate of the metropolitan region as a whole. The research must be derived from transportation surveys conducted within ten years of the date of submission for LEED for Neighborhood Development certification; OPTION 5 Locate the project within a region served by a Metropolitan Planning Organization (MPO) and demonstrate through peer-reviewed analysis that the average annual home-based and/or non-home-based rate of Vehicle Miles Traveled (VMT) per capita of the project will be lower than the average annual rate shown by MPO research for the metropolitan region as a whole. The MPO research must be derived from transportation surveys conducted within ten years of the date of submission for LEED for Neighborhood Development certification. The analysis prepared for the project must be conducted by a qualified transportation professional and reviewed and supported by a second qualified transportation professional who is not affiliated with either the sponsor of the project or the first analyst.	**Consistent with Data**	1) Henderson SB, Beckerman B, Jerrett M, Brauer M. Application of land use regression to estimate ambient concentrations of traffic-related NOX and fine particulate matter. Environmental Science and Technology. 2007; 41 (7):2422 -2428. 2) Van Atten C, Brauer M, Funk T, Gilbert N, Graham L, Kaden D, Miller PJ, Wheeler A, White R (with input from participants of the Workshop on Methodologies to assess vehicle exhaust exposure). Assessing population exposure to motor vehicle exhaust. Reviews on Environmental Health (invited paper). 2005; 20(3):195-214. *Transcript Quotes* 1) *Lawrence Frank*: There are 3 or 4 studies now showing that time spent in cars is a predictor of obesity. We have been challenged on ours... we are pretty confident that it would be known as type 2 errors… just not even because of the air pollution – you have double impacts and also more VMT increases your exposure to have an accident. There are new studies you are increased to exposure to air pollutions being in the roadway where air pollution being emitted. 2) *Lawrence Frank*: One is the California Study and the Australian study and University of Virginia dissertation. That was on obesity. On air pollution would be Michael Brauer - Accident stuff - Reed Brewer. Lot of studies on distance increased driver exposure to accidents.

SLL Prerequisite 4: Wetland and Water Body Conservation

Intent: Conserve water quality, natural hydrology and habitat and preserve biodiversity through conservation of water bodies or wetlands.

<table>
<tr><th>LEED-ND Standard Requirements</th><th>Expert Vote</th><th>Citations</th></tr>
<tr>
<td>
OPTION 1 –FOR SITES WITH NO WETLANDS OR WATER BODIES
Locate the project on a site that includes no wetlands, water bodies, or land within 100 feet of these areas;

OPTION 2 –FOR PREVIOUSLY DEVELOPED SITES WITH WETLANDS/WATER BODIES
Locate the project on a previously developed site where the area within a 1 mile radius from the perimeter of the site has either a) an average street grid density of at least 30 centerline miles per square mile, or b) an average built density of at least 30 dwelling units per acre for any residential components and 1.5 FAR for any non-residential components. If local, state, and federal regulations permit impacts to any on-site wetlands, water bodies, or buffer land that is within 100 feet of these areas, such impacts must be compensated by on-site or off-site wetland restoration of equal or greater amounts;

OPTION 3 –FOR ALL OTHER SITES
If the project is located on a site that includes wetlands, water bodies, or land within 100 feet of these areas, and if local, state, and federal regulations permit impacts to any on-site wetlands, water bodies, or buffer land that is within 100 feet of these areas, limit any impacts to less than the percentage of these areas reflected in either one of the two following tables, and compensate by on-site or off-site wetland restoration of equal or greater amounts. The portion of the site that is impacted must incorporate stormwater best management practices within the impacted area to infiltrate, re-use, or evapotranspirate at least 90% of the average annual rainfall or 1” of rainfall from 75% of the development footprint within the impacted area

<table>
<tr><th>Street grid density within a 1 mile radius from the perimeter of the site boundary</th><th>Percentage of on-site impacts allowed</th></tr>
<tr><td>>20</td><td>15</td></tr>
<tr><td>10-20</td><td>10</td></tr>
<tr><td><10</td><td>5</td></tr>
</table>

<table>
<tr><th>Residential density (DU/acre)</th><th>Non-residential density (FAR)</th><th>Percentage of on-site impacts allowed</th></tr>
<tr><td>>20</td><td>>1.0</td><td>15</td></tr>
<tr><td>10-20</td><td>.75-1.0</td><td>10</td></tr>
<tr><td><10</td><td><.75</td><td>5</td></tr>
</table>

For all Options, minor development within the buffer may be undertaken in order to enhance appreciation for wetlands and water bodies. Such development may only include minor path-ways, limited pruning and tree removal for safety, habitat management activities, educational structures not exceeding 200 square feet, and small clearings for picnic tables, benches, and non-motorized recreational water crafts.
</td>
<td>Opportunity for Future Research</td>
<td></td>
</tr>
</table>

SLL Credit 3: Preferred Locations

Intent: Encourage development within existing communities and developed places to reduce multiple environmental harms associated with sprawl. Reduce development pressure beyond the limits of existing development. Conserve natural and financial resources required for construction and maintenance of infrastructure.

LEED-ND Standard Requirements	Expert Vote	Citations
Locate the **project** in one of the following locations that also earn at least one point for **street grid density** according to the calculation below: • An **infill site** that is also a **previously developed site** (6 points) • An infill site that is not a previously developed site (4 points) • An **adjacent site** that is also a previously developed site (3 points) • A previously developed site that is not an adjacent or infill site (2 points) • An adjacent site that is not a previously developed site (1 point) AND Calculate the street grid density (in street centerline miles per square mile) within a 1 mile radius from the perimeter of the site boundary. Points are added to the above points according to the following street grid density: • 40 centerline miles per square mile or greater • 30-39 centerline miles per square mile • 20-29 centerline miles per square mile • 10-19 centerline miles per square mile No points are available under this credit for sites that are not either 1) an adjacent site, 2) an infill site, or 3) a previously developed site.	**Supported by Data**	1) Rodríguez, D.A., Targa, F. and Aytur, S. Transportation implications of urban containment policies - A study of the largest 25 U.S. metropolitan areas, Urban Studies, 40 pages. 2) Ryan, Sherry and James Throgmorton. 2003. Sustainable Transportation and Land Development on the Periphery: A Case Study of Freiburg, Germany and Chula Vista, California. Transportation Research Part D: Transport and Environment, v.8,1: 37-52. *Transcript Quotes* 1) *Kenneth Rose*: Infill sites may improve social capital…. social capital is more direct. 2) *Emil Malizia*: I think there are a lot of measures but not ones that we can grab a hold of nationally easily. I mean employment density is traditional center in places like Atlanta where there are multiple centers. 3) *Lawrence Frank*: If you do that I hope that intersection density is defined somewhere. 4) *Lawrence Frank*: Regional susceptibility. The thing that mattered most was accessibility to urban centers.

SLL Credit 4: Reduced Automobile Dependence

Intent: Encourage development in locations that exhibit superior performance in providing transportation choices or otherwise reducing motor vehicle use.

<table>
<tr><th>LEED-ND Standard Requirements</th><th>Expert Vote</th><th>Citations</th></tr>
<tr>
<td>OPTION 1
Locate project on a site with transit service of 20 or more easily accessible transit rides per week day. The number of points available for increasing transit service is indicated in the table below. The total number of rides available during weekdays is defined as the number of buses or streetcars stopping with a ¼ mile walk distance of at least 50% of the project's dwellings and business entrances, and the number of bus rapid transit buses, light rail trains, heavy passenger rail, and ferries stopping within a ½ mile walk distance of at least 50% of the project's dwellings and business entrances;
<table>
<tr><th>Total rides available per weekday</th><th>Points earned</th></tr>
<tr><td>20-59</td><td>2</td></tr>
<tr><td>60-99</td><td>3</td></tr>
<tr><td>100-224</td><td>4</td></tr>
<tr><td>225-349</td><td>5</td></tr>
<tr><td>350-499</td><td>6</td></tr>
<tr><td>500 or more</td><td>7</td></tr>
</table>
</td>
<td>Consistent with Data</td>
<td>1) Ewing R, Cervero R. 2001. Travel and the built environment: a synthesis. Transp. Res. Rec. 1780:87-114.

2) Frank LD, Andresen MA, Schmid TL. Obesity relationships with community design, physical activity, and time spent in cars. American Journal of Preventive Medicine 2004;27(2):87-96.

3) McCormack GR, Giles-Corti B, Bulsara M. The relationship between destination proximity, destination mix and physical activity behaviors. Prev Med. 2007 Feb 8

4) Rundle A, Roux AV, Free LM, Miller D, Neckerman KM, Weiss CC. "The urban built environment and obesity in New York City: a multilevel analysis." American Journal of Health Promotion 21 326-34 2007

Transcript Quotes

1) James Sallis: I think as far as it is a connection to physical activity, yes. Our unpublished international study that was one of the significant factors related to physical activity… Having some kind of transit close by.

2) Lawrence Frank: We could reduce time spent in cars is systematically associated with walk.

3) Jen Henry: The more subway stops the lower your BMI.

4) Lawrence Frank: Any region has a metropolitan planning organization so it is easy to call and get that information and get the average travel time to this location - why we can't use that then we will have a real measure.</td>
</tr>
</table>

OPTION 2
Locate project within a Metropolitan Planning Organization AND within a transportation analysis zone where **Vehicle Miles Traveled (VMT)** per capita or single occupancy vehicle (SOV) driving mode share has been demonstrated by MPO research derived from a household transportation survey to be no more than 80% of the average of the metropolitan region as a whole. Additional credit may be awarded for increasing levels of performance, as indicated;

Percent of average regional per capita VMT or SOV mode share	Points earned
71% to 80%	2
61% to 70%	3
51% to 60%	4
41% to 50%	5
31% to 40%	6
30% or less	7

Consistent with Data

1) Baldassare, Mark, Sherry Ryan, and Cherly Katz. 1999. "Suburban Attitudes Towards Policies Aimed at Reducing Solo Driving." Transportation 25,1: 99-117.

2) Norman, Greg, Sandra Nutter, Sherry Ryan, James Sallis, Karen Calfas and Patrick Kevin "Community Design and Recreational Facility Correlates of Adolescent Physical Activity and Body Mass Index," forthcoming in Journal of Physical Activity and Health.

3) Ryan, Sherry. 1999. "Property Values and Transportation Facilities: Finding the Transportation-Land Use Connection." Journal of Planning Literature 13, 4:412-427.

4) Ryan, Sherry and James Throgmorton. 2003. "Sustainable Transportation and Land Development on the Periphery: A Case Study of Freiburg, Germany and Chula Vista, California." Transportation Research Part D: Transport and Environment, v.8,1: 37-52

5) van Hengel, Drusilla R., Joseph F. DiMento, and Sherry Ryan. 1999. "Equal Access? Travel Behavior Change in the Century Freeway Corridor." Urban Studies 36, 3:547-562.

6) Z. Ming. (2006). Travel choice with no alternative - Can land use reduce automobile dependence? Journal Of Planning Education And Research.

Transcript Quotes

1) *David Goldberg*: APTA.com (American Public Transportation Association)

Transcript Notes

1) APTA.org (American Public Transportation Association) mentioned as possible citation, but no specific citation found.

OPTION 3
Locate the project such that 50% of the dwelling units and business entrances are within a ¼ mile walk distance of at least one vehicle that is available through a vehicle-sharing program, and publicize the availability and benefits of the vehicle-sharing program to project occupants. If the project will add more than 100 dwelling units or employees to the neighborhood, at least one additional vehicle for every 100 dwelling units or employees must be available and the parking space must be dedicated as part of the project. Where new vehicle locations are created, a vehicle share program must commit to providing a vehicle to the location for at least three years.

Supported by Expert Opinion

Experts agree, but no citation was provided.

SLL Credit 5: Bicycle Network

Intent: To promote bicycling and transportation efficiency.

LEED-ND Standard Requirements	Expert Vote	Citations
Design or locate the **project** such that 50% of the dwelling units or business entrances are within 3 miles of at least four or more of the diverse uses listed in Appendix A (p.152) using an existing **biking network** and/or a biking network that will be completed as part of the project (3 mile distance is measured along the biking network, not as a straight radius); AND For any non-residential buildings or multifamily residential buildings that are part of the project, provide bicycle parking spaces or storage for a capacity of no less than 15% of the parking space capacity provided for cars as part of the project.	**Supported by Expert Opinion**	*Transcript Quotes* 1) *Lawrence Frank*: Eric, a student at Georgia Tech, and he has published a couple of papers with Mike D. Meyer, Professor, School of Civil and Environmental Engineering, Georgia Institute of Technology: 2) *Tracy McMillan*: The manual of Uniforms Traffic control devises public (FHA) some states have their own, Texas doesn't. *Transcript Notes* 1) Eric, Student, and Mike D. Meyer, Professor, School of Civil and Environmental Engineering, Georgia Institute of Technology" mentioned as possible citation: Specific publication not found

SLL Credit 6: Housing and Jobs Proximity

Intent: Encourage balanced communities with a diversity of uses and employment opportunities. Reduce energy consumption and pollution from motor vehicles by providing opportunities for shorter vehicle trips and/or use of alternative modes of transportation.

LEED-ND Standard Requirements	Expert Vote	Citations
OPTION 1 Include a residential component equaling at least 25% of the **project**'s total building square footage, and locate the project within a 1/2 mile **walk distance** of a number of **pre-project** jobs equal to or greater than 50% of the number of dwelling units in the project;	**Supported by Expert Opinion**	*Transcript Quotes* 1) *Lawrence Frank*: The long form for the census… that gives us a data set to know where people work. So any development you know where the census track is located and they could look up and find out and make sure that the data is easy enough available. The average commuter distance from that location could be an indicator of how much time they are going to spend or how far they will go to commute. So, you would be rewarding people who put development in places. That are closer where people travel shorter distances.
OPTION 2 Include a non-residential component equaling at least 25% of the project's total building square footage, and locate on an **infill** site that is within a ½ mile walk distance of an existing and operational rail transit stop, and within a ½ mile walk distance of a number of existing dwelling units equal to or greater than 50% of the number of new jobs created as part of the project.	**Supported by Expert Opinion**	Experts agree, but no citation was provided.

SLL Credit 7: School Proximity

Intent: Promote public health through physical activity by facilitating walking to school. Promote community interaction and engagement.

LEED-ND Standard Requirements	Expert Vote	Citations
Include a residential component in the **project** that constitutes at least 25% of the project's total building square footage; and locate or design the project so that at least 50% of the project's dwelling units are within ½ mile **walk distance** of an existing or planned school.	**Opportunity for future research**	1) Falb, MD, Kanny D., Powell KE, Giarrusso, AJ. Estimating the proportion of children who can walk to school. Am J Prev Med. 2007 Oct: 33(4):269-75 2) Kerr, J., Rosenberg, D., Sallis, J.F., Saelens, B.E., Frank, L.D., and Conway, T.L. (2006). Active commuting to school: Associations with built environment and parental concerns. Medicine and Science in Sports and Exercise, 38, 787-794. *Transcript Quotes* 1) *Lawrence Frank*: A student of mine, Jennifer did her thesis based on the characteristics of the route by 10 ½ year olds – I had her run her analysis again and came out very significant based on 10 ½ year olds. 2) *Lawrence Frank*: Based on literature we know distance matters and age matters. 3) *Andrew L. Dannenberg*: Ken Powell has a paper, which does separate it by age. 4) *Emil Malizia*: I think we are recommending one mile. That is supported by data and consistent with data.

Neighborhood Pattern & Design

NPD Prerequisite 1: Open Community

Intent: Promote communities that are physically connected to each other. Foster community and connectedness beyond the development.

LEED-ND Standard Requirements	Expert Vote	Citations
Designate all streets and sidewalks that are built as part of the project or serving the project directly as available for general public use and not gated. Gated areas and enclaves are NOT considered available for public use, with the exception of education and health care campuses where gates are used for security purposes.	**No or insufficient Data**	

NPD Prerequisite 2: Compact Development

Intent: Conserve land. Promote livability, transportation efficiency, and walkability.

LEED-ND Standard Requirements	Expert Vote	Citations
Build any residential components of the **project** at an average **density** of seven or more dwelling units per acre of **buildable land** available for residential uses; AND Build any non-residential components of the project at an average density of 0.50 **FAR** or greater per acre of buildable land available for non-residential uses. If the project location is serviced by a transit agency which has specified minimum service densities that are greater than the densities required by this prerequisite, then the project must meet the transit agency's minimum service densities instead. The specified average density must be achieved by the point in the project's construction at which 50% of dwelling units are built, or within five years of the date that the first building is occupied, whichever is longer.	**Consistent with Data**	1) Frank L.D., Engelke P.O., Schmid T.L. 2003 Health and Community Design: The Impact Of the Built Environment On Physical Activity. Washinton: Island. 2) Heath G., Brownson R., Kruger J., Service TFoCP, The effectiveness of urban design and land use and transport policies and practices to increase physical activity: a systematic review. J Phys Act Health 2006;3(suppl. 1):S55-S76. 3) Saelens, B.E. & Handy, S.L. (resubmitted January 2007). Built environment correlates of walking: a review. Medicine and Science in Sports and Exercise. 4) Saelens B.E., Sallis J.F., Frank L.D., Environmental correlates of walking and cycling: findings from the transportation, urban design , and planning literatures. Ann Behav Med 2003;25(2):80-91. 5) Sallis, J.F., and Kerr, J. (December 2006). Built environment and physical activity. PCPFS Research Digest, Series 7, No.4, 1-8. http://www.presidentschallenge.org/misc/news_research/research_digests/3327%20Research%20Digest.pdf *Transcript Quotes* 1) *Andrew L. Dannenberg*: Ken Powell has a paper, which does separate it by age FALD. 2) *James Sallis*: Yes. I say consistent and we can't cite that 7 is the right number.

NPD Credit 1: Compact Development

Intent: Conserve land. Promote community livability, transportation efficiency, and walkability.

LEED-ND Standard Requirements	Expert Vote	Citations
Design and build the **project** to achieve the average densities shown in the table below. The specified density must be achieved by the point in the project's construction at which 50% of dwelling units are built, or within five years of the date that the first building is occupied, whichever is longer.	**Supported by Data**	1) Frank LD, Engelke PO, Schmid TL. 2003 Health and Community Design: The Impact Of the Built Environment On Physical Activity. Washinton: Island. 2) Heath G., Brownson R., Kruger J., Service TFoCP, The effectiveness of urban design and land use and transport policies and practices to increase physical activity: a systematic review. J Phys Act Health 2006;3(suppl. 1):S55-S76. 3) Saelens BE, Sallis JF, Frank LD, Environmental correlates of walking and cycling: findings from the transportation, urban design , and planning literatures. Ann Behav Med 2003;25(2):80-91. 4) Sallis, J.F., and Kerr, J. (December 2006). Built environment and physical activity. PCPFS Research Digest, Series 7, No.4, 1-8. http://www.presidentschallenge.org/misc/news_research/research_digests/3327%20Research%20Digest.pdf .

Residential **Density** (DU/acre)	Non-residential Density **(FAR)**	Points Available
10 to 20	0.75 to 1.0	1
> 20 and ≤ 30	> 1.0 and ≤ 1.5	2
> 30 and ≤ 40	> 1.5 and ≤ 2.0	3
> 40 and ≤ 50	> 2.0 and ≤ 2.5	4
> 50 and ≤ 60	> 2.5 and ≤ 3.0	5
> 60 and ≤ 70	> 3.0 and ≤ 3.5	6
> 70	> 3.5	7

NPD Credit 2: Diversity of Uses

Intent: Promote community livability, transportation efficiency, and walkability.

<table>
<tr><th>LEED-ND Standard Requirements</th><th>Expert Vote</th><th>Citations</th></tr>
<tr>
<td>Include a residential component in the project that constitutes at least 25% of the project's total building square footage; and design or locate the project such that at least 50% of the dwelling units are within ½ mile walk distance of at least two (1 point), four (2 points), seven (3 points) or ten (4 points) of the diverse uses defined in Appendix A (p.152). Uses may either be in nearby areas or be built within the development.

Verify that a pedestrian can reach the uses via routes that do not necessitate crossing any streets that have speed limits of greater than 25 miles per hour, unless those crossings have vehicle traffic controls such as signals and stop signs with crosswalks.

The specified number of uses must be in place by the time certain percentages of occupancy are in place, as indicated in the following table:
<table>
<tr><th>Number of uses</th><th>% of project occupancy at which uses need to be in place</th></tr>
<tr><td>Two uses (1 pt)</td><td>20%</td></tr>
<tr><td>Four uses (2 pts)</td><td>30%</td></tr>
<tr><td>Seven uses (3 pts)</td><td>40%</td></tr>
<tr><td>Ten uses (4 pts)</td><td>50%</td></tr>
</table>
</td>
<td>Supported by Data</td>
<td>1) Frank LD, Engelke PO, Schmid TL. 2003 Health and Community Design: The Impact Of the Built Environment On Physical Activity. Washinton: Island.

2) Heath G., Brownson R., Kruger J., Service TFoCP, The effectiveness of urban design and land use and transport policies and practices to increase physical activity: a systematic review. J Phys Act Health 2006;3(suppl. 1):S55-S76.

3) Jackson, Richard. Harp, Toni., Wright, Tom. Land Use Planning: Why Public Health Must be Involved. Journal of Law, Medicine & Ethics, Vol. 30, 2002.

4) Saelens BE, Sallis JF, Frank LD, Environmental correlates of walking and cycling: findings from the transportation, urban design , and planning literatures. Ann Behav Med 2003;25(2):80-91.

5) Sallis, J.F., and Kerr, J. (December 2006). Built environment and physical activity. PCPFS Research Digest, Series 7, No.4, 1-8. http://www.presidentschallenge.org/misc/news_research/research_digests/3327%20Research%20Digest.pdf

Transcript Quotes

1) James Sallis: This is the stuff that we know. Pretty well is supported by data I would be comfortable with that. The thresholds are supported by data.

2) Lawrence Frank: We haven't measured it that way we are not screening out barrier for 25 miles per hour speed. I don't think anybody has evidence to support that statement.

3) Susan Mudd: One of the things that keep coming up in discussions at CNU has to do with emergency vehicles fire truck dimensions are being used more and more. Is anybody aware of data that relates to how pedestrians are affected by wider streets?

4) Lawrence Frank: It has a public health benefit.</td>
</tr>
</table>

NPD Credit 3: Diversity of Housing Types

Intent: To enable citizens from a wide range of economic levels and age groups to live within a community.

<table>
<tr><th>LEED-ND Standard Requirements</th><th>Expert Vote</th><th>Citations</th></tr>
<tr>
<td>Include a sufficient variety of housing sizes and types in the project such that the total variety of housing within the project, or within a ¼ mile of the center of the project, achieves at least 0.5 according to the following calculation, which is based on the Simpson Diversity Index using the housing categories below.

The Simpson Diversity Index score is calculated with the following equation:
Score = 1- $\sum (n/N)^2$,

where n = the total number of dwellings in a single category, and N = the total number of dwellings in all categories.

<table>
<tr><th>Score on the Simpson Diversity Index</th><th>Points Earned</th></tr>
<tr><td>≥ 0.5 and < 0.6</td><td>1</td></tr>
<tr><td>≥ 0.6 and < 0.7</td><td>2</td></tr>
<tr><td>≥ 0.7</td><td>3</td></tr>
</table>
</td>
<td>Supported by Expert Opinion</td>
<td>Experts agree, but no citation was provided.</td>
</tr>
</table>

NPD Credit 4: Affordable Rental Housing

Intent: To enable citizens from a wide range of economic levels and age groups to live within a community

LEED-ND Standard Requirements	Expert Vote	Citations
Include a proportion of rental units priced for households earning below **area median income** such that: OPTION 1 At least 15% of total rental units are priced for households up to 50% of area median income	**Supported by Expert Opinion**	*Transcript Quotes* 1) *James Sallis*: Maybe indirectly they might be able to live where they work and so less driving; certainly we would expect some public health benefit and social equity. This to me is an expert opinion. 2) *Katie Sobush*: There is some evidence and an indicator that they are able to walk regardless of your own education if your neighbor is educated you are likely to walk more. 3) *Kenneth Rose*: Different life expectations.
OPTION 2 At least 30% of total rental units are priced for households up to 80% of area median income	**Supported by Expert Opinion**	Experts agree, but no citation was provided.
OPTION 3 At least 15% of total rental units are priced for households up to 50% of area median income and an additional 15% of total rental units are priced for households at up to 80% of area median income (2 points). AND Maintain these units at affordable levels for a minimum of fifteen years.	**Supported by Expert Opinion**	Experts agree, but no citation was provided.

NPD Credit 5: Affordable For-Sale Housing

Intent: To enable citizens from a wide range of economic levels and age groups to live within a community.

LEED-ND Standard Requirements	Expert Vote	Citations
Include a proportion of for-sale housing affordable to households at or slightly above the **area median income** such that: OPTION 1 At least 10% of for-sale housing is priced for households up to 80% of the area median income	**Supported by Expert Opinion**	Experts agree, but no citation was provided
OPTION 2 At least 20% of for-sale housing is priced for households up to 120% of the area median income	**Supported by Expert Opinion**	Experts agree, but no citation was provided.
OPTION 3 At least 10% of for-sale housing is priced for households up to 80% of the area median income and an additional 10% of for-sale housing is priced for households at up to 120% of the area median income	**Supported by Expert Opinion**	Experts agree, but no citation was provided.

NPD Credit 6: Reduced Parking Footprint

Intent: Design parking to increase the pedestrian orientation of projects and to minimize the adverse environmental effects of parking facilities.

LEED-ND Standard Requirements	Expert Vote	Citations
For any non-residential buildings and multifamily residential buildings that are a part of the project, locate all off-street facilities at the side or rear of buildings, leaving frontage and streetscapes free of surface parking lots;	**Consistent with Data**	*Transcript Quotes* 1) *Lawrence Frank:* There is no stronger predictor of automobiles than places to store them. Development community does put pressure on them… they say I have to provide structure parking to get LEED I can't afford it so we need to reduce the parking ratio. 2) *Jen Henry*: Just to reduce your overall by the number of trips by 20%. Unbundling is mentioned but not here but it will be in the reference guide. 3) *Katie Sobush*: ABPD has a detailed guideline for parking.
AND Use no more than 20% of the total **development footprint** area for surface parking facilities, with no individual surface parking lot larger than 2 acres. For the purposes of this credit, surface parking facilities include ground-level garages unless they are under or over space intended for human occupancy. Underground or multi-story parking facilities can be used to provide additional capacity, and on-street parking spaces are exempt from this limitation;	**Supported by Expert Opinion**	Experts agree, but no citation was provided.
AND For any non-residential buildings or multifamily residential buildings that are part of the **project**, provide bicycle and/or carpool parking spaces equivalent to 10% of the total automobile parking on the site. Signage indicating carpool parking spots should be provided, and bicycle parking should be within 200 yards of the entrance to the building that it services. The 10% carpool/bicycle space requirement can be met with any combination of bicycle and carpool parking.	**Supported by Expert Opinion**	Experts agree, but no citation was provided.

NPD Credit 7: Walkable Streets

Intent: Provide appealing and comfortable pedestrian street environments in order to promote pedestrian activity. Promote public health though increased physical activity.

LEED-ND Standard Requirements	Expert Vote	Citations
Design and build the **project** such that all of the following are achieved (4 points): **a.** A principal **functional entry** of each building has a front façade that faces a public space such as a street, square, park, paseo, or plaza. **b.** A minimum of 30% of all street frontages located *within* the project, if any, are planned for development that complies with the minimum building-height-to-street-width proportions of 1:3; and where building sites are planned along streets *bordering* the project, a minimum of 15% of the total street frontage of such sites contains (or is dedicated to) development that will produce a building-height-to-street-width proportion of 1:3. Street frontages are to be measured in linear feet. **c.** Continuous sidewalks or equivalent provisions for walking are provided along both sides of all streets within the **project**. New sidewalks must be at least 4 feet wide. Equivalent provisions for walking include ***woonerfs*** and footpaths. **d.** All streets along exclusively residential blocks within the **project**, whether new or existing, are designed for a maximum speed of 20 mph. **e.** All streets along non-residential or mixed use blocks within the project, whether new or existing, are designed for a maximum speed of 25 mph. If the above measures are achieved, the project may earn additional points as follows: 1 point for designing and building the project such that any three measures on the list below are accomplished (up to 4 additional points): **f.** The front façades of at least 80% of all buildings are no more than 25 feet from front property line. **g**. The front facades of at least 50% of all buildings are no more than 18 feet from the front property line. **h.** The front facades of at least 50% of mixed-use and non-residential buildings are contiguous to the sidewalk. **i.** Functional building entries occur every 75 feet, on average, along non-residential or mixed use blocks. **j.** All ground-level non-residential interior spaces that face a public space have transparent glass on at least 33% of the ground-level façade. **k.** No blank (without doors or windows) walls longer than 50 feet occur along sidewalks. Walls with public art installations such as murals may be exempted. **l.** Any ground-level storefront windows must be kept open and visible (unshuttered) at night, and this must be stipulated to future owners in **CC&Rs** or other binding documents. **m.** On-street parking is provided on 70% of both sides of all new streets. The percentage of on-street parking shall be measured by comparing the length of street designated for parking to the total length of the curb around the perimeter of each block, including curb cuts, driveways, and intersection radii. **n.** Street trees occur between the vehicle travel way and sidewalk at intervals of no greater than 40 feet; **o.** At least 50% of ground-floor dwelling units have an elevated finished floor no less than 24 inches above the sidewalk grade. **p.** In non-residential or mixed use projects, 50% or more of the total number of office buildings include ground floor retail; and all businesses and/or other community services on the ground floor are accessible directly from sidewalks along a public space such as a street, square, or plaza. **q.** Trees or other structures provide shade within five years of project occupancy over at least half the length of sidewalks included within or contiguous to the project. The estimated crown diameter (the width of the shade if the sun is directly above the tree) is used to calculate the shaded area.	**Supported by Expert Opinion**	1) Day, Kristen. Boarnet, Marlon., Alfonzo, Mariela., Forsyth, Ann. The Irvine Minnesota Inventory to Measure Built Environments: Development, American Journal of Preventive Medicine 30, 2: 144-152. 2006 2) Day, Kristen. Boarnet, Marlon. Alfonzo, Mariela. Forsyth, Ann. Oakes, J. Michael. The Irvine Minnesota Inventory to Measure Built Environments: Reliability Tests. American Journal of Preventive Medicine 30, 2: 153-259. 2006 3) Forsyth, Ann. Urban Centers in Universities: Institutional Alternatives for Urban Design. Journal of Urban Design 11, 1: 73-79. 4) Loukaitou-Sideris A, Eck JE. Crime prevention and active living. Am J Health Promot. 2007 Mar-Apr;21(4 Suppl):380-9,iii. *Transcript Notes* 1) “Rappaport” mentioned as possible citation for environmental psychology. Specific publication unknown. 2) “John Lange University of New South Wales” mentioned as possible citation. Specific publication unknown. 3) The reference “ www.hphp.us NPD C 7-M” was mentioned but no specific publication found.

NPD Credit 8: Street Network

Intent: Encourage the design of projects that incorporate high levels of internal connectivity and the location of projects in existing communities in order to conserve land, promote multimodal transportation and promote public health through increased physical activity.

LEED-ND Standard Requirements	Expert Vote	Citations
If new cul-de-sacs are created as part of the **project**, include a pedestrian or bicycle through-connection in at least 50% of any new cul-de-sacs. If topographical conditions prohibit such connections, these are not included in the calculation. AND meet the requirements under one of the following Options: OPTION 1 – FOR PROJECTS SMALLER THAN 7 ACRES Locate the project such that the **street grid density** within a ¼ mile radius from the center of the project falls within one of the ranges listed in the table below, OR design the project such that the project's street grid density falls within one of the ranges listed in the table below. OR OPTION 2 – FOR PROJECTS 7 ACRES OR LARGER Design the project such that the project's average street grid density falls within one of the ranges listed in the table below.	**Consistent with Data**	1) Dill, Jennifer. Measuring Network Connectivity for Bicycling and Walking. Joint Congress of ACSP-AESOP. 2003 July. *Transcript Quotes* 2) *James Sallis*: We are at 8 right - NPD Credit 8 – I think if we change to intersection that this would be basically consistent with data. And you may need to harass Larry about it.

Street grid density (centerline miles/sq.mi.)	Points Earned
20 – 29	1
>30	2

NPD Credit 9: Transit Facilities

Intent: Encourage transit use and reduce driving by creating safe and comfortable transit facilities.

LEED-ND Standard Requirements	Expert Vote	Citations
Provide covered and at least partially enclosed shelters, adequate to buffer wind and rain, with at least one bench at each transit stop within the **project boundaries**. Shelters shall be illuminated to five average maintained footcandles (light levels may be reduced after hours). Existing external lighting can contribute to this level, but any new lighting shall meet light pollution requirements in GCT Credit 20, and designed to not directly illuminate any windows of residential properties. AND Provide kiosks, bulletin boards, and/or signs devoted to providing local transit information as part of the project, including basic schedule and route information at each transit stop that borders or falls within the **project**.	**Consistent with Data**	1) Loukaitou-Sideris A, Eck JE. Crime prevention and active living. Am J Health Promot. 2007 Mar-Apr;21(4 Suppl):380-9,iii. *Transcript Quotes* 1) *Karen Lee*: Whenever you encourage transit use it's going to encourage some active travel – it is going to encourage building in more activity. 3) *Katie Sobush*: Recently work has been done after schedules had been posted at stops showing the association with that and increased transit usage. So there is some relationship there. In existing areas I wonder what some of this stuff … is it in the right of way - are all the areas the property of the developer? None of this stuff is public streets or - to what extent do they need to have an agreement with the transit agency to post this information. How feasible it is?

NPD Credit 10: Transportation Demand Management

Intent: Reduce energy consumption and pollution from motor vehicles by encouraging use of public transit.

LEED-ND Standard Requirements	Expert Vote	Citations
OPTION 1 Create and implement a comprehensive transportation demand management (TDM) program for the **project** aimed at reducing **weekday peak period** trips by at least 20% compared to the forecasted trip generation for the project without the TDM strategies; and fund for a minimum of two years following **buildout** of the project	**Consistent with Data**	Experts agree this was consistent with data, but no citation was provided.
OPTION 2 Provide transit passes valid for at least one year, subsidized to be half of regular price or cheaper, to each resident and employee locating within the project during the first three years of project occupancy (or longer). Publicize the fact that subsidized transit passes are available to the eligible residents and employees	**Supported by Expert Opinion**	Experts agree, but no citation was provided.
OPTION 3 Provide transit service (with vans, shuttles, buses) to rail, ferry, or other major transit facilities and/or another major destination such as a retail or employment center, with service no less frequent than five rides per weekday peak period. The service must begin when the project is 20% occupied or sooner, and must be guaranteed for at least two years beyond project buildout	**Supported by Expert Opinion**	Experts agree, but no citation was provided.

NPD Credit 11: Access to Surrounding Vicinity

Intent: Provide direct and safe connections, for pedestrians and bicyclists as well as drivers, to local destinations and neighborhood centers. Promote public health by facilitating walking and bicycling.

LEED-ND Standard Requirements	Expert Vote	Citations
Design and build **projects** such that there is at least one through-street at the **project boundary** every 800 feet, or at existing abutting street intervals, whichever distance is smaller. This does not apply to connections that cannot physically be made; e.g. **wetlands**, rivers, railroads, extreme topography, natural gas lines, pipeline easements, highways, expressways and other limited-access roads.	**Consistent with Data**	Experts agree this was consistent with data, but no citation was provided.

NPD Credit 12: Access to Public Spaces

Intent: To provide a variety of open spaces close to work and home to encourage walking, physical activity and time spent outdoors.

LEED-ND Standard Requirements	Expert Vote	Citations
Locate and/or design **project** so that a park, green plaza or square at least 1/6 acre in area, and at least 150' in width, lies within 1/6 mile **walk distance** of the 90% of the dwelling units and business entrances in the project. Parks less than 1 acre must also have a proportion no narrower than 1 unit of width to 4 units of length; AND For projects larger than 7 acres only, locate and/or design the project so that taken together all of the parks in the project shall average at least 1/2 acre in size.	**Consistent with Data**	1) Giles-Corti B, Broomhall MH, Knuiman M., Collins C, Douglas K., Ng K, Lange A, Donovan RJ. Increasing walking: how important is distance to, attractiveness, and size of public open space? Am J Prev Med. 2005 Feb;28(2 Suppl 2):169-76. 2) Godbey GC, Caldwell LL, Floyd M, Payne L. 2005. Contributions of leisure studies and recreation and park management research to the active living agenda. Am. J. Prev. Med. 28(2S2):150-158. 3) Humpel N, Own N, Leslie E. 2002. Environmental factors associated with adults' participation in physical activity: A review. Am. J. Prev. Med. 22:188-199. 4) Kerr, J., Frank, L., Sallis J. F., and Chapman, J. (2007). Urban form correlates of pedestrian travel in youth: Differences by gender, race-ethnicity, and household attributes. Transportation Research—Part D, 12, 177-182. *Transcript Quotes* 1) *Lawrence Frank*: What we do know is a kid is much more likely to walk 5 to 8, 11 -12 we didn't look at the size of the park we just know having a park would entice kids to exercise. 2) *Karen Lee*: Activity benefits occur so what we do know there is evidence based around doing it at 10 minute segments in terms of calories are burnt for an additional health benefit. 3) *James Sallis*: Open spaces were not as activity producing like a jungle gym. I am not saying all of it but at least a corner of it should be devoted to kids. There is a paper by a doctoral student open spaces were not as effective… the playgrounds they looked at the mixed natural and unnatural was the most constructive. I don't want to put too many restrictions here. I have not seen kids mentioned anywhere. Making sure that the parks accommodate kids is the minimum. *Emil Malizia*: Robin would be the source North Carolina State University…. ncsu.edu *Transcript Notes* 1) Robin Moore from North Carolina State University" mentioned as possible citation, but specific publication unknown.

NPD Credit 13: Access to Active Spaces

Intent: To provide a variety of open spaces close to work and home to encourage walking, physical activity and time spent outdoors.

LEED-ND Standard Requirements	Expert Vote	Citations
OPTION 1 Locate and/or design the **project** so that an active open space facility (e.g., general playfields, soccer, baseball, basketball and other sports fields) of at least 1 acre lies within ½ mile **walk distance** of 90% of the dwelling units and non-residential business entrances in the project;	**Consistent with Data**	1) Addy CL, Wilson DK, Kirtland KA, Ainsworth BE, Sharpe P, Kimsey D. Associations of perceived social and physical environmental supports with physical activity and walking behavior. Am J Public Health. 2004 Mar;94(3):440-3. PMID: 14998810 2) Cohen, Deborah A., MD, MPH, J. Scott Ashwood, MA, Molly M. Scott, MPP, Adrian Overton, MPA, Kelly R. Evenson, PhD, Lisa K. Staten, PhD, Dwayne Porter, PhD, Thomas L. McKenzie, PhD and Diane Catellier, DrPH. Public Parks and Physical Activity Among Adolescent Girls. 3) Hoehner CM, Brennan Ramirez LK, Elliott MB, Handy SL, Brownson RC. Perceived and objective environmental measures and physical activity among urban adults. Am J Prev Med. 2005 Feb;28(2 Suppl 2):105-16. PEDIATRICS Vol. 118. No. 5 November 2006, pp. e1381-e1389 (doi:10.1542/peds.2006-1226) 4) Wilson DK, Kirtland KA, Ainsworth BE, Addy CL. Socioeconomic status and perceptions of access and safety for physical activity. Ann Behav Med. 2004 Aug;28(1):20-8. PMID: 15249256
OPTION 2 Locate and/or design the project so that at least 50% of all buildings are located within ¼ mile walk distance of a multi-use trail or Class I bicycle trail of at least 3 miles in length;	**Consistent with Data**	1) Gobster, Paul H. Recreation and Leisure Research from an Active Living Perspective: Taking a Second Look at Urban Trail Use Data. USDA Forest Service, North Central Research Station Recreation and Leisure Research from an Active Living Perspective: Taking a Second Look at Urban Trail Use Data. USDA Forest Service, North Central Research Station , Evanston, Illinois, USA. Leisure Sciences, Volume http://www.informaworld.com/smpp/title~content=t713773100~db=all~tab=issueslist~branches=27 - v2727, Issue 5 October 2005 , pages 367 – 383 2) Troped PJ, Saunders RP, Pate RR, Reininger B, Addy CL. Correlates of recreational and transportation physical activity among adults in a New England community. Prev Med. 2003 Oct;37(4):304-10. 3) Troped P.J.; Saunders R.P.; Pate R.P.; Pate R.R.; Reininger B.; Ureda J.R.; Thompson S.J. Associations between Self-Reported and Objective Physical Environmental Factors and Use of a Community Rail-Trail. Preventive Medicine, Volume 32, Number 2, February 2001 , pp. 191-200(10)

OPTION 3 Locate and/or design the project so that at least 90% of all dwelling units and non-residential business entrances in the project are located within ¼ mile walk distance of a public recreation center or gym with outdoor facilities or a park with active recreational facilities.	**Consistent with Data**	1) Addy CL, Wilson DK, Kirtland KA, Ainsworth BE, Sharpe P, Kimsey D. Associations of perceived social and physical environmental supports with physical activity and walking behavior. Am J Public Health. 2004 Mar;94(3):440-3. PMID: 14998810 2) Cohen, Deborah A., MD, MPH, J. Scott Ashwood, MA, Molly M. Scott, MPP, Adrian Overton, MPA, Kelly R. Evenson, PhD, Lisa K. Staten, PhD, Dwayne Porter, PhD, Thomas L. McKenzie, PhD and Diane Catellier, DrPH. Public Parks and Physical Activity Among Adolescent Girls. 3) Giles-Corti B, Broomhall MH, Knuiman M., Collins C, Douglas K., Ng K, Lange A, Donovan RJ. Increasing walking: how important is distance to, attractiveness, and size of public open space? Am J Prev Med. 2005 Feb;28(2 Suppl 2):169-76. 4) Godbey GC, Caldwell LL, Floyd M, Payne L. 2005. Contributions of leisure studies and recreation and park management research to the active living agenda. Am. J. Prev. Med. 28(2S2):150-158. 5) Hoehner CM, Brennan Ramirez LK, Elliott MB, Handy SL, Brownson RC. Perceived and objective environmental measures and physical activity among urban adults. Am J Prev Med. 2005 Feb;28(2 Suppl 2):105-16. PEDIATRICS Vol. 118. No. 5 November 2006, pp. e1381-e1389 (doi:10.1542/peds.2006-1226) 6) Humpel N, Own N, Leslie E. 2002. Environmental factors associated with adults' participation in physical activity: A review. Am. J. Prev. Med. 22:188-199. 7) Kerr, J., Frank, L., Sallis J. F., and Chapman, J. (2007). Urban form correlates of pedestrian travel in youth: Differences by gender, race-ethnicity, and household attributes. Transportation Research—Part D, 12, 177-182. 8) Wilson DK, Kirtland KA, Ainsworth BE, Addy CL. Socioeconomic status and perceptions of access and safety for physical activity. Ann Behav Med. 2004 Aug;28(1):20-8. PMID: 15249256 *Transcript Notes* 1) "Robin from North Carolina State University" mentioned as possible citation, but specific publication unknown.

NPD Credit 14: Universal Accessibility

Intent: Enable the widest spectrum of people, regardless of age or ability, to more easily participate in their community life by increasing the proportion of areas that are usable by people of diverse abilities.

LEED-ND Standard Requirements	Expert Vote	Citations
For **projects** with residential components: For each residential unit type developed, design 20% (and not less than one) of each type to comply with the accessible design provisions of the Fair Housing Amendments Act (FHAA) and Section 504 of the Rehabilitation Act (Rehabilitation Act), as applicable. Separate residential unit types include: single-family, duplex, triplex, multi-unit row or townhouses, and mixed-use buildings that include residential units. (Compliance for multi-family buildings of four or more units is already a regulatory requirement.). All paths of travel between residential units and other buildings within the project shall comply with the accessible design provisions of the FHAA and Rehabilitation Act, as applicable; AND For projects with common-use or recreational facilities constructed as part of the project: • For any residential areas, apply the accessible design provisions of the FHAA and the Rehabilitation Act to facilities and rights-of-way; AND • For any non-residential areas, apply the accessible design provisions of the American Disabilities Act (ADA) to facilities and rights-of-way. Projects that include only non-residential components and public right-of-ways will not be able to achieve this credit, since they are already required by law to comply with applicable accessibility regulations. However, if non-residential projects include any common-use or recreational facilities not covered by accessibility regulations, they will be able to achieve the credit. Regarding residential accessibility design provisions, an accessible entrance can be located at the front, side or back of the residential unit, which may sometimes be determined by the topography of the site.	**Consistent with Data**	1) M. Spivock, L. Gauvin, J. Brodeur. Neighborhood-Level Active Living Buoys for Individuals with Physical Disabilities. American Journal of Preventive Medicine, Volume 32, Issue 3, Pages 224-230 *Transcript Quotes* 1) *Andrew L. Dannenberg*: Chris has worked on these. 2) *Lawrence Frank*: Expert is John Stanford with Catea at Georgia Tech he does a lot work on this topic. 3) *James Sallis*: Mike Spivack, he had an article American Journal of Preventive Medicine. *Transcript Notes* 1) Andrew L. Dannenberg mentioned “Chris “ as a possible citation but a specific publication has not been identified. 2) “John Stanford with Catea at Georgia Tech” has been mentioned as a possible citation. Specific publication is unknown.

NPD Credit 15: Community Outreach and Involvement

Intent: To encourage community participation in the project design and planning and involve the people who live in a community in deciding how it should be improved or how it should change over time.

LEED-ND Standard Requirements	Expert Vote	Citations
Meet with immediate neighbors and local public officials to solicit input on the proposed **project** during the pre-conceptual design phase, AND Host an open community meeting during conceptual design phase to solicit input on the proposed project, AND Modify the project design as a direct result of community input, or if modifications are not made, explain why community input did not generate design improvements, AND Work directly with community associations and/or other social networks of the community to advertise public meetings and generate comments on project design, AND Establish ongoing means for communication between the developer and the community throughout the design, construction, and in cases where the developer maintains control of part or the entire project, post-construction.	**Supported by Expert Opinion**	1) Minkler, M., Wallerstein, N.; Community Based Particpatory Research for Health. 2003. nursinglibrary.org 2) Rydin, Y., Pennington, M.; Public Participation and Local Environmental Planning: the collective action problem and the potential of social capital. Local Environment, 2000. Taylor & Francis.

NPD Credit 16: Local Food Production

Intent: Promote community-based and local food production to minimize the environmental impacts from transporting food long distances and increase direct access to fresh foods.

<table>
<tr><th>LEED-ND Standard Requirements</th><th>Expert Vote</th><th>Citations</th></tr>
<tr>
<td>Establish CC&Rs or other forms of deed restrictions that do not prohibit areas for growing produce, including greenhouses, on any portion or area of residential front yards, rear yards, side yards, balconies, patios or rooftops. Greenhouses, but not gardens, may be prohibited in front yard areas that face the street.

AND
Meet the requirements under one of the following Options:

OPTION 1 –NEIGHBORHOOD FARMS AND GARDENS

Dedicate permanent and viable growing space and/or related facilities (such as greenhouses) within the project at the square footage areas specified below. Provide fencing, watering systems, soil and/or garden bed enhancements (such as raised beds), secure storage space for garden tools, solar access, and pedestrian access for these spaces. Ensure that the spaces are owned and managed by an entity that can include occupants of the project in its decision-making, such as a community group, a homeowners association, or a public body.

<table>
<tr><th>Project density (dwelling unit/acre)</th><th>Required growing space (sq ft per dwelling unit)</th></tr>
<tr><td>7 to 14</td><td>200</td></tr>
<tr><td>> 14 and ≤ 22</td><td>100</td></tr>
<tr><td>> 22 and ≤ 28</td><td>80</td></tr>
<tr><td>> 28 and ≤ 35</td><td>70</td></tr>
<tr><td>> 35</td><td>60</td></tr>
</table>

OR

OPTION 2 –COMMUNITY SUPPORTED AGRICULTURE

Purchase shares in a Community Supported Agriculture (CSA) program located within 150 miles of the project site for at least 80% of the households within the project for two years. Shares must be delivered to within ¼ mile of the project on a regular schedule, which shall not be less than twice per month at least four months of the year.

OR

OPTION 3 –PROXIMITY TO FARMERS' MARKET

Locate project within ¼ mile of an established farmer's market (that has been operating for at least two years), with at least three producer vendors, and that operates at least once a week for at least 5 months of the year.</td>
<td>Consistent with Data</td>
<td>1) Morland, Kimberly, PhD, Wing, Steve, PhD, Diez Roux, Ana, MD, PhD. The Contextual Effect of the Local Food Environment on Residents' Diets: The Atherosclerosis Risk in Communities Study. November 2002, Vol 92, No. 11. American Journal of Public Health 1761-1768. © 2002 American Public Health Association.</td>
</tr>
</table>

Green Construction & Technology

GCT Credit 20: Light Pollution Reduction

Intent: Minimize light trespass from site, reduce sky-glow to increase night sky access, improve nighttime visibility through glare reduction, and reduce development impact on nocturnal environments.

LEED-ND Standard Requirements	Expert Vote	Citations
For exterior lighting in **shared portions of the project**, only light areas as required for safety and comfort. Do not exceed 80% of the lighting power densities for exterior areas and 50% for building facades and landscape features as defined in ASHRAE/IESNA Standard 90.1-2004, Exterior Lighting Section, without addenda;	**Opportunity for Future Research**	

5. Recommendations to the LEED-ND Core Committee in Revising the Draft Standard

Recommendations to the LEED-ND Core Committee in Revising the Draft Standard

The public health experts' initial response to LEED-ND criteria combined an appreciation for how the criteria overall aligned with known public health research, while at the same time, recognizing an absence of specific references to active living or public health outcomes. This omission appeared to run through the document, including the introduction and the goal-oriented language contained in each intent statement.

Intent Language

The focus of the expert review of the LEED-Neighborhood Development standard was on the requirements under each pre-requisite and credit and their relationship to the body of public health research. However, in reviewing the LEED-ND criteria, the experts noticed that the intent language of the pre-requisites they were asked to review rarely if ever referred to physical activity or public health. In addition they noted that many of the intents that did identify increased walking, as a desired outcome did not mention bicycling despite much research correlating the two. It was thought that changing the intents could help to greatly expand the number of people who might promote the LEED-ND standard to include the medical and public health communities.

Recommendation: Mention promoting physical activity or improving public health in the intents of the pre-requisites and credits that promote walking, bicycling and reduced VMT.

Sprawl

The word "sprawl" was questioned as being undefined or open to confusion. There was some discussion in favor of replacing sprawl with the term "automobile-dependent locations."

Recommendation: Consider replacing sprawl with auto-dependent locations.

Noted Exceptions

In two cases during the expert review, different offsetting benefits were identified. The first concerns infill sites where potential public health benefits of a project located in the center of a metropolitan area could be offset by the harm resulting from the project's proximity to a pollution-generating, high traffic area. In the case of gated communities, the adverse public health effect resulting from reduced connectivity was thought by the experts to be potentially offset to some degree by an increase in social capital. The increase in social capital was thought to result from the relative isolation and boundedness of such an area.

Central Locations vs. Infill

In reviewing Smart Location & Linkage Credit 3: Preferred Locations, which rewards projects according to distinctions of location—adjacent, infill, and previously developed—the expert panel observed that this criterion is an imperfect proxy for a central location in a metropolitan area. The experts discussed alternative methods of rewarding centrality, including measuring distance

to the oldest settled parts of a city or region. While not discussed in detail, this approach was thought to correlate more closely with research data.

Measuring Connectivity

The expert reviewers affirmed a direct relationship between connectivity, increased walking and bicycling, reduced per capita VMT, and positive public health outcomes. The current LEED-ND draft, under Neighborhood Pattern & Design Credit 8: Street Network, measures connectivity by counting centerline miles per square mile. For example, if a square mile of land featured 20 streets per mile, north-south and east-west, it would have 40 centerline miles. By contrast, public health research, by and large, counts the number of intersections per square mile. The public health experts expressed concern that the centerline mile criteria could conceal a street network with poor connectivity.

Recommendation: Revise the standard to measure intersection density (either three-leg or four-leg intersections) rather than centerline miles. It was noted that little or no research existed to make distinctions between the performance of three versus four-legged intersections.

Straight Line Distance vs. Actual Travel Distance

The public health experts affirmed that the directness of a travel route correlated to a willingness to walk and/or bicycle, resulting in reduced VMT and trip generation. The current draft of LEED-ND, under Smart Location and Linkage Prerequisite 1: Smart Location, measures travel distance as 1/4 mile from 50% of all building entries. The experts were concerned that this metric could conceal a poor pattern of connectivity. For example, street grids could stop completely at railroads, rivers, highways, extreme grade changes, or feature extremely long blocks, all patterns reflective of poor connectivity. The difference between measuring trip distance as the crow flies versus the actual travel distance has been extensively studied and been determined to be a valid and significant distinction in how distance is measured.

Recommendation: Consider measuring actual distance of travel routes.

Causation vs. Association

Public health research is often a process of examining demographic and spatial data to identify patterns and correlations. Research is applied to existing communities and practitioners apply this to new or changing communities. Because most of the analysis is statistical and does not include surveying individuals on what motivated their conduct, the findings can be said to identify an association. LEED-ND, on the other hand, is a tool of applied strategies where specific metrics are set as goals for design with the intention of causing a specified public health outcome. These perspectives were acknowledged as a core difference between the academic and research communities and the need that practitioners have for applying research with the intention of achieving a specified outcome.

In a further characterization, the research community is perceived by practitioners to be cautious in drawing conclusions that might help in community design. Practitioners, it was noted, in the absence of useful public health research, were forced to employ their best judgment without the benefit of background research.

6. Recommendations for Future Public Health Research

Recommendations for Further Public Health Research

The expert review of the draft LEED-ND standards revealed that a majority of criteria were supported by expert opinion and not by data. This alone would suggest a wealth of potential research topics: the interaction of connectivity, density, and land use variety; the benefits of urban design; the benefits of biophilia.

Need to Identify More Specific Thresholds

A recurring reaction of the experts reviewing the specific performance metrics in LEED-ND was to agree that the physical design intervention resulted in positive health outcomes but not have a basis for justifying the specific quantitative threshold proposed. More often than not the answer was "more is better." This applied to development densities, connectivity, land use mix and transit facilities. Unfortunately this argument can be fairly ineffective in trying to convince a developer or a municipality of the benefits of a specific level of intervention. The design and development community would benefit from research justifying specific thresholds along a spectrum of performance.

Causation Versus Association

The review revealed that most research data that the LEED-ND core committee has relied on in developing the pilot standards documents associations rather than causations. While seemingly a fine point, a great deal of new development will be built in the years to come. The prediction is that by the middle of the 21st Century the US population will increase by more than 100 million people. Much of this development will occur on Greenfield sites. In these cases where no communities now exist it would be more persuasive to be able to say that research suggests that if a community is designed in a given way that positive public health outcomes will result.

Regulated Aspects of Urban Design

In reviewing the urban design credits in the Neighborhood Pattern and Design section, it was noted that many of the details of the built environment regulated by zoning and building codes have been little researched. In responding to a request to comment on whether any given building setback from a sidewalk was associated with positive public health outcomes, one expert opined "the trees have been studied more than the buildings." The design and development communities need more specific research findings about those aspects of the built environment that are currently regulated.

Biophilia

Biophilia is the inherent affinity that humans feel toward nature based on their interdependence. While the enhanced public health outcomes resulting from proximity and visibility of vegetation are well-documented, little or no research has been done to document more abstract virtues. For example, the LEED-ND criteria address the design of hardscape surfaces that can filter stormwater. Researchers were unaware of any data suggesting a public health benefit from

humans who occupied an environment where this nature-enhancing strategy was employed. It might be suggested that a sense of well being is produced by such an intervention, but this is lacking in substantive proof.

LEED-ND seeks to integrate two ideals considered mutually exclusive for generations: urbanism and environmentalism. The standard envisions projects that integrate and strike a balance between the human and environmental benefits of compact, walkable urban form, as well as designs that emulate and enhance natural systems. Perhaps more than anywhere else in the standard, this overlap is most heightened in the Smart Location & Linkage Prerequisite 4: Wetland and Water Body Conservation. This prerequisite calls for a 100-foot setback from water bodies. At the same time, it provides for a limited development of this setback, increasing in intensity in proportion to the density of the adjacent human settlement. The urbanist members of the LEED-ND Core Committee believe that the human benefit of proximity to water more than offset whatever harm may result to the water quality or wildlife habitat resulting from that limited development of the setback. The environmentally-focused members of the Core Committee place a higher value on preserving the integrity of the habitat than on the benefits to humans resulting from access to the water's edge. This debate was brought before the public health expert committee to seek their insights. Unfortunately, Dr. Howard Frumkin, regarded by the other researchers as the most knowledgeable on this topic, had to leave the meeting to meet other obligations before this topic could be broached.

While this issue is not discussed for the reasons mentioned above, this may be an example of a question of relative values research could contribute to, but not resolve.

7. Opportunities for Closer Links Between Sustainability and Public Health Communities

Opportunities for Closer Links Between Sustainability and Public Health Communities

In laying out comprehensive criteria for the design and evaluation of human settlements, the LEED-ND criteria provide a point of convergence among interrelated but often isolated professional specialties. While the New Urbanism and Smart Growth movements have for many years worked closely to embrace the active living agenda promoted by the Robert Wood Johnson Foundation, these concerns have heretofore not surfaced in sustainability criteria. The refinement, adoption, and promotion of LEED-ND offers numerous opportunities for coordination and collaboration in the years to come. Specifically, the LEED-ND project was encouraged to seek out and establish ties with the American Public Health Association. These discussions have been initiated with the hope of future review and adoption of LEED-ND criteria by APHA membership. Finally, the dialog between the LEED-ND committee and CDC staff reviewed ways in which federal agencies could review and implement these criteria.

APPENDIX

1. Transcript of Proceedings

Transcript Reformatting

The attached word-for-word transcript has been spell checked but is otherwise unedited. In order to make this text more accessible it has been reformatted in several ways:

1. **ALL CAPS** text dividers have been inserted to alert the reader to a change in the topic being discussed.
2. All citations to research or researchers provided are underlined.
3. The consensus conclusions reached by the expert panel have been **bolded.**

An Expert Review
On the Strength of the Data in Support
Of Proposed Community Design Standards

May 21, 2007

Doug: Welcome I think of this as history. At the core of this, I thought we would start with introductions. As you all know I am chairman of the LEED Development Project and also the facilitator.

Introductions:

Susan Mudd, Urban planner by training, JD, MA, CNM Board

Heather Morrow-Almeida, MPH, PHPS fellow, NCEH

Susan Hobson, MPH, ORISE Fellow, NCEH

Tracy McMillan, PPH Partners & University of Texas at Austin

Andrew Dannenberg, MD, MPH, NCEH

Katie Sobush, MS CDC Foundation Fellow, NCCDPHP DNPA

Jim Sallis, PHD, San Diego State University

Karen Lee, MD, MHS, Bureau of Disease Control NYC DOAMH

Larry Frank, Professor at University of British Columbia

Emil Malizia, Professor at UNC at Chapel Hill Chair

Renee McGurk - just started work with Doug as Executive Assistant

David Goldberg, SGA

Ken Rose, CDC NCEH/ATSDR, OD

Howie Frumkin, CDC NCEU/ATSDR, OD

Doug: I am really impressed by all who are here today and I declare success.

We are little off border crossings and famine and a couple of other things this morning but we are getting through it, in the same way that the core committee has gotten through it in the last several years. I think we are going to have Dr. Frumkin join us for a while and at least share some opening remarks.

And Karen Lee is in the lobby from New York. So, the project background I have a series of slides that I think will make sense of this and all will be revealed. We are going to review the documents on your desk you should have a copy of the entire standard. Adjacent to that should be a copy of the Public Health Report that was summarized by consultants. At 10:30 I would like to go through the standards one at a time and ask for affirmation. Is the research there is it not there and should we change it?

Lunch… I want to make sure we all get outdoors in the daylight and get a group picture to prove we were actually in one place at one time. As many of you who are interested can go to dinner tonight. Tomorrow a review of related set of standards from a book that is coming out in October - The Emerging Thresholds, so that's the big picture.

Rules of Order informal ask questions as we go you know lets have a good interchange.

Goals:

Perform an expert review of the LEED-ND standard and emerging threshold standards.

Familiarize experts with the details of LEED-ND. People are generally aware but they don't have any idea of what it says.

We want you to spoon feed us data we are very busy, we are fighting density people, fighting habitat people. Who aren't we fighting with I don't know?

Susan Mudd: Ourselves.

Doug: There are at least three constituents that we would love to be expert in what we but right now we need to rely on you. So you will make it easy for us to fix our standards.

I think this is a big one to identify opportunities for new research because we are on the front line to certify the projects. So we have written ours and we are going to start certifying a number of them. It is a huge opportunity for research pilots; we asked for 120 we got 371 we are just delighted about that it's like we tripled subscribed and we think that that first pulse of projects is a real research opportunity. We have no barriers; Jen will know what I am talking about. We want to brand the first batch of the 120 as a kind of ambassador projects. We would love to get some research data published. We'd really love to strengthen and then issue the summary for editing.

Why are we here today, the history of this particular project uhhmm started writing this book which was an experience and it really ultimately came out of the fact that new urbanists have never defined many of their core principles. Never put numbers on it so we couldn't simply reference senior standards for the number of roof tops … doesn't exist, so the book was written to clarify those...uhh so I was writing this book I sat next to Ellen Jones she said you should call CDC they want to issue healthy community standards. Call Andy and Howie they will help you out. They really want to do this.

So I called Andy and Howie and ... Dr. Frumkin and expressed interests but cited insufficiency data to do so at this time. We should have pretty good data in just 10-20 years. The timeline of our world is as follows:

2007-2008 - LEED-ND pilot project ….

2009 - Final will be adopted. I'm personally pushing for a zoning Code version of LEED-ND

2013 - We will be ready for our First Revision. The standard zoning code of LEED-ND will be updated as we learn things.

2026 - CDC issues healthy community standards – this is why we are here today we need your best stuff now… we are going to need it again in four years and four years after that, insofar you all have careers that is about this stuff. We need to come together with case study projects that generate their own data sets. Suzy Spivey's expertise she knows this stuff and so on. We need you to submit density data, energy data and so on. So we see great opportunities. Some of this we can't predict, but one hope that this is successful and there is a power to invent the particulars.

2045 the U.S. population is 400 million, as there will be 100 million new Americans over the next 45 or so years. They are going to live on infield or they are going to live on green fill, so one-third of the country has not been built yet. These things can ideally shape that. So, those of you who know nothing about it, direct your attention to the power point inspired by Jen Henry.

What is LEED-ND?

It's a three way deal, joint venture of USCBC, CNU & NRDC.

The duct tape of the anti sprawl movement. The premise here is the bare minimum, two buildings and one street, it could be one building we don't have a minimum or a maximum size. We don't want to set any limits. Projects may be mixed use or they may be single use. This project is informing other aspects of the LEED so each building will be focused on a stand alone building and essentially very high standards and LEED irrespective of building. So that's what Jen has professionally and genetically encoded to be a land use person so her day job forces her to pose as a building person. Constantly she is fighting our battles, silently with the inertia, it is all about the building. We thank her for that and she has arrow holes in her back to prove it. There are 9 prerequisites with how many points ……

Jen: I don't know how many points total.

Doug: How is it organized? We ask 3 big questions. Where?
Locate in or near existing urban areas and secondly avoiding sensitive areas.

[Dr. Frumkin, Ken Rose & Karen Lee walks in round of applause for Karen Lee who had U.S. citizenship issues]

Doug: We are glad you are all here, Karen are you okay? We are glad for you to be here. The three of you just missed why we are here. Everyone has a copy of the Standards and the Rating System. Why we are here is to perform the expert review of the LEED ND standard as well as the emerging thresholds. We are finding that many experts while being aware of LEED-ND do not know the details and we want to take you through the particulars today and tomorrow. We want you to spoon feed your data. We are fighting battles on too many fronts to become experts in your area. We think that there are opportunities for identifying new research outlets and new focus and detail in and around the LEED-ND criteria – we will be summarizing at the end. We will go through the power point presentation.

[Timeline was placed on screen again and Doug repeated timeline for newcomers]

The hope is that by 2030 it will become the law of the land.

Standards are written with prerequisites which are things you must do to enter the LEED neighborhood development process failing to do so means you can't qualify.

These are a list of the prerequisites under Smart Location and Linkage; preference for locating constant inside urban areas as avoiding sensitive land and so on. One way of illustrating those prerequisites is a map of metropolitan areas. If you are a green field leapfrog you are out. That's the first huge filter - you have to be proximate to a city. You can't drive 5 miles that way, buy 80 acres of farmland, call yourself a town and then certify. Mostly you can't. [Doug points to the power point map]

Planned transit service is another way to expand the boundaries. Back to the slide – all

the land that is white is entitled to the guy drives 5 miles down the road. The project can go ahead legally whether we like it or not. That tension between what we think we all believe that infill and constant development is environmentally unhealthy and that's a complex issue and that is an ongoing argument tension or debate and if you have that green fill project and you can demonstrate somehow through hook & crook … we have 4 or 5 projects. So, within those prerequisites there are yet other prerequisites. For example Wetland and Water Body Conservation …. there are cases particular in California where there are endangered species inside of urban boundaries or urban areas where developments are allowed and encouraged.

Jen: Is that a true or is that a hypothetical?

Doug: No, no, no that's hypothetical. So prerequisites of Neighborhood Pattern & Design – It is a Prerequisite of LEED-ND that you cannot be a gated or secured settlement. The second one is compact development density. These are 2 powerful shapers of what you are doing and then the last one and the only is Construction and Technology.

So who wrote LEED – ND Draft?

Core Committee, 5 each from CNU, Smart Growth, USGBC, Many authors.

One tireless and vigilant staffer Jen keeps her eyes and covers our back.

We developed a whole bunch of prerequisites through brain storms. Second step is you have to write language - pick a topic and turn that into something. Standards must be quantifiable and certifiable. … Some ratio or something and certifiable – something that a project team documents and prove that they have done. We probably have 3, 4 or 6 credits that fell off …..

Public health report did confirm the draft we have – principle author Matt Ramey, secondary Sarah were the two authors presented in a core committee retreat in 2005 and were very helpful….There is an ongoing prerequisite drama about diametrically opposed set of values. We are going to over time glacially move the market and the other extreme is that we got to draw the hotline in the sand and defend them to the death.

We have a Target of 100 Points

Credit Weightings

Storm water, dark sky, many competing values 15 members putting dots on a card rationalizing it, walkability, etc. that's how we did it.

Ways you can write Credits

Ladder credits - in density and in transit service and a few others

Bunch credits

Bonus credits earns a fourth credit

Linked credits to earn 1 you have to do another ……

Platinum … winner take all …. failing to meet one prerequisite and that you were perfect in everything else. Some super project who would be interested in doing this – maybe nobody I don't really know.

Jen: I think we only have the first two…

Doug: Million other ways to do this we come seeking your affirmation we want you to review the draft overall and make sure that it is a strong document based on the research that you funded we want some level of affirmation. We would love specific feedback.

Howie... Two thoughts there is the category that science don't really speak to and there maybe the experts think it is a good idea based on their general impressions. That is not an invalid use of experts... based on expertise in the area but not based on data.

Andy: Can we change others to endorse?

Howie: Endorsed based on expert opinion. … In those situations where we say we like something but identify that we don't know enough about that 'something' that ought to be flagged.

Jim: I got two general issues that I would like to bring up while Howie's here. Research agenda I like the idea of evidenced based criteria and I believe that we have a fair amount of data that can be used - the results haven't been presented but they could be -----so we have funded several studies that are gathering data. There are others in the US one of the things that I was thinking that this is something that active research could sponsor and basically analogy and existing data. It would be a lot easier and I think more effective. We would only be able to do a small bit - but if we could find partners - like with division of PHS and other funders – really to fund analysis of existing establish these responses so we could identify thresholds. I think we could get further down the road and thresholds that you are wanting a lot quicker than 10 years. For example we could put a call for proposals, urban physical activity and some kind of health outcome. We are inviting you to propose analysis to relate the entire range of connectivity….

availability of bicycle facilities and so they will give you the raw data and you can do that with the data you now have …

Larry: One way to do that is to specify that there are standards or approach by which the results that come out of the research adhere. There are a lot of relationships and it is adhoc and we are doing different ways and what's the likelihood that someone would [unintelligible] based on urban form characteristics – you have to test these variables independently, you have to specify the variables in ways we could use to advise a developer on how to build a community. So you would have to write that ---- in so that what you got of it in the end is a product you would add to this process.

Jim: Something that some CDC folk can follow up on. The other comment is ever since I learned about LEED-ND the first thing I thought where are the health sponsors. It is clearly related here I think a health partner could be useful. That is something that has been eating at me. When I was invited to come here – my main concern was -- this is great and we need a stronger connection between LEED ND and public Health. Is CDC the right Co-sponsor? I would encourage you to work for finding a health partner.

Doug: One opportunity that we have the apparatus that support the 1000 hamster volunteers and behind each of the topic areas there is a thing called TAG. We are going to have a new TAG because of the location linkage and pattern and design. That is the group Jen and Susan can help me make sense of. They get the calls and things like that there may be other rules of the TAG.

Karen: I work in NY City and buildings are a very key part of how we can influence health. When I look at lead innovations - primarily addressing health qualities there is a whole host of health issues that are completely unaddressed. I raise that because there is room for expansions of the criteria …..

Jen: When I started …. it has been growing quickly... when I started they explained to me what Lead 3.0 … more like a code upgrade. By the time we started 3.0 expectations were so high. Setting up little parts will be improved every year, health focuses will be discussed, I can't give you much more detail right now there is not a TAG for that.

Doug: Something I failed to describe is the intent. One of the arm wrestling we continue to have is on the offering of intent. Our intent with this credit is to reduce the consumption of farmland, reduce air pollution to car use….. At Page 69 … and promote public health through increased physical activity… there may be others where we can add that language later …

Jen: Public health was the only topic actually that we were able to do this - all other topics were depended on the folks on the committees their own knowledge – I just wanted to highlight that for you.

Larry: If LEED as a program were to be evaluated as an intervention then that would be a systematic set of questions about sampling and which type of LEED projects we wanted to select and I was curious and this a bit backing up but are there any financial incentives how do we tie that into lead certification?

Susan Mudd: Going into it there was no necessary obvious financial incentives. However, we expect there are communities that may need certification…. as easy to get entitlement. We expect it to be the greatest developer's perspective. We expect that some communities or some level of government may adopt it as essentially mandatory.

Jen: It's hard to predict what will happen and those incentives won't come from us.

Howie: I really love to see more explicit health – I understand this is a technical guide and not an inspirational document. Going back to Jim's idea – health sponsorship - going to be much easier to do that if there is much more LEED criteria. Evaluating credit and also about places of the heart but maybe that deserves to be access to health care facilities

as an element of design, the group might want to challenge himself really health based - to encourage to think bluntly about health benefits. Injury prevention matters a lot. Prevent bikers and walkers from getting hit, etc.

Susan: I think if we proposed a separate rating system met with health, I think there is a lot of support within the committee.

Doug: We hope that it has the unintended effect of including more of your stuff and strengthening it so when you take it back to the constituents that there are 60 out of 100 and that's damn good. We are in partnership with the urban people and others and storm water people we are a big coalition, we didn't get everything we asked for but most of our important stuff is in there.

Karen: I think what I was suggesting a subset rather meant for the overall criteria and potentially a subset thing.

Jim: Again, trying to find another public health partner …. APHA should be involved in this… how could we make this happen?

Jen: The primary partner APHA is not a partner... trust me you don't want them as a partner.

Susan: But, we want to know the organizations that we should be asking and at what level of partnership.

Jim: And if they don't respond we will let you know! Hee hee

Karen: How are bike systems embedded into … in terms of storage area, in terms of bicycle lanes and paths and safe lanes, also supermarkets, green markets.

Doug: We do have a credit and an access credit.

RECORDER WENT OUT AND I HAD TO MOVE TO NEW LOCATION

Larry: It's a very cumbersome retail housing.

Doug: What do you mean retail housing?

Larry: I was actually thinking of the ration how much retail is situated where someone lived.

Karen: If you had affordable housing... people who build high... or condos all of them have state of art ...there are those in low income housing... can't walk not safe… children can't play… I think the elements that come along with the affordable housing... Another thing to add to your list is the access to affordable physical facilities.

Susan: We have numerous discussions and I hope you don't feel that I'm being offensive. We have in general tried to limit because buildings change because of what's in them. So, even the date of the initial application... might not be there the second day and so we tried to focus on the physical form. That has been an ongoing discussion about how much we should go out and being specific.

Doug: LEED was introduced as a vice of filters to find some significant bundle of decisions being made. The master planning of developments for that reason you will see in this product, and the other, it tends to be essentially of levels of people making that decision that have control over. We intended not to go inside the buildings because often times there are master developers and they are subdividing the land and buildings could be done by others. And… No one is in charge of LEED - it has bunches of committees - we have been doing it for 3 or 5 years.

Jen: They are trying to make it more flexible. You got hundreds of committee volunteers ...who want to influence the right picture... all of them engaged and all have their own ideas.

Karen: When you are developing … there are going to be worksite buildings indoor quality will effect multiple people, their health and their environment ...the elements cannot be captured…

Jen: It's not that it won't change. It is going to take time ...It's very complicated and if we start developing we want the rating systems to work.

Doug: One recommendation to Andy and Howie same meeting be repeated so that the message can get across and we can table all of the stuff we don't control.

Larry: Two suggestions about the partners ... APHA I think that out of this meeting could be a recommendation with CDC to help you…

DISCUSSION OF SMART LOCATION & LINKAGE PREREQUISITE 1: SMART LOCATION; OPTION 1 FOLLOWS:

Doug: Smart Location and Linkage - We have 5 options – 30 possible points can be earned in location, 39 neighborhoods ... and so on. You can read along in your book or on the screen. Encourage development within and near existing communities or public transportation infrastructure. Reduce vehicle trips and miles traveled and support walking as a transportation choice. Walking and transportation have a public health benefit. I am going to mark up my version to propose and mention public health implications... walking... biking …

Doug: Option one is infill site.

Larry: How would you word the health inclusion ... to promote public health?

Jen: There is ample opportunity to put more 'stuff' about why this is good and how it goes with other things … we are not going to put every little bit of that in the pilot. Don't think of this as a P.R. document they are not going to spend a lot of time reading this now. They care about what the requirements are.

Emil: We should add public health to the intent and if you add it the first time they will pay attention to the very first one in the book! They might actually read it!

Doug: Understand we will, Susan and I, will take it back and make recommendations.

Larry: And you have done research on it directly and you could also complete it by saying you want to promote walking,

biking and you could say transit... you just don't want to be near it – you want people to use it.

Doug: This is hilarious... there is a delicacy I am beginning to appreciate - to exclude green field development.

Susan: We should have told them in the beginning.

Doug: Number 1 does it have a public health benefit - infill?

Larry: Almost always this is a huge health issue. If there were an appropriate place to add this... exception would be putting high-density housing along truck routes…high concentrations of air pollutions. I don't know how that would get worked in.

Doug: Define what you mean by high density. Give us a number. Later tell us and give us a number - creates a homework assignment.

Andy: One report 300 feet from a really busy road where the air pollution starts to get lethal…

Larry: There is a basis and a lot of evidence. If it is not in the standards it undermines credibility from a health perspective.

Emil: There is presumably a thought about distinguishing a prerequisite from a credit. Some of this is very helpful and too fine grained. This distance parameter might come in under credits we have not talked about.

Doug: What interests me is that public health is explicitly excluded in this criteria.

Larry: I was in a meeting 2 weeks ago where - where new evidence showing this is really more of a health problem than we understood.

Doug: Could somebody look up the proximity to the road, Utah, Idaho to find out whether this credit exists or not? If you burden them everybody can't get to the map.

Andy: I am guessing more of a credit.

Larry: I agree with that.

Katie: I live in an area with truck routes - those are changing slightly - talking about creating standards for infill maybe those truck routes won't exist in 20 years.

DISCUSSION OF SMART LOCATION & LINKAGE PREREQUISITE 1: SMART LOCATION; OPTION 2 FOLLOWS:

Doug: Option 2 - Locate the project near existing or planned adequate transit service so that at least 50% of dwelling

units and business entrances within the project are within ¼ mile walk distance of bus or streetcar stops or within ½ mile walk distance of bus rapid transit stops, and so on

Jen: Basically minimum service …the idea is that we tried to get a frequency that would allow the majority of people ... if it were once a day service nobody is going to give up their car.

Larry: There is a data that is national... that every single location that would tell you more than just… it's workable, if we wished to involve this further this is an opportunity area and we just happen to have some data ...it shows the time it takes to get to a place so you can have 4 buses - and it takes three hours versus a 20 minute ride in a car. You can have buses and you can have no access - but it's not reasonable to take them unless you have to.

Doug: Our definition of walk distance is one I want to mention the distance that pedestrian must walk without construction as safe and comfortable environment. This raises this issue – the distance along right angle sidewalks ….

Larry: I don't think you need a GPS.

Doug: 50% of the dwelling is…..

Andy: That doesn't sound that hard.

Doug: There has been push back already from applications. I seen slides to show we can't get that.

Larry: You really have to have the network distance.

Tracy: [voice way too low] Because it's very different it could be very different and very close.

Jim: I think the network base distance is important.

Doug: A quarter mile recognized as a significant drop off?

Jim: My understanding is that's kind of the lower. An average distance is closer to a half mile and quarter mile people will not walk farther than that in the suburbs.

Doug: You might have a higher threshold.

Larry: That's going to make it too complicated.

Doug: What was your source?

Jim: Marlon Boarnet.

Tracy: Boarnet and Greenwalk.

Larry: There are at least 10 studies on walk distances. Chanam Lee has a paper - Daniel Rodriguez, Chapel Hill. I personally believe it could be relaxed a little bit from a quarter mile. I am more concerned about measuring the 50% entrances. Redding Station has a door every 3 feet that might become outrageous.

Doug: Speaks to putting the dot … much simpler administrative task and measure each one.

Larry: You could have a development that is linear and more than half of it is just too far to get to transit.

Andy: We probably won't reach a conclusion …..

Susan Mudd: And to the extent that the data supports in the easiest way possible measurement that would be useful to know that the data would not support it as opposed to having each developer figure out every path.

Larry: I think the last thing we want is for someone to go dot to dot... straight line …

Doug: This first criteria……..

Jim: I think that requiring for them to have it on sidewalks will be impossible to certify.

Larry: All they need to know is - where is the nearest transit stop.

Susan: It requires a 50,000 study by developer...

Larry: We send students out and they go intersection to intersection they can do it in 20 minutes. This is not rocket science.

Doug: Realize though that this is deciding to buy land in the right place. It could be there is a missing public sidewalk between my development and the train station off my property but I still bought in the right place. This is a threshold issue --- am I in LEED ND or not? As a developer I did the right thing and don't exclude me ….

Andy: Walkable streets get a lot of credit later.

Larry: You could have a percentage of the pathway having a sidewalk so there could be a gap and they could fall --- you could also be lobbying at the same time.

Doug: That is a reference guide. Can we vote on this first one? Are we comfortable in general …

Katie: Smart location to….what?

Doug: You were brought here under the pretext that you were public health expert. Before you can vote on the whole credit we would have to go to the others. If you feel like we got it right.

Jim: **Consistent with data.**

Larry: I am flexible

David: What was the deal with the 50%? I don't know if that is supported by any data.

Doug: ...just 90 pages to go.

Doug: Second criteria ½ mile walk – people willingness to walk to a bus versus a half mile walk to light or heavy rail.

Jim: Buses, more buses.

Doug: Misallocated street car ¼ mile it should be the ½ mile.

Larry: It's really fixed versus nonfixed.

Doug: Did we define it that way?

Jen: No, it is defined slightly different.

David: Street cars usually take short distances, a replacement for the walk trip.

Jen: It is differentiated heavy rails and light rails are together and the reason is capacity heavy rail have more capacity for buses.

Larry: Ferry terminal is a different kind of animal; doesn't mean you re going to have good access.

Larry: It doesn't begat you access to destinations of the region.

Jen: In some places it does.

Doug: We should clarify the definition. In terms of this big breakdown is there a different propensity or elasticity to walk?

Larry: Just from a real estate – developer don't make decisions based on the bus but a rail line is a solid fixed in the ground.

Doug: Insofar as we have allocated based on capacity - wrong sorting criteria. Larry I agree with you – this is a different task for this audience

Andy: You have a median …. The median trip was only 4 minutes the median total walking a day was 19 minutes.

Jim: Four minute segments….

Jen: The quarter mile, half-mile difference is separated – fixed – non-fixed.

Doug: That actually means rubber wheel street car.

Jen: Yes, the intention was the thought was the street car is rubber wheeled. Some streetcars are rubber wheeled.

Doug: Andy your comment was people will walk further to fixed routes. Would we conclude that this half-mile standard is **supported by data?**

Andy: **Consistent with data.**

Doug: This is option 2, same page.

Andy: This is an area likely to be data.

Katie: Depending on how the system is set up whereas if you can walk straight to the rail or be willing to walk further because you are going to have the train regardless, so in different areas of the country there are different bus rail connections.

Doug: We agree we need further research. In the case of Planned transit service …..

Moving on the next part of Option 2 it is the premise that says that development ought to occur in concert with transit. This presupposes that when people move in their house and they will not be transit and they will have formed behavioral patterns that will change when the transit shows up.

Larry: I think we have not tested this the behavior is shaped ...one of the things that we had in Atlantic Station was that the parking deck went up first and that sort of creates a pattern behavior and transit came later on.

DISCUSSION OF SMART LOCATION & LINKAGE PREREQUISITE 1: SMART LOCATION; OPTION 3 FOLLOWS:

Doug: In that light – is the community less healthy …someone please study that? Any other comments on this … Option 3 (page 6) distance to uses this premise says you may be within walking distance of existing varied land uses… Are their health differences amongst what we have proposed here?

Jim: Yes. There a couple of specific studies I can think of with Andrew Dunn... A paper just came out from Billie she found that people in their neighborhood with each increment of category of use available. Ann Bearnez- Moudon and Billie Giles-Corti.

Howie: Larry taught me years ago that just because you have proximity you may not have mobility.

Jen: I believe it is in the definition of walk distance. Distance that a pedestrian must travel between destinations without obstruction within a safe and comfortable environment.

Jim: To keep this in context this is not defining the optimum this is the basic if you don't pass this you don't pass go. I don't think this should be optimum.

Larry: So they have to have six different items on the list and one concern it could be they could have a place of worship, police station, hardware store and a hair place they don't… There are some things that you really need to have you got to have a grocery store and a pharmacy and a bank.

Larry: One of the things that we have learned is that you can have fast foods worse than a greater variation. We might be promoted healthy eating.

Doug: Where we are we have set a threshold ---- this is a threshold to get into the system.

Tracy: What about Wal-Mart? …

Doug: Counts as one.

Jim: That is in line with Billie's measurement; 50% percent from home.

Doug: 50% of all homes? The center of all…

Jim: From that person's home.

Doug: If we were to vote is it **consistent with data?**

Larry: **Yes.** - Numbers of the uses - that matters the most we are measuring mixed use in that way. I can give you the reference for that. Larry... LUTAQH – King County.

DISCUSSION OF SMART LOCATION & LINKAGE PREREQUISITE 4: WEDLAND AND WATER BODY CONSERVATION; OPTIONS 4 & 5 FOLLOWS:

Doug: Should we discuss 4 and 5 - What these are Green fill that somehow delivers below average VMT … Option 4 clean air they don't have the people would be out on a green field site.

Jen: I think we know so little about what sites are going to be defined by this.

Larry: There are 3 or 4 studies now showing that time spent in cars is a predictor of obesity. We have been challenged on ours ...we are pretty confident that it would be known as type 2 errors… just not even because of the air pollution – you have double impacts and also more VMT increases your exposure to have an accident. There are new studies you are increased to exposure to air pollutions being in the roadway where air pollution being emitted.

Katie: The VMT were they done in suburban areas -- same relationship?

Larry: On the accident side?

Katie: No on the area side.

Larry: Good question I don't know.

Doug: Lump 4 and 5 together -- how do we categorize? **Consistent with?**

Larry: One is the California Study and the Australian study and University of Virginia dissertation. That was on obesity. On air pollution would be Michael Brauer - Accident stuff - Reed Brewer. Lot of studies on distance increased driver exposure to accidents.

Doug: We are good on this one. Turn to page 14 – SLL Prerequisite 4

Page 14 at the bottom option 3 one of the biggest emergent issues is the overlap between urbanists as it pertains. The chart at the bottom proposes a compromise - the environmentalist view a river corridor as a habitat for species other than humans. The best thing we can do is move humans back 100 feet. The urbanists view water edges as an opportunity for human delight. Is there a public health good or social capita good or a well being good to human not going 100 feet of the water edges? Is it proportioned to the development density outside the 100 feet?

Jim: Howie did the review – he is not here.

Doug: Should we come back to it.

Larry: In Canada - no one owns the waterfront.

Doug: You may not own it but you can make improvements?

Larry: Absolutely not.

Karen: In addition to going up to the water there is also the question of whether there are opportunities for active access to the water.

Doug: Let's just hold it until Howie gets back.

Jen: We are going to wait for Howie.

Doug: The urbanists believe that adding trees maybe be a further inducement – go to Italy beautiful – not a tree in sight.

Susan: Water vs. green is that why we are going to wait?

Andy: I have not seen anything specific about the water…

Susan: I have not seen anything.

Larry: Is the argument that if a developer wants to build right up to the water's edge that is actually a public health deficit because you have taken away access to water for the general public.

Susan Mudd: We are losing some habitat what is the trade-off?

Larry: For multiple reasons it seems arguable and that there are plenty of places to accommodate that density and maybe the water's edge is not the best place to do it.

Susan Mudd: The urbanists will argue that there is where humans want to be.

DISCUSSION OF SMART LOCATION & LINKAGE CREDIT 3: PREFERRED LOCATIONS FOLLOWS:

Doug: **This seems like an area for further research.** Maybe we don't have to go back.

Credit three SSL 3 Preferred Locations (Page 27) …. to reward with points or credits the location of a project... 6 points for infill site that is previously developed – 4 infill site not previously developed and 3 to a site that is adjacent to a developed area and so on… you can see from the center of the city you get 6… down to 1 point. **Does this have a public health benefit?**

Andy: There are several steps removed - in and of itself is a little bit removed from it. We should focus on the ones that have the most direct public health impact or the ones that are consistent with the …but a couple of steps back.

Jen: I think you can choose to skip it for that reason but it is an incredibly important credit to the rating system overall and you will see right here it's 2 to 10 points and it may even go up theoretically after pilot in terms of its point rating so that may be a reason to spend time on it.

Ken: Infill sites may improve social capita … social capita is more direct.

Larry: In terms of measurability this one squares on the location of development a lot and that's a big issue it is indirect – it's underneath.

Emil: I don't quite get why if you are talking about preferred location you don't try to reference this to something like the oldest developed area in the region or center if you could define that why tie it to infil1?

Jen: The second part about street density actually end up servicing as a property to that for the most part. It talks about the density of the street network grid and it turns out in the center of town.

Emil: And is it somewhere?

Jen: Page 27 the bottom half. Basically it's saying you get points … and then you get even more points depending on how centrally you are located.

Larry: The measure using are more for centralities are only proxies and you might as well use the real thing.

Susan Mudd: Those could be high on the bottom scores and not on the top scores.

Doug: This is a weird one because this is actually the off site.

Jen: One mile radius …. there is another one where you get points…

Susan Mudd: Off with her head.

Emil: I was trying to find a simpler way……..

Jen: We started out with ….. and then a consultant came up with network density and there was still debate ….you can have a small town that has dense street network and not the same as Manhattan and there is clearly more centrality in Manhattan. I think we … what areas end up scoring higher.

Emil: I think there are a lot of measures but not ones that we can grab hold of nationally easily. I mean employment density is traditional center in places like Atlanta where there are multiple centers.

Doug: Exclude the conservation subdivision places with very low densities. I argued very vehemently that in healthy places, the birds are chirping, your windows are open, kids run barefoot all summer. So, this excludes that pattern of development – so conservation developments are unhealthy places to live?

All: No.

Andy: A – Serenbe - subdivision outside of Atlanta is a lovely nature oriented development surrounded by woods …

Larry: It seems like a place like that if you look at all the different home related impacts ---- it loses on most of them and it catches some on one which is – maybe not so much in terms of air pollution and it happens to be in the east. In the summer it's actually higher concentration on those even in town. So, there is a misperception about how clean the air actually is.

David: Not a definition for sprawl in your book. I would suggest taking it out. We are all worried about the harms associated with sprawl.

Larry: I just wrote a definition for sprawl.

Doug: Is it short?

Larry: It's like five pages.

Larry: Automobile dependent development... there are other definitions I think you should have other definitions – like

5 or so definitions.

Jen: It is not an official definition. The terms that are used in the requirements were the ones we were very careful to define.

Doug: Did I hear the preference that second measure to center line miles was preferred to the first measure? Was that opinion more widely held?

Larry: I am a little confused... It doesn't have the density numbers that we know are associated with walking. I mean we got some numbers on that ….. I mean we know what it is.

Jen: I think there is something that sort of shows what the conversion ends up being.

Emil: Which is the easiest to count?

Jen: I don't know

Larry The evidence is more stacked – intersection density than center line miles so it's going to be harder to back that up with evidence.

Jim: More consistent with the data.

Doug: It is also more visual to people to think about intersections.

Larry: You can have a lot linear miles on road way and very poor connectivity.

Jen: Is there any particular reason?

Susan: I remember debate with consultants on that issue... I can't recall the detail.

Doug: The consensus around the room to switch.

Emil: I believe the intent of the requirement on the bottom of the page 27 is more important. So it's a central versus a proximity to infill. Being more central is more important than being a part of or next to.

Doug: Move that expert opinion that centrality within the metropolitan area trumps what happens to be right next to you.

Larry: Centrality is not defined at all. I am not sure how to define that.

Doug: Experts say that the bottom of the page matters more than the top of the page. **Is that affirmed? Is it supported by data, consistent with data?**

Larry: If you do that I hope that intersection density is defined somewhere.

Susan: A T would count but not an L.

Doug: If defined that way we would agree it should be reweighed and is that **supported by data, consistent with data or expert opinion?**

Larry: **Supported by data.**

Larry: Regional susceptibility. The thing that mattered most was accessibility to urban centers.

DISCUSSION OF SMART LOCATION & LINKAGE CREDIT 4: REDUCED ATUOMOBILE DEPENDENCE; OPTION 1 FOLLOWS:

Doug: Supported by data. Going, going, gone! Moving on to Page 29 – Reduced Automobile Dependence. **I assume this is supported by data?** Is that a so moved?

Jim: **I think as far as it is a connection to physical activity, yes.** Our unpublished international study that was one of the significant factors related to physical activity. ……Having some kind of transit close by.

Larry: We could reduce time spent in cars is systematically associated with walk.

Jim: **It's consistent with data.**

Karen: Andrew Rundle shown that BMI has shown that.

Jen: The more subway stops the lower your BMI.

Doug: Is this an area we could research more?

Larry: This is transportation and that's not that hard to do ...if a developer who wants to get LEED certified in Florida ... location efficiency what is the metric they can readily claim a credit?

Doug: **Consistent with data?**

Jim: **Yes.**

Larry: Any region has a metropolitan planning organization so it is easy to call and get that information and get the average travel time to this location - why we can't use that then we will have a real measure.

Jen: What you are getting at sounds like options 4 and 5 and of option 2 here - talks about metropolitan planning organization so that's a different way of getting the same thing if show reduced improvement over the averages.

David: That is an option here to…

Jen: Right, both of these parallel those options.

David: All you could get is one point for that.

Larry: When that occurs for people to understand the credibility - to flag that as recognized as a not a permanent thing just noted as programmatic and acknowledge that you are aware of it somehow.

Doug: This is a sales pitch for tomorrow, Jeff Tomlin, a great consultant in this regard. The question I propose to him for the book is demographically and spatially support a car share site. It is not a subsidized site and a company will show up - I have this many people living in this proximity with this income, yes there will always be a car share - that's in the book

David: We don't have that established as a permanent ongoing business. I don't know if they have turned a profit yet.

Andy: I don't see how you can give credit.

Doug: In Chicago, for every flex cars they put on the street 17 cars go away. Then tell me that doesn't have a public benefit.

Andy: Is it a design issue?

David: Designate a car spaces….

Jen: If you add a lot then you have to designate a spot, if it already exists...

Larry: What about unbundling parking?

Jen: It's found somewhere else.

DISCUSSION OF SMART LOCATION & LINKAGE CREDIT 4: REDUCED AUTOMOBILE DEPENDENCE; OPTION 2 FOLLOWS:

Doug: **The first Option 1 is consistent with data and Option 2 is that one also considered within data?**

Larry: It's been measured both ways... Sherry Ryan in San Diego measured that.

Susan: That's easy for them to get.

Jim: That's if we have data on that.

Larry: Sherry was able to show that

Doug: David can you?

David: APTA.org American Public Transportation Assoc.

Doug: **Option 2 is that consistent with data?**

Larry: **Yes.**

DISCUSSION OF SMART LOCATION & LINKAGE CREDIT 4: REDUCED AUTOMOBILE DEPENDENCE; OPTION 3 FOLLOWS:

Doug: **Option 3 is that consistent with data.**

Jim: **This is an expert opinion …. there is enough gaps on the change … I've got 1& 2 under consistent with data and 3 under expert opinion.**

DISCUSSION OF SMART LOCATION & LINKAGE CREDIT 5: BICYCLE NETWORK FOLLOWS:

Doug: Page 32… Bicycle Network… the intent to promote w/n three miles of at least 4 using the list in Exhibit A using an existing biking network and/or biking network and so forth…

Andy: What's bikeable and what's not… basically any residential road with no volume is probably ideal for bikes.

Jim: The bike trails are designed for ten miles per hour.

Jen: I remember some questioning of that and speed.

Larry: If it were to say promote bicycle transportation efficiency and physical activity is that reasonable?

Andy: That would be good to have that in there.

Jim: Andy the downside you are recommending…….

Andy: I am recommending a safe route. There are multiple components for what a safe route is.

Doug: Ten miles an hour is so low. Heather has said that they are trained to design a street - faster than the speed so we do not endorse the posted speed... we are calling out the design speed rather than the posted speed is creating industry where you have to figure out fast people would drive based on the design they produced.

Larry: Eric, a student at Georgia Tech, and he has published a couple of papers with Mike Mayer.

Karen: I am just curious is there a – for a trail is based on - 2 to 3 feet wide.

Tracy: For on street bike lanes?

Karen: What the reference is?

Tracy: The manual of Uniforms Traffic control devises public (FHA) some states have their own, Texas don't.

Jim: **This sounds like expert opinion.**

DISCUSSION OF SMART LOCATION & LINKAGE CREDIT 6: HOUSING AND JOBS PROXIMITY; OPTION 1 FOLLOWS:

Doug: Page 34 - Housing and Jobs Proximity – Susan….

Susan: Everybody wanted to figure out if there was a way to define close proximity between housing and jobs and for a variety of reasons we struggled with not wanting to incentive corporates out later justified by building houses around them. We really didn't know the right way to achieve that and if in fact we didn't know if we could achieve anything. What if any data do you think would – is there data you think that would get us to that referencing?

Larry: The long form for the census… that gives us a data set to know where people work. So any development you know where the census track is located and they could look up and find out and make sure that the data is easy enough available. The average commuter distance from that location could be an indicator of how much time they are going to spend or how far they will go to commute. So, you would be rewarding people who put development in places. That are closer where people travel shorter distances.

Doug: That has a health benefit?

Larry: Most of the vehicle miles traveled is in the commute. Non-work trips are much shorter –non-work trips tend to be car pools - work trips tend to be solo.

Jim: Sounds like that would be another option or indicator of the area with a certain level of census based commute.

Larry: If they could walk to work that would be great to reduce the distance in drive as well and more to understand about the data.

Jim: But is it distance? There is a distance to work the average.

Karen: Sounds like if you had a shorter distance you could also increase active travel that would be an additional health benefit.

DISCUSSION OF SMART LOCATION & LINKAGE CREDIT 6: HOUSING AND JOBS PROXIMITY SUGGESTED OPTION 3, FOLLOWS:

Larry: That would have to be a very short distance.

Andy: But if its transient oriented development is something you do want; so you don't want to go against that.

Doug: Larry you are proposing a third path...

Larry: I think it is appealing to make use of this other information they are so rare and it's our census.

Tracy: It may also be attainable so few people will attain option 1 or option 2… and if people feel that they can get credit for it maybe there should be a third option.

David: What's the third option again?

Larry: Is the development within a zone where the actual commute distance is three miles or less or 5 miles of less.

Jim: As written it has walkability.... **I would say expert opinion.**

Doug: **On both options 1 and 2 and recommends a third option.**

Jim: **Yes.**

DISCUSSION OF SMART LOCATION & LINKAGE CREDIT 7: SCHOOL PROXIMITY FOLLOWS:

Doug: Credit 7 - Page 36 school proximity...

Jen: Planned School is well defined.

David: What does it mean for it to be planned?

Emil: You could require the local school board…

Susan: Many of these communities have charter schools they are not all public.

Emil: Almost all are planned no matter what kind f school they are.

Doug: We will fix the planned school, assuming we do the standard as written is it **supported by data.**

Jim: **Yes.**

Doug: **Consensus?**

Others: **Yes.**

Jim: **Except for the half mile.**

Tracy: We could get professional data.

Larry: A student of mind Jennifer did her thesis based on the characteristics of the route by 10 ½ year olds – I had her run her analysis again and came out very significant based on 10 ½ year olds.

Jim: **Consistent with data.**

Doug: If this credit were written to distinguish between primary schools and secondary schools would there be different walk thresholds for those two?

Larry: Based on literature we know distance matters and age matters.

Andy: Ken Powell has a paper which does separate it by age FALD.

Doug: As written this is **supported by data** with an opportunity to make it richer

Emil: **I think we are recommending one mile. That is supported by data and consistent with data.**

DISCUSSION OF NEIGHBORHOOD PATTERN & DESIGN PREREQUISITE 1: OPEN COMMUNITY FOLLOWS:

Doug: Finally in the Neighborhood Page 48 – Prerequisite 1 Open Community….
Is there a public health benefit to un-gated communities?

Andy: Social capital...

Jim: Un-gated is better than gated?

Emil: Not for communities.

Jim: **We have no data.**

Andy: **Insufficient data.**

Doug: **No expert opinion on it...**

Ken: **We don't have the data to support that...** with the development that is gated and one immediately cross the street it's not gated.

Doug: **No data.**

Larry: I have been working with Susan with social interacting smart track. We are finding that is this cul de sac, low density, social capita people know their neighbors and interact with their neighbors but it has to do with tenure and residence. So there are a lot parameters, still this is not about urban form we are asking about open community right now and as pertaining to open community, personally it's not still asking the question about social interaction as much as urban form.

Doug: Larry, are you taking a position other than no data?

Larry: It creates an opportunity for connectiveness. You are not going to get far in a place that is promoting gated communities.

Doug: **Are we feeling more like that it's expert or is this our first no comment?**

Jim: **I say keep it but don't rely on the health data.**

DISCUSSION OF NEIGHBORHOOD PATTERN & DESIGN PREREQUISITE 2: COMPACT DEVELOPMENT FOLLOWS:

Doug: No conclusion ---- Page 50 Compact Development – Conserve land and so forth walkability.

Karen: We don't have the high threshold, yet in New York itself even in a very high intense place already there are still variations.

Jim: Density yes. Larry what would you say?

Larry: It's a continuous grading. I mean you can show the data and transit can work at all. I don't see density.

Ken: I would add this is border run off.

Larry: Andy was making the point it should be a continuous grading.

Doug: Is it too low should it be 8 or 9 or 10?

Larry: At net density – probably is kind of low. But, I don't know that we could really support it.

Jim: **Is it consistent with data?**

Jen: The aim of this is that any set aside would enable you to get planning and so instead it is basically everything except the things that would be excluded.

Doug: **Consistent with data?**

Jim: **Yes. I say consistent and we can't site that 7 is the right number.**

DISCUSSION OF NEIGHBORHOOD PATTERN & DESIGN CREDIT 1: OPEN COMMUNITY FOLLOWS:

Doug: Page 52 - Ladder credit rewards more important for increasing developments and this is something that would be **supported by data?**

Larry: **Yes.**

Andy: Do you lose credits here if you set aside green space?

Jen: You get the credit for your average density so with or without if you manage to do your average density while incorporating green space fabulous, if not, if you got some area that you set aside voluntarily that is not listed you still come back to the denominator of your density. In a sense it counts against you.

Larry: Very rarely does density happen that way.

Doug: Was that a comment about linking credits?

Larry: You might want to consider a way to provide an incentive to locate denser development where there are other … you could take it out of your scale here. I mean this is where it would come from you got a grading so you could tie it together if they have increased density plus the 6 different other kind of land uses that would give you more – you may not need to go 7 you could go in 20 increments instead of tens and not have to reallocate your points and …you could take your points.

Susan: You are saying that if you did both things …

Doug: Let's talk about it over cocktails... That's a design thing. Jen, the definition of livable land includes public streets other public rights of way and land excluded from development by law.

Doug: Homework to do with Kate.

Doug: As written is NPD Credit 1 Compact development **supported by data?**

Jim: **Yes.**

DISCUSSION OF NEIGHBORHOOD PATTERN & DESIGN CREDIT 2: DIVISITY OF USES FOLLOWS:

Doug: Page 54 NPD Credit 2 - will be **supported by data.**

Jim: **This is the stuff that we know. Pretty well is supported by data I would be comfortable with that. The thresholds are supported by data.**

Larry: We haven't measured it that way we are not screening out barrier for 25 miles per hour speed. **I don't think anybody has evidence to support that statement.**

Doug: We have a more aggressive definition and from what we know this is not necessary.

Katie: 25 miles per hour in Georgia when schools are in session - it would be restricted…

Larry: Traffic controls undesignated...

Ken: 35 miles per hour… We are dealing with DOT in our neighborhood they will not put in a crosswalk in - if the speed limit is over 35 miles per hour.

Jim: It seems unrelated to the diversity issue.

Larry: I think it's an example to what we were trying to capture.

Susan: If people could not get across, then the other part of it was meaningless.

Larry: I think it would be useful to consider the number of lanes.

Karen: If you have three lanes.

Larry: Even if there is a signal, what is on the other side of that road is a world away.

Emil: Why don't you mention safety in the manual?

Tracy: My other question on verifying the speed that you are talking about.
The language don't seem strong enough

Susan: One of the things that keep coming up in discussions at CNU has to do with emergency vehicles fire truck dimensions are being used more and more. Is anybody aware of data that relates to how pedestrians are affected by wider streets?

Doug: Is there a joint response for that to put it under a bigger ban it's a trade off versus traffic pedestrian interaction.

The CNU would love to work with you to put in the …..

Ken: Dick….

Andy: Dick Jackson was working on it.

Larry: It has a public health benefit.

DISCUSSION OF NEIGHBORHOOD PATTERN & DESIGN CREDIT 3: DIVERSITY OF HOUSING TYPES FOLLOWS:

Doug: At page 56 – Diversity

Jen: We stole this …

Larry: This is great!

Jim: I would be happy to say this is an **expert opinion**; it's great!

Doug: **So expert opinion it is…**

DISCUSSION OF NEIGHBORHOOD PATTERN & DESIGN CREDIT 4: AFFORDABLE RENTAL HOUSING FOLLOWS:

Doug: At Page 59 …. Affordable Rental Housing – public health benefit?

Jim: Maybe indirectly they might be able to live where they work and so less driving; certainly we would expect some public health benefit and social equity. This to me is an **expert opinion**.

Katie: There is some evidence and an indicator that they are able to walk, regardless of your own education if your neighbor is educated you are likely to walk more.

Ken: Different life expectations.

DISCUSSION OF NEIGHBORHOOD PATTERN & DESIGN CREDIT 5: AFFORDABLE FOR-SALE HOUSING FOLLOWS:

Doug: That one was an **expert opinion**. Next one is page 61. Please skim the criteria….

Andy: Are these numbers based on … health data?

Emil: The one from rental ….

Tracy: Why is there no maintenance for sale of public housing?

Jen: You mean keeping the sales price low? Controlling what people can sale the houses for is harder than controlling the rental.

Katie: Can't there be a requirement for the first option to go back to the municipality.

Jen: It's trickier for restricting the deeds and what not I think it lowers the appeal of buying the house and turning it into a rental.

Doug: There are two options in my mind first is the first time buyer program and the second option is traditionally smaller housing units are affordable depending on the family size decreases - we are selling - we can make it more affordable serving the market differently.

Larry: Percentage. I know at Lindberg Station has a requirement that ten percent of the units that are sold would be deeded so that they can't be rented. Makes it affordable to an area that is fairly central and that is good accessibility for the station. They don't want to have that happen more than a certain amount because …

Andy: <u>It has an equitable issue socially.</u>

Doug: Isn't it true Jen if you built one unit of affordable rental housing you could earn two points?

Jen: It is based on the percentage of total rental or the total for sale.

Karen: Access to transit is one thing. If there is no grocery store close by, it's not that easy to go grocery shopping on transit. You can't carry that much. I don't know maybe it's not possible to capture it to some of these supporting destinations.

Doug: **Is it expert opinion.**

Jim: **Yes.**

Katie: I think that it's a real issue with affordable housing it is just not feasible for a large family to live in a one bedroom.

Karen: It should account for size…..

Jen: Is there a medium?

Tracy: It doesn't take care of the size…..

Jim: You don't have the guarantee that it would be restricted.

Doug: A millionaire could come in and buy?

Jim: Rental housing; don't you want to have some kind of minimal housing units that rental because it's 100% of the rental.

Jen: Since we could have a wide variety of projects that is why we didn't put that restriction on that.

Jim: Why should they get a credit?

Susan: If it is a tiny project, two three flats, six units, which would the number be?

Doug: We should definitely get a percentage.

Emil: Aside from whether they are affordable within the affordable for sale housing.

Doug: So affordable housing is **expert opinion**?

Jim: **Yes.**

DISCUSSION OF NEIGHBORHOOD PATTERN & DESIGN CREDIT 6: REDUCED PARKING FOOTPRINT FOLLOWS:

Doug: Page 63 Reduce Parking Footprint – Locate all off-street parking facilities at the side or rear of buildings blah blah blah…….

Andy: Anything about shared parking?

Jen: If you go to page NPD 10 - so this is basically rewarding however you do it - go to credit 10 there is actually an incentive for doing transportation management …

Ken: Is bicycle covered?

Doug: Three causes basically - no parking is that **supported by data?**

Jim: **I'd say consistent with data.** Point 1 is consistent with data.

Doug: Number two really argues for the maximum that's the threshold we are bringing….

Karen: Why does it exclude underground sort of like … that seems to me to increase your footprint.

Jen: If you are going over in a helicopter how much of the land is spent on parking.
If you are stacking it ------ most is spent on parking.

Karen: You are still using less land you are allowing more cars on sight.

Larry: There is no stronger predictor of automobiles than places to store them. Development community does put pressure on them… they say I have to provide structure parking to get LEED I can't afford it so we need to reduce the parking ratio.

Doug: $3-4 for above and 20-40 for below.

Karen: Is this a place where you can stagger points?

Jen: It's 20% of the total footprint.

Doug: Who wrote this?

Jen: Me, Kat and Elliot.

Andy: Is unbundled mentioned in here?

Doug: No

Larry: What do you do with couples that car share. You could link those two

Andy: Could that fit here?

Jen: They have two different approaches, one for the footprint and the other one is to reduce transportation demands.

Andy: It is not specifically mentioned in 10 for the unbundling.

Jen: Just to reduce your overall by the number of trips by 20%. Unbundling is mentioned but not here but it will be in the reference guide.

Katie: ABPD has a detailed guideline for parking.

Doug: The top one is **consistent with data** and the next two are expert opinions.

DISCUSSION OF NEIGHBORHOOD PATTERN & DESIGN CREDIT 7: WALKABLE STREETS FOLLOWS:

Doug: Page 65: Walkable Streets - provide appealing and comfortable pedestrian street … Number one…. has a front

Larry: what would happen if we drop the sale?

Jim: I think that is an **expert opinion.**

Doug: This is the way that each building is …. **supported by data?**

Ken: Is that going to undermine pedestrian use?

Katie: People that park around the building do they have to walk around?

Jim: **We don't have data on details.** We are working towards that?

Doug: Having a door connected that connects to the sidewalk is an essential link?

Emil: You can call Mariella Alfonzo graduated from Irvine malfonzo@udi.edu

Doug: A is **expert but no data**… Okay Read - B

Jen: It gives you a sense of enclosure.

Doug: This is one unit tall and that's a maximum of three.

Jim: I don't think we have data on that. We have measures…

Andy: If it's higher urban design standards will stagger back….

Doug: The 1 to 3 ratio comes out of the urban design ….

Larry: It creates an outdoor room. Too much height.

Doug: This is a minimum.

Andy: **I would be surprised if there is data on this.**

Doug: The first clause of B do we like it or do we not?

Jim: I think it is **expert opinion** of the designers.

Larry: You could reference Rappaport the environment changes faster as you move through it. The environment changes very slowly. It's an environmental psychology.

Emil: John Lange University of New South Wales studying for 40 years.

Larry: Anastasia-Lucas – Sideris - UCLA Planning

Doug: What do we think about - B

Jim: **Supported by data.** We found several studies and some relation to transport one to relation to walking to school, etc.

Doug: **Supported by data.** Next clause under sidewalks 4 feet wide - C?

Tracy: I think you should look at the standard.

Ken: If it is right next to the road makes a big difference.

Doug: A minimum of four. Too low? Change our standard.

Jim: I would go with the complete street recommendation.

Katie: 6 feet is sounding better.

Andy: 4 feet doesn't cut it.

Tracy: I think this is for the urban design.

Doug: So 5 feet?

Karen: If you are able to support that.

Susan: MUTCD standard is?

Jim: I think that is worth promoting …

Doug: Second half of C is **expert opinion** and referencing – the MUTCD manual…

Alright D…….

Ken: That gets into the cycling issue and you design to do things to make them unfriendly to cycle.

Doug: Is this good?

Ken: It can be good – it can be bad for cyclists as well.

Andy: Can we have a clause that says while accommodating cyclists?

Katie: Or speed bumps and stop signs.

Susan: We had discussions about this.

Doug: Back up or pass by and suppose it's a very very skinny street.

Doug: We don't have data we got some homework to do here.

Jim: **Insufficient data.**

Tracy: There has been a study done…. On a street that is designed for 20 miles an hour.

Andy: They put the bike right in the center of things

Larry: Argue for points to be allocated …

Andy: Something says accommodates bikes…

Karen: Preventable injuries….

Ken: It might be help undermining and you may be increasing injuries that's where it is problematic for me.

Katie You don't want to make it difficult if they are going to be walking where bicycles are. It doesn't even matter ...this is why it is best to accommodate everyone

Larry: I can see being afraid of those streets.

Katie: You do have to yield; I ride my bike on Chamblee Tucker...

Ken: This is a research question.

Doug: It is 5:20 -- What to write for D and E?

Jen: **More research needed.**

Doug: There is very little work done with which we would simply reference it.

Ken: Complete streets.org

Doug: Do you have a copy of it? What do we write for D & E?

Jim: **I don't know I think we have insufficient data...**

Tracy: A lower speed is better.

Katie: We don't know what that speed is…..

Ken: Add the caveat where reducing speed...

Jim: That is not a criteria.

Katie: The designers will not know what to do.

Jim: Somebody get a copy of Complete Streets. **Insufficient data further research required.**

Katie: I don't know what the intent is... It is consistent with some data…mixed bag….

Susan: There were two or three who were cyclists in their opinions the slower speed limit was the best surrogate they could come up with for accommodating bikers.

Larry: This is a point for further discussion.

Doug: What do we write for D & E?

Katie: Reference is Complete Streets I will get it for you.

Jim: **I think we have sufficient data.**

Katie: We know that a lower speed for all non motorized users. We don't know how that lower speed is achieved and that is where it imposes a threat to cyclists.

Doug: **Mixed bag….**

[END OF FIRST DAY]

May 22, 2007

Good morning. Jen has to leave pretty early so I am going to let her start.

Jen: We planned 120 projects we have 371 applications, the organization wanted to expand and accommodate most of those projects. We are going to send them a letter that says yes you have an opportunity to purchase space. We know a lot of projects did not look closely at the rating system before they applied. They threw their hats into the ring because it was free and it was a deadline. We got 300 of the 370 on the last day; we think there maybe the letter will contain some stern language about make sure you look at the rating system. We think there might be a significant drop out rate; we don't know what the final number will be my guess it will be 120 and 300 projects will be in our pilots. We are going to choose 60 projects that we're calling a focus group and those 60 will have priority in terms of going through the certification cue when they come in the door with their documentation. I think those 60 constitute that we have a little more leeway to lean on in terms of saying hey we might be following up with you with some more questions. Andy has been our liaison he is working to help us look at that group of 60 and make sure that there are some projects are going for the credits that you are interested in seeing and that there is a diverse sampling among those. We will be working to do that while all of them register in the next 4 or 5 weeks. The actual pilot is when they go thru the certification and what that involves is documenting every single prerequisite and credit they are trying to achieve with specific documentation, submitting it to us paying our fees they actually do that at the beginning. They pay fees and the fees go to pay a 3rd party consultant to review that documentation. There are no site visits it's all just looking at documentation, what we ask for, what they say making sure it looks like it matches up. There is an opportunity to ask for more documentation. That process takes several weeks. Not every pilot project will certify. But, you have the opportunity to certify under the pilot rating system. So that basically leads into what information will be easy to get and what information will be harder to get and if you look at any part of the system in the submittal section it talks about what the projects is expected to submit for documentation. These sections constitute all of my weekends in January and February. Once you read one of them you will get the pattern and go to key items. The site design for habitat asks for a brief narrative, summarizing some results, a site plan, a list of plans to be used. They vary on what stage certification process you are going for. We are still somewhat dependent on the kindness of the project teams in terms of cooperating. One other thing I wanted to mention is now falling out of my head, any questions? Basically there are a lot of ideas around the pilots, the storm water wants to do research on water, and the energy folk want to do on energy… There is somewhat of a need to help and research. You guys are obviously are well equipped to be reputable researchers and we are very interested in talking to you – please narrow your focus and make it clear what you want to look at and lay out a precise plan.

Andy: Does your plan mean looking at the data they have submitted?

Jen: That's up to you it's not impossible and maybe you want to do research and you don't even need to talk to us. To be honest I am not sure how big of a sample type if you are looking for post-construction projects that have to meet certain criteria - you might get down from our 370 to only 10 or 15 projects that might not constitute a big enough data set anyway depending on what you are looking at and what kind of projects.

Emil: Looking at these 3 options, the stages of certification, second stage, then you say it's good and you give it this rating. Then, if that project is complete they come in with some kind of amendment or…….

Jen: That's the hope and idea… all projects will complete stage 3 then they basically tell us the updates or they need to sign something saying that nothing changed.

Jim: Just one little thing, I just heard of and have a little bit of experience with developments that when they are getting their approval they don't have the right plans, etc. Then those don't pan out it seem like for stage 3 you would want to require photographs.

Jen: For some of the credits we require a little bit more but for the most part it's – honestly going through the other stages it is pretty timely.

Susan: The pilot selections when I have a conversation with Larry, I learned from him that he has incredible data about the cities around the country. If you have any access to incredible data that you think would be a good fit, it would be nice for us to know what city or states that those are in.

Doug: Add some meat to how that might go forward.

Susan: My recollection is that we will be letting the 60 in the focus group know that they are in the focus group and that they will be getting assistance and special attention to their questions. I would want to know when they are making selections, if there are data sets for certain areas. The pilot applications from those cities that also fit the diverse things that we were looking at I would be interest in making sure we had something from those cities, richer data.

Doug: You are creating the potential for research to take place but how does it take place?

Jim: We should discuss that maybe? Andy have you talked about CDC?

Andy: The interest we weren't at the level of what we talked about - we have not explored it but we are open to explore all sorts of things.

Doug: Public health assessments - I thought it would be great for a link between CDC and whatever resources and projects expressed interests of having such assessment done and we could link to them and they could do or contract with us. For Jen the LEED pilot program is a complete nightmare and now it is Jen's problem. We are careful not to further burden she has three plates full. Do we have any CDC interns?

Andy: We have wonderful interns and they are sitting here smiling.

Doug: So let's just say we had a pool of 60 we would take that list and give it to you….

Andy: We have an intention to put a little bit of money into it say 5 or 10K … if they help they would be eligible for consideration for innovation credit and that way you could get something you would review - it also could be a win win for everybody.

Jen: Once we get the focus group registered – the application is confidential but there will be a few who want to stay confidential the rest will be public. That doesn't mean I am able to offer all their submittals to anybody easily.

Emil: One way to control, is have the project make the ultimate decision on whether to provide the information so that you have researchers to go to your website to see who's in? I would contact 5 or them 2 of them and ask them directly because presumably they can't replicate or send something…

Jen: We might be able to do something and if in website if the project say they are open to opened to being contacted.

Emil: Association of Collegiate School of Planning – a good resource.

David: Going back to what Doug mentioned the marketability of healthy green neighborhoods. It would make sense to research before we go out there. To do it ahead of time - market research to find out how this notion of green healthy neighborhoods and the very aspects what they respond to and what they don't and what requires explanation. That will help generate some desire for this and more focused and sensible marketing of the whole concept. I was very much interested in working to help raise some money for it.

Doug: Just to add, Jackie Benson was posed the question, the development purchase premium that people pay for green community and her impression was zero - but that in the Sunday ads when they are looking some communities to buy in she marketed earth craft communities here in Atlanta - traffic was 20% higher things sold or rented quicker.

David: We are trying to develop a concept for green healthy neighborhoods – set standards for it and then get everybody excited about doing it. If we want to know how to magnify the impact of these places. We need to understand and help developers – and market something. Nothing is wrong with that.

Doug: Turn to page 65 – Walkable streets credits are up to 8 points – A through E if you do all five you earn 4 points - so now the bottom half of page 65 if both measures are achieved the project may earn additional points as follows 1 point for designing and building the project such that any 3 measures are accomplished up to 4 additional points.

Emil: I read them and I would submit all of them - they have a lot of similarities we don't know a lot about from health standpoint we may render our own opinions as people who live active lives or however we want to describe ourselves. That was my take on it.

Jim: I think as a group these are **expert opinions** designed as kind of guidelines I think these are very good examples what we have data on right now. To me this is expert opinion with some consistent with data. Pretty good consistent data on issues related to aesthetics and trees are a part of that – the best kind of data. N and Q are consistent with data and otherwise **expert opinion.**

Doug: How long would it take you to do the research?

Jim: You heard me have an appeal to speed it up; together with CDC identify funding to analyzing data elements of LEED ND; still that's a couple of years.

Doug: We are going to write a code version of this in a couple of years. .. walkable.

Jim: We funded several people to go out and do very detailed walking audits - things like set backs and buffers and spaces in trees and this sort of thing and those are the data we have now but to use some of things as a framework, here is a specific reason to analyze these things and likelihood that people are going to walk.

Doug: Jim if you do ask people to study this could you add the letters Q, R front porches?

Tracy: Some of these are collective efficacy...

Doug: Why is it called that?'

Jim: As our community can get things done if we have problems collectively we can do something about it.

Tracy: A lot of these measures in this credit has to do with nonresidential environment...
leans more toward walking to the bank, clothing store not a recreational walk.

Emil: A functional trip

Katie: Are these trade offs for walking for physical activity and bicycling on both sides so if there is a barrier between motor vehicle traffic and the sidewalk but on street parking is it parallel to the curb and there is injury data that supports that….

Heather: Are any of these -- they are not credits anywhere else?

Jen: No.

Katie: Can you talk about the 70% was reached?

Doug: You can't get more than 70%.

Katie: That's the maximum you can have?

Doug: Right.

Andy: The urgence reference…. www.hphp.us

DISCUSSION OF SMART LOCATION & LINKAGE PREREQUISITE 4: WETLAND AND WATER BODY CONSERVATION CONTINUES BELOW:

Doug: Howie, we have been saving some questions for you. This is a prerequisite for gaining entry into the certification - wetland body conservation Page 14. The issue here is the environmentalist on one hand seeing that corridor as habitat and serving a purpose in nature. The urbanist seeing the same corridor as something of great benefit to humans. So the compromise that was written the acknowledgement that the residential density in units per acre immediately next to the setback requirement would allow increasing levels of impact in the setback zone. Please look at the table. The argument on two extremes is this - The environment movement basically said we have provided all of the places and access to the water's edge that we will ever need we need no more and we should have no net loss of habitat ever again in the future.

The other extreme is that if humans are living at 100…. screw the fish. The question is the urbanists' vision might be there is a very hard edge, plaza, may have no tress whatsoever but applies people access to the water's edge think about Brooklyn Heights may not be a tree in sight. Would that water's edge access be distinct from building? Is there a benefit

is there a research behind the benefit?

Howie: I have the impression that the health of the waterways is threatened in different ways when you are talking about development along the water stream. You need there to be protection from [unintelligible] in ways you might not insist on having in the New York Harbor. Whether you have a distinction from different bodies of water you may want to permit a different types of development, and different types of waterways. Then moving to the health piece – we have data showing the access to water is good for people in the sense that people might feel restored and we have access in being in natural settings gets kids to be more physically active. I don't know if there is anything that will help with this. I think it is probably going to be more of an environmental decision than a health issue. The one thing I will mention is the question of putting paths in lanes ….. occurs a lot may include only minor pathways, not my expertise but I will just mention it. It may be that you want to include a description of the kinds of paths that are permissible, non destructive surfaces may be alright but standard DOT requirements has a much bigger impact and that one may not be permissible. I think what we would like to do is balance those two competing needs of waterways preservation. Human access for pleasure and learning and human activity. One way to do that is to reduce the footprint of the access.

Doug: I failed to describe the whole facts here ...The portion of the site that is impacted must incorporate storm water best management practices within the impacted area to infiltrate, reuse or evapotranspirate at least 90% of the average annual rainfall or 1" of rainfall from 75% of the development footprint within the impacted area… bottom of page 14

Susan: Do you know or could you help us find those data partly one of the questions is a possible compromise whether we should change the setback from the current requirement of 100 feet to something like 50 feet but 50 feet with the development being part of conservation plan ……. [unintelligible]

Howie: [He is too low and I couldn't hear him and neither could the recorder]
talk about this seeing a video nature scene compare to the real thing.

Jim: The research is not as specific.

Howie: The caution we have to exercise in something like this is that all of this nature preference is very heavily influenced by your background so if you grew up in Northern Alaska or in Phoenix or Atlanta you make a very different norm for nature contact and what is restorative and beautiful.

Jim: Versus terrifying….

Howie: Under intent this would be a really good place to call out this delicate balancing act that we are talking about. Conserve water quality and natural hydrology and habitat and permit people access to natural settings to promote health and well being and balance these so that they both are optimized as well as we can.

Doug: Love it and this room would agree that there is a health and well being benefit people in this case getting to see the water. That is helpful it won't solve our fight. This is a case where a design component to see what does 5% impact buy you not much so that's an issue.

Howie: Have you talked about access to waterways. I know that proximity came up in the discussions yesterday but you know they were beach front or river front. They are both private properties with occasional public access to let you get to the waterway. How frequently do you need to place the access points and how accessible do they need to be to actually facilitate public use of the waterways. Sometimes you get these perfunctory access points that are rare and hidden.

Doug: If we would mend the intent the way you suggested this would be the place for it to appear. That's what I wanted to ask Howie, were there others. **There is a lot of expert opinion.**

DISCUSSION OF NEIGHBORHOOD PATTERN & DESIGN CREDIT 8: STREET NETWORK FOLLOWS:

Doug: We are on page 69. Street network - we talked about changing the metric from 7 miles intersection density. I have also seen the same thing of intersection legs that you record a corner intersection differently from the street corner. Is that how your data is recorded?

Jim: Yeah, Jennifer Deal is the expert in intersection connectivity. I don't know what she has come up with. Larry says if you count only 3 legs and above it is pretty closely related to other metrics. I don't know --- that is how he does it.

Jim: We are at 8 right - NPD Credit 8 – I think if we change to intersection that this would be **basically consistent with data.** And you may need to harass Larry about it.

DISCUSSION OF NEIGHBORHOOD PATTERN & DESIGN CREDIT 9: TRANSIT FACILITIES FOLLOWS:

Doug: NPD 9, page 71 ……

Karen: Whenever you encourage transit use it's going to encourage some active travel – it is going to encourage building in more activity.

Jim: **Sounds like expert opinion to me.**

Doug: This credit is interesting; in Chicago there is not a bus shelter. This ding exists in old places versus a shelter is kind of a twist.

Tracy: Anastasia from UCLA has done research in terms of the level of security but that would be some research to go back and look at.

Katie: Recently work has been done after schedules had been posted at stops showing the association with that and increased transit usage. So there is some relationship there. In existing areas I wonder what some of this stuff ….. is it in the right of way - are all the areas the property of the developer? None of this stuff is public streets or - to what extent do they need to have an agreement with the transit agency to post this information. How feasible it is?

Doug: It could be if the developer ….. because the local traffic engineers won't allow it. They keep the streets private and the park engineers won't allow the skinny streets and they can't wait the 5 or 10 years. They keep the street private. I don't really see it as a barrier.

Katie: Some agreements between transit agencies and municipalities where the shelters are normally paid for thru an advertising contract and those are somewhat limited. So, those would be in existing places forever by contract.

Doug: Is this an **expert opinion?**

Jim: **I think so for a health connection.**

Doug: **Consistent with data.**

DISCUSSION OF NEIGHBORHOOD PATTERN & DESIGN CREDIT 10: TRANSPORTATION DEMAND MANAGEMENT FOLLOWS:

Doug: I have noted it. Number 10 – Page 73.

Susan: This is where the unbundling of parking is found.

Doug: The intent is written narrowly?

Katie: Transit is one strategy but walking, biking, telecommuting, the label of transportation and management if it's meant to encourage transit use then that should be the title instead of using TDM.

Susan: I thought that our intention here was that option was to improve more than not.

Tracy: So it should say reduce energy consumption by encouraging alternative modes of transportation.

Susan: That would more accurately capture what we were intending. If that was change does option 1 address your point or not?

Katie: Yeah.

Emil: You don't have the data on that but you should put it in the intent.

Jim: You are trying to reduce and this just says reduce trips...

Emil: You can compare the trip generations but you usually had a different - terrible data set on occupancy rates. If you put it in the intent and give some slack in terms of how to document – might be a good idea. Otherwise, it would be very difficult to document.

Jim: You could say auto trips?

Tracy: It is easy for us to go out and get an account… you have to do more extensive

Jim: The point is to reduce car trips. These are basically **consistent with data.**

Doug: **# 1 is consistent with Data.**

Jim: **2 is consistent with data and 3 is supported by data?**

Tracy: … Really have not been tested my way [voice too soft]

Jim: Supported by data is, oh yeah, we have got the dose response and this specific recommendation - consistent with is the principle….

Howie: **None of us knows the data to support number 2.**

Jim: **Number two is expert opinion**

Susan: Would you call it data?

Jim: **Expert opinion with 3.**

DISCUSSION OF NEIGHBORHOOD PATTERN & DESIGN CREDIT 11: ACCESS TO SURROUNDING VICINITY FOLLOWS:

Doug: We are done with 10 let's go to 11, Page 76 - Access to Surrounding Vicinity… Provide direct and safe connection, blah blah…. You got a quadrant and there is another quadrant…. People don't want those people driving into the neighborhood.

Howie: What if you got a development that is partially bordered by underdeveloped land let's say there is a park in the city and parts of it is nestled up against the park so that you got a mile of project boundary. You want to build a road in the park - you are next to another neighborhood.

Susan You can see every single part of the neighborhood. I think the answer would be an opening to that place.

Doug: To view a park is not accommodating through streets now and again - I want to discourage - there is no connectivity because of the park.

David: Point is that your project is a continuation of an existing - or creates a possibility for it. Even going around the park you would expect there would be a road along the park and then you get through project.

Katie: It could be specifically stated that if there were a park then a bike pedestrian could actually get through the park then the motor vehicle would go around the park.

Jim: The principle being one through street or access so you are really promoting direct connection for pedestrians. So I would say under the principle that this is about connectivity that it is **consistent with data** and parks and open space.

DISCUSSION OF NEIGHBORHOOD PATTERN & DESIGN CREDIT 12: ACCESS TO PUBLIC SPACES FOLLOWS:

Doug: go to 12 - Access to Public Spaces….

Jim: Yeah, Larry didn't the recent paper for kids was for having a park?

Larry: What we do know is a kid is much more likely to walk 5 to 8, 11 -12 we didn't look at the size of the park we just know having a park would entice kids to exercise.

Doug: Early talking point was a park with a three minute walk that should be a shorter walk. That happened to me.

Karen: Closer is probably good at the same time forcing them to walk a little bit further for activity ...I think there is sort of a balance.

Tracy: Also in terms of municipality [sorry Tracy's voice is way too soft]

Karen: Activity benefits occur so what we do know there is evidence based around doing it at 10 minute segments in terms of calories are burnt for an additional health benefit.

Susan: Active space is the next credit.

Katie: To encourage physical activity is hard and if they are allowed to skate board …

Jim: I am also looking at the next one you have the option of a play field or a trail or a gym and so one of the things making sure there is some type of facility for little kids. I am worried about.

Larry: Also for seniors ------ going to benefit so kids and seniors.

Jim: Seniors would want a bench and the kids would want some type of play ground.

Chris: A lot of the parks have the concrete chess boards.

Jim: Open spaces were not as activity producing ...like a jungle gym. I am not saying all of it but at least a corner of it should be devoted to kids. There is a paper by a doctoral student open spaces were not as effective… the playgrounds they looked at the mixed natural and unnatural was the most constructive. I don't want to put too many restrictions here. I have not seen kids mentioned any where. Making sure that the parks accommodate kids is the minimum.

Emil: Robin would be the source North Carolina State University…. ncsu.edu

Doug: The intent that we would be given residual.

Jim: **Consistent with data.**

DISCUSSION OF NEIGHBORHOOD PATTERN & DESIGN CREDIT 13: ACCESS TO ACTIVE SPACES FOLLOWS:

Doug: page 80… Credit 13

Howie: You are asking for an awful lot in many places you are not going to have land for that development.

Karen: What if you don't have option 1 – what if you just add the credit so that there are multiple as oppose to the option.

Susan: For that, we would need it supported by data – otherwise I can tell you getting a prerequisite for that is going to be a huge fight.

Doug: We fight constantly.

Jim: From the health point of view, this is pretty fundamental.

Emil: One compromise is to accommodate the density because it is real it would have something do with ….

David: You build the project within easy walking distance to locate …..

Jim: I would be ...if you are developing a block that is not reasonable ...but if you are developing something beyond you know some minimal size then I think you have a responsibility to build a park.

Susan: That is the way on the second part of option 12 – do you like that kind of thing ...Is that the kind of thing?

Jim: Yeah, there is a threshold ….

Andy: A very walkable place that may not have the specific park but it still could be a very attractive place.…

Karen: The reality is that there are many communities that are not that walkable.

Jim: My way of looking at it is a walkable neighborhood is designed so that you can walk to destinations. That has no relationship to your recreational activities, so you need to design for that as well. One does not substitute for the other and if you want a healthy neighborhood it's designed for both.

Howie: If you require that you put parks in the neighborhoods those could be little parks they are not going to be venues for physical activity. They could be little parks they are going to be places where the elderly will come and sit and where kids can play on the playground. Also sports it is an interesting idea it gets complicated half-Hispanic – half Anglo some want a soccer field and some want baseball.

Ken: From a kid's perspective I don't think it matters if it is a baseball or soccer field, I think what matters is that there is

flat space for a kid to hit or do something with.

Doug: In my notes here is what I am capturing that there is consensus in the room in favor of requiring some open facility for projects above a certain threshold. As to credit because a prerequisite is something we can't guarantee. Is Option 1 is **supported by data?**

Jim: **I would say all of these are consistent with data.** Having places for physical activity, all of these are places for physical activity. I would recommend that you get some input from the National Recreation and Parks Association. Kathy Spanger – National Research Parks

Howie: One reference or source is PPS Project Public Spaces Fred Kent.

DISCUSSION OF NEIGHBORHOOD PATTERN & DESIGN CREDIT 14: UNIVERSAL ACCESSIBILITY FOLLOWS:

Doug: Moving on to page 83 – NPD Credit 14 – Pattern & Design.

Andy: How would this go beyond what's required?

Emil: It brings the number of units; it brings it down in terms of the number of the types of units.

Andy: Chris has worked on these.

Karen: People with disabilities is that the only intent here? Uhhh probably the disparities to access things like places for physical activity based on income levels. If you have the multiple dwelling units. I think if we get a prerequisite similar as the one in the last slide we are probably okay. If that does not occur then people who live in affordable units often have less access to things like physical activity. I don't know if it is no intent at all to address universal accessibility issues.

Emil: Are you talking about economic accessibility? Universal physical access ability? Why would your income matter?

Karen: There are certain aspects of being able to lead a healthy life that is not universally accessible because of issues other than disabilities, like income issues. If you were to buy a high-end condo, you would most likely have an on-site physical work out room. On the other hand, if you live in a public housing chances are you wont have access.

Jim: We dealt with affordable housing yesterday and 90% everybody there has access to recreational facilities.

Katie: This is trying to make a place where all people could live. All people will have the same access.

Jim: I think this is **consistent with data.**

Larry: Expert is John Stanford with Catea at Georgia Tech he does a lot work on this topic.

Jim: Mike Spivock, he had an article American Journal of Preventive Medicine.

Doug: 6 or 8 years of culminating at our conference in New York a group of 20 or 25 activists in wheelchairs came into the conference center and between sessions got out of their wheelchairs and made human bonds – had acorn activist taped on their bodies I am a traditional front porch step – step over me. You had to physically walk over them to get to your seat so that got our attention.

DISCUSSION OF NEIGHBORHOOD PATTERN & DESIGN CREDIT 15: COMMUNITY OUTREACH AND INVOLVEENT FOLLOWS:

Doug: This intent is to encourage community participation in the project design and planning and involve the people who live in a community in deciding how it should be improved or how it should change over time… NPD Credit 15 (Page 86).

Emil: I think I understand how the people of the community need to have input on how it should be improved or changed. In terms of requirement it is actually illegal to meet with local officials…open meeting laws require that the press be involved, developers are encouraged to meet with staff, planners. Scratch public officials and put professional staff in there or change the wording, professional rather than politicians.

Karen: Politicians change but often local agencies staff have a long tenure.

Doug: The rebuttal many contacts practitioners are working against hostile regulation. Staff are rarely are authorized to change them that's where the direct contact with the mayor or council member to say, you require 1 acre lot size. You know apparently it's a political... not to mention one that requires executive authority.

Emil: I wouldn't care to argue about it because it is saying that the developers should to the work of the urbanist in lobbying for change. That might be fine is your criteria. My bigger suggestion it that this is an opportunity to bring planning criteria that unity has agreed to presumably and that is sanctioned by public officials. This is all about making the neighbors happy not necessarily to say what you do to make them happy is consistent with the comprehensive plan, consistent with what everyone has agreed in terms of reasonable relation developments and so on... My broader suggestions should another end be added where I ask whether what they are doing is consistent with local development polices and to do it at a level of detail where they can say we either support and enhance this policy or we undermine it. I guess the third policy is we ignore it.

Susan: We didn't put it in the reference because we all had enough bad experiences with very bad planning that we didn't want to require it... That was conscious.

Emil: The separation of uses was a public health benefit for most of our history.

Susan: You are right.

Emil: I am not sure the best way to handle this. I guess the more basic point is that I applaud you for going beyond the neighbors.

Katie: I believe it is beneficial to include and to have the government involved. Council members to come to some meet-

ing in the end.

Susan: We assumed that they would be met with and we just assumed that.

Doug: Where are we on this is it **expert opinion?**

Emil: Between the post and open community and modify the project I think there is an important question that might be considered – based on more of my experience than research there is never consistent community input. There might be an additional 'an' or some addition to that talks about seeking consensus. Or trying to get some sense from the community of what they want. People will be talking about things that are incompatible and resolving conflicts you need to talk about near consensus. Then you modify the plan, it would be with regard to consensus of community input. What that would prevent is something I have read that talks about - how developers should involve the community - divide and conquer is a basic strategy. You want to be able to cherry pick community input. So to require some attempt at least of consensus presents a stronger standard at least it's a standard.

DISCUSSION OF NEIGHBORHOOD PATTERN & DESIGN CREDIT 16: LOCAL FOOD PRODUCTION FOLLOWS:

Doug: 15 **expert opinion.** NPD Credit 16 page 89 – Promote community-based and local food production to minimize the environmental impact from transporting food long distances and increase direct access to fresh foods. Establish CC&R's blah blah

Karen: Add healthy like fresh healthy foods.

Susan: There was a debate about pesticides and organics and what-nots.

Katie: Fresh fruits and vegetables.

Susan: That's why we left it generic. It was a nightmare. We thought we were including healthy stuff without screaming no pesticides, etc.

Katie: Question about Option 3 there are a lot of farmers markets where there is one vendor who goes to the farmer's market and brings back – I am just wondering if it could be a quantity of food, instead of 3 vendors because I think for some urban neighborhood that might be slightly trickier.

Susan: You're saying that one vendor might actually be bringing from

Katie: My farmer's market for example, there is one truck, one man he goes to the state farmer's market to get fruit and vegetables for costly more than three producers. He brings that one truck with an extended trailer – that has a very large quantity that serves the Kroger campus as well as the surrounding community - one person and not three vendors.

Susan: The example we were afraid of was one farmer selling watermelons and he would get a credit for practically doing nothing.

Jim: This one is **consistent with data.**

DISCUSSION OF GREEN CONSTRUCTION & TECHNOLOGY CREDIT 20: LIGHT POLLUTION REDUCTION FOLLOWS:

Doug: Page 140…Credit 20: Light Pollution Reduction emphasis on dark skies and came out of all the observatory towns in New Mexico and Arizona, the intent here is minimize light trespass from site, reduce sky-glow to increase night sky access, improve nighttime visibility through glare reduction, and reduce development impact on nocturnal environments. It sets for a series of light levels. It's based on … If you are in Yellowstone your lights are very dark or off up to Times Square are allowed to be much brighter…. Does this have a public health benefit?

Katie: I think it's good to have requirements for bright streetlights it makes you feel more safe.

Karen: I don't know how dark or bright -- these represent clearly on the street level in terms of walking if bright enough then people feel safe, if the streets are bright then they could have the benefit of walking at night.

Renee: Light pollution is pretty real… I don't know which would outweigh…

Doug: When the current standards tend to be written by the minimum level of light density and lighting at all could have a beneficial effect on walking in urban areas and associated with safety.

Karen: Crime related types of health issues. I think it is a striking that balance.

Emil: Lighter areas are safer?

Jim: People identify lack of lighting with being unsafe.

Katie: In the winter I don't bike to the Marta Station I will take the bus with my bike because it's dark and I live in an unsafe area.

Tracy: I think these standards are written to include that it is not lack of light that is really important.

Karen: There could be benefits in street level lighting that are meant to light up the roads for cars. There could be scenarios where there are win wins.

Doug: We have been in conversations with Phillips lighting which makes 20% of the world's light fixtures about the idea for providing for public lighting until 10 or 11 at night so that people could get a decent sleep and then when people wake up at 6 or 7 it comes back up so you could get your car and that sort of thing. Streetlights are the dumbest thing they come on around dusk and they go off around dawn an off switch for the whole city. As written how are we going to rate this? … We have to move along here…

Jim: **I don't even have an opinion on this. I think one concern could be to specify the values. I don't know what those are ---- it's too dim.**

Doug: So this has **no opinion.**

Jim: My concern is that this might be quite low level street lights. I don't know that's why I have no opinion.

Emil: I have no opinion. I am trying to figure out what level of lighting it is…..

Katie: I don't think there is a lot of research that talks about the specific amount of light and so narrowing that down might have a lot of benefits.

Doug: **No opinion, it is.**

Jim: One last recommendation, healthy people guidelines, number one aim for health improvement is to improve health disparities. More people of less healthy and people of disadvantages minority groups are less healthy. So we will look for opportunities to improve health issues and there is not a lot of this that is specifically focused on equity. The two that are most obvious is affordable rental and sale of houses. My recommendation would be to at least require one or both of those to get a button status. I think that says you can set the highest level and it be only for rich people. That would not be a good public health intervention.

Emil: That is something between a prerequisite and a credit. A prerek or platinum.

Doug: Kind of winner takes all.

Jim: Somebody needs to deal with affordable housing. New urbanism is preached a lot and will most likely fall - doesn't happen. You don't want to certify things that stink, though.

Karen: One last comment the one major area is that as the pilot projects come in if we have pilots potentially have multi family multi story housing units or multi story building units whether they would have innovation credits they were encouraged to consider is designing … so things like adding a stair clause to encourage physical activity and tell you what the benefits to stairs.

Doug: If there are no comments we can go to the second chapter to this. You can close your books look at the presentation and follow along. This is the book that I have written – there are a number of thresholds proposed in it – you will see. Part of the reason for writing the book was the core committee members – saying that we should revise the standards. The book has 4 parts the first part is an essay, a chunk has to do with the environment. It also says we looked far and wide and we came across this thing called

rather than being a fictional creation of LEED-ND it predated LEED and a bunch of projects out there, which is trying to combine traditional urbanism, integrated with high performance builders. It's safe to say if all that you see here were to take place would it have a **public health benefit?**

Jim: **Yes, driving less.**

Karen: **Yes.**

Katie: **Yes.**

Doug: It might look something like this. If you consider 2005 as a 100% number.

Within the new urbanism there are three land use types. The neighborhood and then the corridor. The challenge of the book was new urbanism never set parameters on what we see for the developments. And so on… One other particular challenge the population should be able to support one elementary school. There have not been a lot of places built to these particular standards. This is Victor's creation – look at the diagram and this assigns neighborhood such that you can tell when you are in it and you can tell when you are in the center and the like and I am going to ask for your preferences on this….

Emil: We realize among other things that occurred this idea that we can just make the environment right ...people would behave better and became the Achilles heel and brought down -- I guess that and the elementary school not making it racially exclusive were the two things that defeated the idea and drove it out of this planning. I am not sure about architectural or landscaping. There is a recognition now for concern for sustainable development. There is a lot of good concepts there. It's not just worrying about metropolitan region or even urban areas getting down to neighborhood level again and I think that the principles are being brought back in. **I think these would be supported by 90% of the planners.**

Doug: From a researcher standpoint. The neighborhood… I am responsible for what happens in my neighborhood and I identify it as my responsibility if something bad happens in my neighborhood.

Katie: Does it matter if it is your neighborhood you might be closer to the center of the adjacent neighborhood and that street beside may not be that big of a barrier so you might identify with those people.

Doug: That would be an existing…. Down to Victor's goals proposes in short neighborhood people are to take greater responsibility for the planning, and ongoing evolution… Is this something that someone would be interested in researching in these places to see if people have that heightened sense of community?

Karen: We currently have a project of health to look at trying to basically (unintelligible) clusters destinations where we think about creating walkable streets. One of the interesting to see is what we map out and is in fact what ends up mapping a walkable street based on the number of streets and historical crime and traffic safety data and if they actually fit with perceptions and the hypothesis. From the community perceptions it is interesting to see the boundaries that we are drawing – that define a particular neighborhood. So that is perception versus reality.

Katie: Children have a much different perception of their neighborhoods. Their neighborhoods are only one or two streets within the entire neighborhood.

Doug: This one is the land area – the walk to center that had the mix of uses typically the transit stop. That is only 3 to 10 percent of the total land area.

Emil: What's the hypothesis?

Doug: The idea of the neighborhood size actually corresponds the behavior we assume that people would walk and how much stuff has to be in the 3 – 10 percent center.

Emil: If it's too small it won't matter.

Doug: If you make a super center and make them walkable – and an adjacent neighborhood unwalkable you may have diminished and retailing tends to like bigger boxes because they do a predatory thing on adjacent …so it is counter the

retail entity actually has a lot of cellular would much rather blow out a block fill the big box put all others out of business the retail model that is dominant in our country use this as our daily planning tool.

This is from Nelson Nygaard this is physical measure, residential density mixed with uses local retail transit, bike... physical measures ...and in Jeff's analysis up to 90% effect on BMT. For non residential uses the lower box on the right hand column. This is not to have you verify as much as a lot of the world has known ... does anybody have any reaction to this find I am putting out there. The leading Zimmerman Volk Associates have done 30 market studies for TND's; they are all single-family houses. What they found was the rental loft and apartments even in Greenfield TMD's 33% is for rental lofts, 9% for sale lots, 9% for row houses and so on… The whole idea that Greenfield must be a bunch of single-family houses seems not be true. They have a similar set of market studies for infill sites so that it seems what LEED-ND asks for is actually serving the market. Here is what LEED-ND diversity and I wont read it to you 4, 7 and 10 the credit version … our standard is written in such a way that the uses can be emanated by areas ½ mile and you can get the credit for those uses being allocated in that pattern. We all would agree that it is not a walkable destination. Should we add or consider some clustering destination to get closer to the center, does the center have any benefits?

Elliot Allen proposed a method to do this you cluster those things together and that might be a way to do it. Bob Gibbs - he was asked the question how many roof tops do you need to get to support the corner stores…. His answer 1000 roof tops. Bob says no to all of those subsidies you need a 1000 to get to the one corner store. Larry Frank told me that the most important walk is to the grocery store.

Jim: <u>We found that looking at Atlanta trip data average trip to grocery store from home is like 3 or 4 miles.</u> It differed some by higher or low walkable but even in the high walkable it's still pretty far that is probably not a reasonable - most common walk trip. I don't know of any data on this is that people don't like a lot of density but you have to provide extra amenities so they get benefits that they value which provide community wide benefits that's a pretty important process to understand.

Emil: Amenities should also include good design. I saw a slide show and well design projects you always underestimate density.

Katie: Is it just the rooftops or is there also income associated with that?

Doug: It does vary by income. It may be more conservative.

Emil: It's driven by income and purchasing power.

Doug: One detail I forgot to mention in the chart was 1000 dwellings were they in the center or not on one of the roads - if you put a gas station there you did not need that many rooftops. So should they get accustomed to shopping in gas stations? If you should make more neighborhoods on islands? Harbortown in Memphis has a great….. and it makes really good money. Does boundedness offer more retail choices?

Emil: A lot of great cities in the world are on water. It's not an island but you have something like that. You have the water at least on an edge and if not on two sides.

Andy: The trouble with shopping in gas stations is 98% junk food.

Emil: Is there a different kind of destination that is not driven by commerce? It's better to have a functional trip.

Katie: Yeah… If you have the church, the library. .. that sort of town center square.

Doug: Here we have our modification of the ideal neighborhood. We embrace DPZ's configuration of the shopping plaza to get parking – streets become storm water streets, parks become storm water parks. We have introduced more green space and to get more to the island - on the left is a wildlife corridor on non-human habitats can occur linearly placing adjacent human habitats back; put at the risk of the critters in the habitat. And do critter crossing at each of the connectors goes over has a way for deer, bunnies, and frogs to get up and down the river. This is not the latest version of this actually better shared between the neighborhoods and so on and so on. Pushed the elementary school up to the right…….

Jim: That is where you put the playground.

Doug: To summarize next steps for the report we want to put together everything we balloted and pull out, break it all apart and itemize... secondly is to summarize our process to achieve a summary document that we will work, work and work on to get it together. I think we will work on to get it say the right things. There was a consensus of expert opinion in support of the LEED-ND standards. Most of it was consistent with data, some expert opinion, occasionally it was supported by data.

Andy: One is from the health community to get health as visible as possible in the overall process. I would like to see a tag line where health is one of the words that shows up in the tag line.

Doug: As a result of this session I think we are now going to be able to say that ---- where we asserted it before, we can now document it.

Andy: The recommendation of this committee says that we are at the level where the standard tag line for LEED-ND has the word health.

Doug: The next USBCG meeting is in Chicago in November.

Karen: There could be an opportunity to do this process to convey to the other committees of having gone through a more systematic process with health related experts.

Andy: Research ideas are keeping a long wish list of things we would like to do and mesh it with the things we have on ours. It's valuable working toward funding. In terms of future funding is tied to global warming to what extent some of the ideas here could be packaged in a way that they – global warming looking at ideas that it ties in and what does that mean in reality to how you package it? LEED-ND could be one of the solutions to global warming, if packaged right.

Doug: The public dialogue on climate change is very hardware intensive, it's your light bulb, it's your car, it's your furnaces and so on. But it is never your built environment or your lifestyle patterns. LEED-ND and healthy communities have ten benefits not just one. What is John's tag line?

Susan: The convenient remedy to the inconvenient truth.

Doug: We could do these calls in the next year. I digress don't think you are off the hook now you are now in the orbit Great exchange ...thanks for your generosity and intelligence.

[END OF SECOND DAY]

APPENDIX
2. Agenda and Original Proposal

Draft Agenda

The following agenda is included to help describe the focus of the expert review. We anticipate a great deal of give and take to finalize the agenda.

Day 0: Sunday, May 20
Arrival and check-in. Meet for dinner and drinks in hotel.

Day 1: Monday, May 21

8:00 AM	Registration, pickup name tags at the CDC front entrance
9:00 AM	Kickoff and Introductions
9:30 AM	Introduction to LEED-ND and Sustainable Urbanism projects
10:00 AM	Standards Review

Prior to the meeting, we will draft a proposed protocol for evaluating each of the proposed standards.

Protocol: Our initial suggestion is that 90 minutes be given over to each topic for which standards are proposed. The protocol is likely to track very closely with the outline of intended outcomes as follows, formatted as questions for the experts.

Proposed Protocol
Standard Setup (5 - 15 minutes)
One or more people familiar with each standard will describe the history and sources of the development of that standard.

Expert Review and Input (50 - 75 minutes, directed toward the experts)

1. What research are you aware of that addresses the intent and metrics of the proposed standard?
2. Based on your general knowledge of the topic area, please rate the standard according to the following criteria:
    a. Supported by data
    b. Inferred by or consistent with data
    c. Inconsistent with data
    d. Data is inconclusive
    e. No data
    f. Topic for which no approved scientific methodology exists to test.
    g. Not informed in this area.

Discussion on Future Research in this Area (10-15 minutes)
This section will involve a discussion on the trajectory of research and how future research might be redirected to inform future versions of the standards. (How can the needs of designers for specific metrics guide future research?)

Standards Proposed for Review
The standards to be reviewed can be drawn from the following list of topic areas. We anticipate reviewing approximately 4 topics per working day, with the possibility of reviewing more if the time permits.

1. Urban design and walkability
2. Mix of uses and the concept of the complete neighborhood
3. Density
4. Street grid and connectivity
5. Levels of transit service
6. Location on the transect of place types
7. Proximity to types of public space
8. Skinny streets/complete streets
9. Visibility of trees and other elements of nature and natural systems
10. Urban heat island

4:00 PM	Summary
5:00 PM	Adjourn
7:00 PM	Meet for Dinner

Day 2: Tuesday, May 22

9:00AM	Resume review
Noon	1 hour break
2:00 PM	Summary
3:00 PM	Adjourn

Outcomes

There are three intended outcomes for this expert reviews:

1. Informing Community Health Standards Currently Under Development
The LEED Neighborhood Development project is pioneering design and performance criteria for sustainable communities. The standard is currently in draft form and is about to be issued for the pilot period, during which time the standards will be applied to real world projects. The performance criteria in the standards will be extensively tested during the pilot phase and will likely undergo extensive revisions as a result. The expert review will contribute to those revisions.

2. Informing Future Research
The members of the Core Committee of LEED-Neighborhood Development believe that there is a need for research to further refine our understanding of the public health impacts from various land use and urban design criteria. We believe that this session can help shape future research agendas. A memo will list the promising areas of research identified during the workshop.

3. Strengthening Ties between the Research and Practitioner Communities
The scientific research establishment is cautious in drawing firm conclusions from this emerging field of research. Meanwhile, planners, developers and municipal officials make land use and urban design decisions on a daily basis without the benefit of any public health research. We believe that through dialogue between researchers and practitioners that we can accelerate the pace and relevance of applied research.

An Expert Review of the Proposed Community Design Guidelines

Proposed by:

The Congress for New Urbanism

in conjunction with

The Centers for Disease Control

Background

In recent years, the Centers for Disease Control has focused research attention toward the public health impacts of development and land use patterns. One desirable long term goal of this work would be for the CDC to develop and promulgate standards for healthy communities. In the next 10 to 20 years, ongoing research on this topic promises to produce data robust enough to develop such standards.

The Urban Land Institute (ULI) estimates that by the year 2030, the population of the US will grow by more than 60 million people. The current growth estimate for the next 10 years is that we will need 12,300,000 new household residences. At .6 households per acre, if we develop as in the past, we will need to use 20,500,000 acres of land in new development to accommodate that growth. The new land development occurring before settled data is in hand in 10 years could really benefit from the public health insights that are now known or suggested. Lacking a major change of course, most of that new development will take the form of suburban sprawl, which public health literature links to obesity, depression, and low social capital, among other undesired outcomes.

Proposal Sponsor

This proposal is being made by the Congress for the New Urbanism (CNU), a not-for-profit organization based in Chicago. The focus of the organization is to reform land development practices in the US by preparing regional plans and developing compact mixed-use and walkable places. CNU has over 2,000 members throughout the United States and around the world. Annual conferences, known as Congresses, attract the most sought-after talents in the fields of architecture, planning and development to share ideas and establish new goals towards creating sustainable places.

LEED-Neighborhood Development (LEED-ND) is a significant initiative undertaken by the CNU over the last four years, in partnership with the US Green Building Council (USGBC) and the Natural Resource Defense Council (NRDC). LEED-ND will create the first-ever certification system for what constitutes leadership in sustainability practices in the design and development of whole communities, and can be thought of as a pre-cursor to future standards for healthy communities.

Doug Farr is co-chair of the LEED-ND project and founding Principal of Farr Associates, a Chicago-based architecture and urban planning firm whose primary mission is the creation of sustainable human environments. Farr Associates holds the distinct privilege of being the only firm in the world to have designed and built

two LEED Platinum buildings; The Chicago Center for Green Technology and the Center for Neighborhood Technology, both located in Chicago.

Project Structure

This proposal envisions convening 10 of the nation's leading public health researchers on this topic to review and comment on proposed development standards. This review is proposed to take place at the CDC in Atlanta, GA over a two day period in November/December of 2006. The comments will be transcribed and can be edited into an executive summary.

The standards to be reviewed will be selected from the draft standards for LEED-ND as well as standards being proposed in a book called Sustainable Urbanism: Integrating Human & Natural Systems, being written by Doug Farr.

Intended Project Outcomes

There are several intended outcomes from this project, pertaining both to the proposed standards and the course of future research.

1. Compile a list of readily known research* relevant to the proposed standards.

*This research refers to the previously written LEED-ND draft and all pertinent research, as well as CDC's guidelines within the CDC Healthy Communities Goals Process and all pertinent research.

2. A survey of the strength of data in support of proposed community standards.
3. A discussion about how future research might be redirected to inform future versions of the standards. (How can the needs of designers for specific metrics guide future research?)
4. A written report and summary on the findings of the panel defining future guidelines for healthy communities, and including implementation strategies for the CDC.

Selection of Experts

Experts to serve on the review panel will be selected from lists provided by the Centers for Disease Control and the Congress for New Urbanism. We anticipate working directly with Dr. Howard Frumpkin (CDC) and John Norquist (CNU) to finalize the expert panel.

Attendees

Public health experts (assuming 5 from CDC and 5 from elsewhere)	10
CNU/LEED-ND/Farr:	5
Transcriber:	1
Total Attendees:	16

CDC Tasks

1a. Assist the CNU/Farr Associates in identifying and inviting 10 of the nation's leading public health researchers to participate on the panel
1b. Provide invitee list with contact information.
2. Assist in selecting date for review session.
3. Assist Farr Associates/CNU in scheduling, planning & conducting panel discussion.

CNU Tasks

1. Contract administration
2. Manage and facilitate reimbursement process.
3. Assist the Centers for Disease Control and Prevention in identifying and inviting 10 of the nation's leading public health researchers to participate on the panel.
4. Review and edit all documents created for the event, and as a result of the event.

Farr Associates Tasks

1. Subcontract for meeting preparation, transcription services, travel, etc.
2. Plan and conduct a two-day expert panel in Atlanta, Georgia (date TBD)
3. Arrange meeting venue and all associated pre-conference planning and coordination.
4. Compile all necessary documents and research needed for the event.
5. Assist the Centers for Disease Control and Prevention in identifying and inviting 10 of the nation's leading public health researchers to participate on the panel.
6. Oversee and manage all travel related needs for participants.
7. Facilitate and provide conference support for the two-day meeting.
8. Provide a written document summarizing the conference outcomes and recommendations.

Timeline

This timeline will adhere to the calendar as soon as the below dates are known:

Expert Panel Dates: TBD
Contract Awarded: TBD

1. Panel Expert Selection
2. Hotel/flight confirmation
3. Materials created for panel discussion
4. Selection of standards for discussion per day
5. Prepare materials to be sent to participants
6. Conference hosting secured
7. Panel Event
8. Report

9. Expected outcome of report
10. Dissemination of report
11. Press & Marketing
12. Further studies & efforts

APPENDIX

3. Slides Used at Review

An Expert Review

on the Strength of the Data in support of Proposed Community Design Standards

FARR ASSOCIATES
Architecture | Planning | Preservation

Smart Location and Linkage (Where)

SLL Prerequisite 1: Smart Location Required

Intent: Encourage development within and near existing communities or public transportation infrastructure. Reduce vehicle trips and miles traveled and support walking as a transportation choice.

Requirements:

Smart Location and Linkage (Where)

SLL Prerequisite 4: Wetland and Water Body Conservation Required

Intent: Conserve water quality,natural hydrology and habitat and preserve biodiversity through conservation of water bodies or wetlands.

Requirements:

Smart Location and Linkage (Where)

SLL Prerequisite 6: Floodplain Avoidance Required

Intent: Protect life and property, promote open space and habitat conservation, and enhance water quality and natural hydrological systems.

Requirements:

Smart Location and Linkage (Where)

SLL Credit 1:

Remediated Brownfield sites (2 points)

Intent: Encourage the reuse of land by developing sites where development is complicated by environmental contamination, reducing pressure on the undeveloped land.

Requirements: Locate project on a site, part or all of which is documented as contaminated (by means of an ASTM E 1903-97 Phase II Environment Site Assessment or a local Voluntary Cleanup Program) OR on a site defined as a brownfield by a local, state or federal government agency;

AND

Remediate site contamination such that the controlling public authority approves the protective measures and/or clean-up as effective, safe, and appropriate for the future use of the site.

Smart Location and Linkage (Where)

SLL Credit 2: High Priority Brownfield Redevelopment (2 points)

Intent: Encourage the cleanup of contaminated brownfields sites in areas targeted for redevelopment.

Requirements: Earn SLL Credit 1 (Contaminated Brownfields Redevelopment), using a site that is in one of the following areas:

- Federal Empowerment Zone
- Federal Enterprise Community
- Communities with Official Recognition (OR) from the Department of Justice for their Weed and Seed Strategy
- Qualified Low-Income Communities (LIC's) as defined by the New Markets Tax Credit
- (NMTC) Program of the U.S. Department of the Treasury-Community Development Financial Institutions Fund (CDIF).

Brownfield sites in areas identified by state level equivalent programs to those listed above will also qualify.

Smart Location and Linkage (Where)

SLL Credit 3: Preferred Locations (2 to 10 points)

Intent: Encourage development within existing communities and developed places to reduce multiple environmental harms associated with sprawl. Reduce development pressure beyond the limits of existing development. Conserve natural and financial resources required for construction and maintenance of infrastructure.

Requirements: Locate the project in one of the following locations that also earned at least one point for street network grid density according to the calculation below:

- An infill site that is also a previously developed site (6 points)
- An infill site that is not a previously developed site (4 points)
- An adjacent site that is also a previously developed site (3 points)
- A previously developed site that is not an adjacent or infill site (2 points)
- An adjacent site that is not a previously developed site (1 point)

Smart Location and Linkage (Where)

SLL Credit 3 Continued: Preferred Locations (2 to 10 points)

AND

Calculate the street network grid density (in street centerline miles per square mile) within a 1 mile radius from the perimeter of the site boundary. Points are added to the above according to the following street network grid density:

- 40 centerline miles per square mile or greater (4 points)
- 30-39 centerline miles per square mile (3 points)
- 20-29 centerline miles per square mile (2 points)
- 10-19 centerline miles per square mile (1 point)

No points are available under this credit for sites that are not either 1) an adjacent site, 2) an infill site, or 3) a previously developed site.

Smart Location and Linkage (Where)

SLL Credit 4: Reduced Automobile Dependency (1 to 8 points)

Intent: Encourage development in locations that exhibit superior performance in providing transportation choices or otherwise reducing motor vehicle use.

Requirements: Locate project on a site with transit service of 20 or more easily accessible transit rides per week day. The number of points available during weekdays is defined as the number of buses or streetcars stopping with a 1/4 mile walk distance of at least 50% of the project's dwellings and business entrances, and the number of bus rapid transit buses, light rail trains, heavy passenger rail, and ferries stopping with a 1/2 mile walk distance of at least 50% of the project's dwellings and business entrances.

Smart Location and Linkage (Where)

SLL Credit 4 Continued:
Reduced Automobile Dependency
(1 to 8 points)

Total rides available per weekday	Points Earned
20-29	2
60-99	3
100-224	4
225-349	5
350-499	6
500 or more	7

Smart Location and Linkage (Where)

SLL Credit 4 Continued:
Reduced Automobile Dependency
(1 to 8 points)

OPTION 2

Locate project within a Metropolitan Planning Organization AND within a transportation analysis zone where Vehicle Miles Traveled (VMT) per capita or single occupancy vehicle (SOV) driving mode share has been demonstrated by MPO research derived from a household transportation survey to be no more than 80% of the average of the metropolitan region as a whole. Additional credit may be awarded for increasing levels of performance, as indicated;

Percent of average regional per capita VMT or SOV mode share	Points Earned
71% to 80%	2
61% to 70%	3
51% to 60%	4
41% to 50%	5
31% to 40%	6
30% or less	7

Smart Location and Linkage (Where)

SLL Credit 4 Continued:
Reduced Automobile Dependency
(1 to 8 points)

OPTION 3

Locate project such that 50% of the dwelling units and business entrances are within a 1/4 mile walk distance of at least one vehicle that is available through a vehicle-sharing program, and publicize the availability and benefits of the vehicle-sharing program to project occupants. If the project will add more than 100 dwelling units or employees to the neighborhood, at least one additional vehicle for every 100 dwelling units or employees must be available and the parking space must be dedicated as part of the project. Where new vehicle locations are created, a vehicle share program must commit to providing a vehicle to the location for at least three years. (1 point).

Points earned under Options 1 and 2 may not be combined. A point from Option 3 may be earned independently, or be added to those earned under Options 1 and 2 for a maximum of 8 points.

Smart Location and Linkage (Where)

SLL Credit 5: Bicycle Network (1 point)

Intent: To promote bicycling and transportation efficiency.

Requirements: Design or locate a project such that 50% of the dwelling units or business entrances are within 3 miles of at least four or more of the diverse uses listed in Appendix A (p 152) using an existing biking network and/or a biking network that will be completed as part of the project (3 mile distance is measured along the biking network, not as a straight radius);

AND

For any non-residential buildings or multifamily residential buildings that are part of the project, provide bicycle parking spaces or storage for a capacity of no less than 15% of the parking space capacity provided for cars as part of the project.

Smart Location and Linkage (Where)

SLL Credit 6:

Housing and Jobs Proximity (1 point)

Intent: Encourage balanced communities with a diversity of uses and employment opportunities. Reduce energy consumption and pollution from motor vehicles by providing opportunities for shorter vehicle trips and/or use of alternative modes of transportation.

Requirements:

OPTION 1

Include a residential component equaling at least 25% of the project's total building square footage, and locate the project within a 1/2 mile walk distance of a number of pre-project jobs equal to or greater than 50% of the number of dwelling units in the project;

OR

OPTION 2

Include a non-residential component equaling at least 25% of the project's total building square footage, and locate on an infill site that is within a 1/2 mile walk distance of an existing and operational rail transit stop, and within a 1/2 mile walk distance of a number of existing dwelling units equal to or greater than 50% of the number of new jobs created as part of the project.

Smart Location and Linkage (Where)

SLL Credit 7: School Proximity (1 point)

Intent: Promote public health through physical activity by facilitating walking to school. Promote community interaction and engagement.

Requirements: Include a residential component in the project that constitutes at least 25% of the project's total building square footage; and locate or design the project so that at least 50% of the project's dwelling units are within 1/2 mile walk distance of an existing or planned school.

Smart Location and Linkage (Where)

SLL Credit 8:

Steep Slope Protection (1 point)

Intent: Minimize erosion to protect habitat and reduce stress on natural water systems by preserving steep slopes in a natural, vegetated state.

Requirements:

OPTION 1: Avoid disturbing portions of project sites that have pre-project slopes greater than 15%.

OPTION 2: On portions of project sites with pre-project slopes greater than 15% that are also previously developed sites:

a. Treat any fractions of the site that have not been previously developed by complying with the requirements for sites that are not previously developed set forth in Option 3;

b. Restore native plants or adapted plants to 100% of any previously developed slopes over 40%; 60% of any previously developed slopes between 25%-40%; and 40% of any previously developed slopes between 15%-25%;

Smart Location and Linkage (Where)

SLL Credit 8 Continued:
Steep Slope Protection (1 point)

OPTION 3:

On portions of project sites with pre-project slopes greater than 15% that are not previously developed sites:

- do not disturb slopes greater than 40%;
- do not disturb portions of the project site within 50 feet of the top of the slope, and 75 feet from the toe of the slope;
- limit development to no more than 40% of slopes between 25%-40%, and to no more than 60% of slopes between 15%-25%;
- located development such that the percentage of the development footprint that is on pre-project slopes less than 15% is greater than the percentage of buildable land that has pre-project slopes less than 15%

For all three options, those portions of project sites with slopes up to 20 feet in elevation (toe to top) that are more than 30 feet in any direction from another slope greater than 15% are exempt from the requirements, although more restrictive local regulations may apply.

For Options 2 and 3, develop CC&Rs, development agreements, or other binding documents that will protect the specified steep slope areas in perpetuity.

Smart Location and Linkage (Where)

SLL Credit 9: Site Design for Habitat or Wetland Conservation (1 point)

Intent: Conserve native wildlife habitat, wetlands and water bodies.

Requirements:

Smart Location and Linkage (Where)

SLL Credit 10: Restoration of Habitat or Wetlands

(1 point)

Intent: Restore wildlife habitat and wetlands that have been harmed by previous human activities.

Requirements: Using only native plants, restore native habitat or pre-development water bodies or wetlands on the project site in an area equal to or greater than 10% of the development footprint and remove any invasive species on the site. Protect such areas from development in perpetuity by donating or selling the land or a conservation easement on the land to an accredited land trust or relevant public agency.

Smart Location and Linkage (Where)

SLL Credit 11: Conservation Management of Habitat or Wetlands (1 point)

Intent: Restore wildlife habitat, wetlands and water bodies.

Requirements:

Neighborhood Pattern & Design (What)

NPD Prerequisite 1: Open Community Required

Intent: Promote communities that are physically connected to each other. Foster community and connectedness beyond the development.

Requirements: Designate all streets and sidewalks that are built as part of the project or serving the project directly as available for general public use and not gated. Gated areas and enclaves are NOT considered available for public use, with the exception of education and health care campuses where gates are used for security purposes.

Neighborhood Pattern & Design (What)

NPD Prerequisite 2: Compact Development Required

Intent: Conserve land. Promote livability, transportation efficiency, and walkability.

Requirements: Build any residential components of the project at an average density of seven or more dwelling units per acre of buildable land available for residential uses;

AND

Build any non-residential components of the project at an average density of 0.50 FAR or greater per acre of buildable land available for non-residential uses. If the project location is serviced by a transit agency which has specified minimum service densities that are greater than the densities required by this prerequisite, then the project must meet the transit agency's minimum service densities instead. The specified average density must be achieved by the point in the project's construction at which 50% of dwelling units are built, or within five years of the date that the first building is occupied, whichever is longer.

Additional Notes: The density of a mixed-use building is calculated by: 1) determining the total square footage of all residential and non-residential uses; 2) calculating the percentages of the total square footage that the residential and non-residential components each represent; 3) applying those percentages to the building parcel to determine the proportionate share of land area for each component; and 4) calculating residential density as the number of dwelling units per acre using the residential share of the land area divided by total non-residential square footage. For example, a mixed-use building of ten dwellings at 1,500 sq. ft. each, and 25,00 sq.ft. of retail, on one net acre of land would have a residential density of 26 DU/acre and a non-residential density of 0.92 FAR. Densities of individual mixed use buildings that are not being averaged with other single-use buildings must meet either the residential density minimum or the non-residential density minimum, but need not meet both.

Neighborhood Pattern & Design (What)

NPD Credit 1:

Compact Development (1 to 7 points)

Intent: Conserve land. Promote community livability, transportation efficiency and walkability.

Requirements: Design and build the project to achieve densities shown in the table below.

The specified average density must be achieved by the point in the project's construction at which 50% of dwelling units are built, or within five year of the date that the first building is occupied, whichever is longer.

Residential Density (DU/acre)	Non-residential Density (FAR)	Points Available
10 to 20	0.75 to 1.0	1
> 20 and 30	> 1.0 and 1.5	2
> 30 and 40	> 1.5 and 2.0	3
> 40 and 50	> 2.0 and 2.5	4
> 50 and 60	> 2.5 and 3.0	5
> 60 and 70	> 3.0 and 3.5	6
> 70	> 3.5	7

Neighborhood Pattern & Design (What)

NPD Credit 2:

Diversity of Uses (1 to 4 points)

Intent: Promote community livability, transportation efficiency , and walkability.

Requirements: Include a residential component in the project that constitutes at least 25% of the project's total building square footage; and design or locate the project such that at least 50% of the dwelling units are within 1/2 mile walk distance of at least two (1 point), four (2 points), seven (3 points) or ten (4 points) of the diverse uses defined in Appendix (p.152).Uses may either be in nearby areas or be built within the development.Verify that a Pedestrian can reach the uses via routes that do not necessitate crossing any streets that have Speed limits of greater than 25 miles per hour,unless those crossings have vehicle traffic Controls such as signals and stops signs with crosswalks. The specified number of uses must be in place by the time certain percentages of occupancy are in place, as indicated in the following table:

Number of uses	Percentage of project occupancy at which uses need to be in place
Two uses (1 point)	20%
Four uses (2 points)	30%
Seven uses (3 points)	40%
Ten uses (4 points)	50%

Neighborhood Pattern & Design (What)

NPD Credit 3:

Diversity of Housing Types (1 to 3 points)

Intent: To enable from a wide range of economic levels and age groups to live within a community.

Requirements: Include a sufficient variety of housing sizes and types in the project such that the total variety of housing within the project, or within a 1/4 mile of the center of the project, achieves at least 0.5 according to the following calculation, which is based on the Simpson Diversity Index using the housing categories below:

The Simpson Diversity Index score is calculated with the following equation:
Score=1 - E(n/N)2,
Where n=the total number of dwellings in a single community, and
N=the total number of dwellings in all categories.

Score on the Simpson Diversity Index	Points Earned
0.5 and 0.6	1
0.6 and 0.7	2
0.7	3

Neighborhood Pattern & Design (What)

NPD Credit 4:

Affordable Rental Housing (1 to 2points)

Intent: To enable citizens from a wide range of economic levels and age groups to live within a community.

Requirements: Include a proportion of rental units priced for households earning below area median income such that:

At least 15% of total rental units are priced for households up to 50% of area median income (1 point).

OR

At least 30% of total rental units are priced for households up to 80% of area median income (1 point)

OR

At least 15% of total rental units are priced for households up to 50% of area median income and an additional 15% of total rental units are priced for households at up to 80% of area median income (2 points).

AND

Maintain these units at affordable levels for a minimum of fifteen years.

Neighborhood Pattern & Design (What)

NPD Credit 5:

Affordable For-Sale Housing (1 to 2 points)

Intent: To enable citizens from a wide range of economic levels and age groups to live within a community.

Requirements: Include a proportion of for-sale housing affordable to households at or slightly above the median income such that:

At least 10% of for-sale housing is priced for households up to 80% of area median income (1 point)

OR

At least 20% of for-sale housing is priced for households up to 120% of area median income (1 point)

OR

At least 10% of total rental units are priced for households up to 50% of area median income and an additional 15% of for-sale housing is priced for households at up to 80% of area median income and an additional 10% of for-sale housing is priced for households at up to 120% of the area median income (2 points).

Neighborhood Pattern & Design (What)

NPD Credit 6:

Reduced Parking Footprint (2 points)

Intent: Design parking to increase the pedestrian orientation of projects and to minimize the adverse environmental effects of parking facilities.

Requirements: Locate all off-street parking facilities at the side or rear of buildings, leaving building frontages and streetscapes free of parking facilities:

AND

Use no more than 20% of the total development footprint area for surface parking facilities, with no individual surface parking lot larger than 2 acres. For the purposes of this credit, surface parking facilities include ground-level garages unless they are under or over space intended for human occupancy. Underground or multi-story parking facilities can be used to provide additional capacity, and on-street parking spaces are exempt from this limitation.

AND

For any non-residential buildings or multifamily residential buildings that are part of the project, provide bicycle and carpool parking spaces equivalent to 10% of the total automobile parking on the site. Signage indicating carpool parking spots should be provided, and bicycle parking should be within 200 yards of the entrance to the building that it services. The 10% carpool/bicycle space requirement can be met with any combination of bicycle and carpool parking.

Neighborhood Pattern & Design (What)

NPD Credit 7:

Walkable Streets (4 to 8 points)

Intent: Provide appealing and comfortable pedestrian street environments in order to promote pedestrian activity. Promote public health through increased physical activity.

Requirements: Design and build the project such that all of the following are achieved (4 points):

a. A principal functional entry of each building has a front façade that faces a public space such as a street, square, park, or plaza

b. A minimum of 30% of all street frontages located within the project, if any, are planned for development that complies with the minimum building-height-to-street-width proportions of 1:3; and where building sites are planned along streets bordering the project, a minimum of 15% of the total street frontage of such sites contains (or is dedicated to) development that will produce a building-height-to-street-width proportion of 1:3. Street frontages are to be measured in linear feet.

c. Continuous sidewalks or equivalent provisions for walking are provided along both sides of all streets within the project. New sidewalks must be at least 4 feet wide. Equivalent provisions for walking include woonerfs and footpaths.

d. All streets along exclusively residential blocks within the project, whether new or existing, are designed for a maximum speed of 20 mph.

e. All streets along non-residential or mixed use blocks within the project, whether new or existing, are designed for a maximum speed of 25 mph.

Neighborhood Pattern & Design (What)

NPD Credit 7 Continued:

Walkable Streets (4 to 8 points)

Requirements: If the above measures are achieved, the project may earn additional points as follows: 1 point for designing and building the project such that any three measures on the list below are accomplished (up to 4 additional points):

f. The front façades of at least 80% of all buildings are no more than 25 feet from front property line.

g. The front facades of at least 50% of buildings are no more than 18 feet from the front property line.

h. The front facades of at least 50% of mixed-use and non-residential buildings are contiguous to the sidewalk.

i. Functional building entries occur every 75 feet, on average, along non-residential or mixed use blocks.

j. All ground-level non-residential interior spaces that face a public space have transparent glass on at least 33% of the ground-level façade.

k. No blank (without doors or windows) walls longer than 50 feet occur along sidewalks. Public are installations such as murals may be exempt.

l. Any ground-level storefront windows must be kept open and visible (unshuttered) at night, and this must be stipulated to future owners in CC&Rs or other binding documents.

Neighborhood Pattern & Design (What)

NPD Credit 7 Continued:
Walkable Streets (4 to 8 points)

m. On-street parking is provided on 70% of both sides of all new streets. The percentage of on-street parking shall be measured by comparing the length of street designated for parking to the total length of the curb around the perimeter of each block, including curb cuts, driveways, and intersection radii.

n. Street trees occur between the vehicle travel way and sidewalk at intervals of no greater than 40 feet;

o. At least 50% of ground-floor dwelling units have an elevated finished floor no less than 24 inches above the sidewalk grade.

p. In non-residential or mixed use projects, 50% or more of the total number of office buildings include ground floor retail; and all businesses and/or other community services on the ground floor are accessible directly from sidewalks along a public space such as a street, square, or plaza.

q. Trees or other structures provide shade within five years of project occupancy over at least half the length of sidewalks included within or contiguous to the project. The estimated crown diameter (the width of the shade if the sun is directly above the tree) is used to calculate the shaded area.

Neighborhood Pattern & Design (What)

NPD Credit 8: Street Network (1 to 2 points)

Intent: Encourage the design of projects that incorporate high levels of internal connectivity and the location of projects in existing communities in order to conserve land, promote multimodal transportation and promote public health through increased physical activity.

Requirements: If new cul-de-sacs are created as part of the project, include a pedestrian or bicycle through-connection in at least 50% of any new cul-de-sacs. If topographical conditions prohibit such connections, these are not included in the calculation.

AND OPTION 1: FOR PROJECTS SMALLER THAN 7 ACRES

Locate the project such that the average street network grid density within a 1/4 mile radius from the center of the project falls within one of the ranges listed in the table below, OR design the project such that the project's average street network grid density falls within one of the ranges listed in the table below:

OR OPTION 2: FOR PROJECTS 7 ACRES OR LARGER

Design the project such that the project's average street network grid density falls within one of the ranges listed in the table below:

Street grid density (centerline miles/sq.mi.)	Points Earned
20-29	1
> 30	2

Neighborhood Pattern & Design (What)

NPD Credit 9: Transit Facilities (1 point)

Intent: Encourage transit use and reduce driving by creating safe and comfortable transit facilities.

Requirements: Provide covered and at least partially enclosed shelters, adequate to buffer wind and rain, with at least one bench at each transit stop within the project boundaries. Shelters shall be illuminated to five average maintained footcandles (light levels may be reduced after hours). Existing external lighting can contribute to this level, but any new lighting shall meet light pollution requirements in GCT Credit 20, and designed to not directly illuminate any windows of residential properties.

AND

Provide kiosks, bulletin boards, and/or signs devoted to providing local transit information as part of the project, including basic schedule and route information at each transit stop that borders or falls within the project.

Neighborhood Pattern & Design (What)

NPD Credit 10: Transportation Demand Management (2 points)

Intent: Reduce energy consumption and pollution from motor vehicles by encouraging use of public transit.

Requirements: OPTION 1: Create and implement a comprehensive transportation demand management (TDM) program for the project aimed at reducing weekday peak period trips by at least 20% compared to the forecasted trip generation for the project without the TDM strategies; and fund for a minimum of two years following buildout of the project (1 point): {No more than two points can be earned under this credit}.

OR OPTION 2:

Provide transit passes valid for at least one year, subsidized to be half of regular price or cheaper, to each resident and employee locating within the project during the first three years of project occupancy (or longer). Publicize the fact that subsidized transit passes are available to the eligible residents and employees (1 point);

OR OPTION 3:

Provide transit service (with vans, shuttles, busses) to rail, ferry, or other transit facilities and/or another major destination such as a retail or employment center, with service no less frequently than five rides per weekday peak period. The service must begin when the project is 20% occupied or sooner, and must be guaranteed for at least two years beyond project buildout (1 point).

Neighborhood Pattern & Design (What)

NPD Credit 11:

Access to Surrounding Vicinity (1 point)

Intent: Provide direct and safe connections, for pedestrians and bicyclists as well as drivers, to local destinations and neighborhood centers. Promote public health by facilitating walking and bicycling.

Requirements: Design and build projects such that there is at least one through-street at the project boundary every 800 feet, or at existing abutting street intervals, whichever distance is smaller. This does not apply to connections that cannot physically be made; e.g. wetlands, rivers, railroads, extreme topography, natural gas lines, pipeline easements, highways, expressways and other limited-access roads.

Neighborhood Pattern & Design (What)

NPD Credit 12:

Access to Public Spaces (1 point)

Intent: To provide a variety of open spaces close to work and home to encourage walking, physical activity and time spent outdoors.

Requirements: Locate and/or design project so that a park, green plaza or square at least1/6 acre in area, and at least 150' in width, lies within 1/6 mile walk distance of 90% of the dwelling units and non-residential building entrances in the project. Parks less than 1 acre must also have a proportion no narrower than 1 unit of width to 4 units of length;

AND

For projects larger than 7 acres only, locate and/or design the project so that taken together all of the parks in the project shall average at least 1/2 acre in size.

Neighborhood Pattern & Design (What)

NPD Credit 12:

Access to Public Spaces (1 point)

Intent: To provide a variety of open spaces close to work and home to encourage walking, physical activity and time spent outdoors.

Requirements: OPTION 1: Locate and/or design project so that an active open space facility (e.g., general playfields, soccer, baseball, basketball and other sports fields) of at least 1 acre lies within 1/2 mile walk distance of 90% of the dwelling units and non-residential building entrances in the project;

OR OPTION 2:

Locate and/or design the project so that at least 50% of all buildings are located within 1/4 mile walk distance of a multi-use trail or Class I bicycle trail of at least 3 miles in length;

OR OPTION 3:

Locate and/or design the project so that at least 90% of all dwelling units and non-residential building entrances in the project are located within 1/4 mile walk distance of a public recreation center or gym with outdoor facilities or a park with active recreational facilities.

Neighborhood Pattern & Design (What)

NPD Credit 14:

Universal Accessibility (1 point)

Intent: Enable to widest spectrum of people, regardless of age or ability, to more easily participate in their community life by increasing the proportion of areas that are usable by people of diverse abilities.

Requirements: For projects with residential components: For each residential unit type developed, design 20% (and not less than one) of each type to comply with the accessible design provisions of the Fair Housing Amendments Act (FHAA) and Section 504 of the Rehabilitation Act as applicable. Separate residential unit types include: single-family, duplex, triplex, multi-unit row or townhouses, and mixed-use buildings that include residential units. (Compliance for multi-family buildings within the project shall comply with the accessible design provisions of the FHAA and Rehabilitation Act, as applicable;

AND

For projects with common-use or recreational facilities constructed as part of the project:

- For any residential areas, apply the accessible design provisions of the FHAA and the Rehabilitation Act to facilities and rights-of-way; and
- For any non-residential areas, apply the accessible design provisions of the American Disabilities Act (ADA) to facilities and rights-of-way.

Neighborhood Pattern & Design (What)

NPD Credit 14 Continued:

Universal Accessibility (1 point)

Projects that include only non-residential components and public right-of-ways will not be able to achieve this credit, since they are already required by law to comply with applicable accessibility regulations. However, if non-residential projects include any common-use or recreational facilities not covered by accessibility regulations, they will be able to achieve the credit.

Regarding residential accessibility design provisions, an accessible entrance can be located at the front, side or back of the residential unit, which may sometimes be determined by the topography of the site.

Neighborhood Pattern & Design (What)

NPD Credit 15: Community Outreach and Involvement (1 point)

Intent: To encourage community participation in the project design and planning and involve the people who live in a community in deciding how it should be improved or how it should change over time.

Requirements: Meet with immediate neighbors and local officials to solicit input on the proposed project during the pre-conceptual design phase,

AND Host an open community meeting during conceptual design phase to solicit input on the proposed project,

AND Modify the project design as a direct result of community input, or if modifications are not made, explain why community input did not generate design improvements,

AND Work directly with community associations and/or other social networks of the community to advertise public meetings and generate comments on project design,

AND Establish ongoing means for communication between the developer and the community throughout the design, construction, and in cases where the developer maintains control of part or the entire project, post-construction.

Neighborhood Pattern & Design (What)

NPD Credit 16:

Local Food Production (1 point)

Intent: Promote community-based and local food production to minimize the environmental impacts form transporting food long distances and increase direct access to fresh foods.

Requirements: Establish CC&Rs or other forms of deed restrictions that do not prohibit areas for growing produce, including greenhouses, on any portion of area of residential front yards, rear yards, side yards, balconies, patios or rooftops. Greenhouses, but not gardens, may be prohibited in front yard areas that face the street.

AND Meet the requirements under one of the following Options:

OPTION 1 NEIGHBORHOOD FARMS AND GARDENS

Dedicate permanent and viable growing space and/or related facilities (such as greenhouses) within the project at the square footage areas specified below. Provide fencing, watering systems, soil and/or garden bed enhancements (such as raised beds), secure storage space for garden tools, solar access, and pedestrian access for these spaces. Ensure that the spaces are owned and managed by an entity that can include occupants of the project in its decision-making, such as a community group, a homeowners association, or a public body.

Neighborhood Pattern & Design (What)

NPD Credit 16 Continued:
Local Food Production (1 point)

OPTION 1 NEIGHBORHOOD FARMS AND GARDENS

Project density (dwelling unit/acre)	Required growing space (sq ft per dwelling unit)
7 to 14	200
> 14 and 22	100
> 22 and 28	80
> 28 and 35	70
> 35	60

Neighborhood Pattern & Design (What)

NPD Credit 16 Continued:
Local Food Production (1 point)

OPTION 2 COMMUNITY SUPPORTED AGRICULTURE

Purchase shares in a Community Supported Agriculture (CSA) program located within 150 miles of the project site for at least 80% of the households within the project for two years. Shares must be delivered to within 1/4 mile of the project on a regular schedule, which shall not be less than twice per month at least four months of the year.

OR OPTION 3 PROXIMITY TO FARMERS' MARKET

Locate project within 1/4 mile of an established farmers' market (that has been operating for at least two years), with at least three producer vendors, and that operates at least once a week for at least 5 months of the year.

Green Construction & Technology (How)

GCT Credit 1: LEED Certified Green Buildings (1 to 3 points)

Intent: Encourage the design and construction of buildings to utilize green building practices.

Requirements: OPTION 1- FOR PROJECTS WITH 5 OR FEWER HABITABLE BUIDLINGS

Design, construct, or retrofit one building as part of the project to be certified under one of the following LEED building rating system: LEED for New Construction, LEED for Existing Buildings, LEED for Homes, LEED for Core & Shell, or any Application Guides of these rating systems (1 point). Additional points (no more than 3 total) may be earned for each additional certified building that is part of the project;

OR OPTION 2- FOR PROJECTS WITH 6 OR MORE HABITABLE BUILDINGS

Design, construct, or retrofit a percentage of the square footage of buildings that are part of the project to be certified under one of the LEED building rating programs listed above. Points are available as follows:

Percent of square footage of project's buildings LEED certified	Points
20% to 30%	1
> 30% to 40%	2
> 40%	3

Green Construction & Technology (How)

GCT Credit 2: Energy Efficiency in Buildings (1 to 3 points)

Intent: Encourage the design and construction of energy efficient buildings to reduce air, water, and land pollution and environmental impacts from energy production and consumption.

Requirements: Design and construct at least 90% of all buildings in the project such that they meet one of the following requirements according to the appropriate category (1 point).

Category 1: For non-residential buildings and residential buildings over 3 stories:

OPTION 1: WHOLE BUILDING ENERGY SIMULATION

Demonstrate a minimum 10% improvement in the proposed building performance rating compared to the baseline building performance rating per ASHRAE/IESNA Standard 90.1-2004 (without addenda) by a whole building project simulation using the Building performance Rating Method in Appendix G of the Standard. Appendix G requires that this energy analysis include ALL of the energy costs within and associated with the building project. To achieve this point, the proposed design:

SEE NEXT SLIDE

Green Construction & Technology (How)

GCT Credit 2 Continued:
Energy Efficiency in Buildings (1 to 3 points)

- must comply with the mandatory provisions (Sections 5.4, 6.4, 7.4, 8.4, 9.4 and 10.4) in Standard 90.1-2004 (without addenda);
- must include all the energy costs within and associated with the building project; and
- must be compared against a baseline building that complies with Appendix G to Standard 90.1-2004 (without addenda). The default process energy cost is 25% of the total energy cost for the baseline building. For buildings where the process energy cost is less than 25% of the baseline building energy cost, the LEED submittal must include supporting documentation substantiating that process energy inputs are appropriate.

For the purposes of this analysis, process energy is considered to include, but is not limited to, office and general miscellaneous equipment, computers, elevators and escalators, kitchen cooking and refrigeration, laundry washing and drying, lighting exempt from the lighting power allowance (e.g. lighting integral to medical equipment) and other (e.g. waterfall pumps). Regulated (non-process) energy includes lighting (such as for the interior, parking garage, surface parking, façade, or building grounds, except as noted above), HVAC (such as for space heating, space cooling, fans, pumps, toilet exhaust, parking garage ventilation, kitchen hood exhaust, etc.) and service water heating for domestic or space heating purposes.

Green Construction & Technology (How)

GCT Credit 2 Continued:
Energy Efficiency in Buildings (1 to 3 points)

For this credit, process loads shall be identical for both the baseline building performance rating and for the proposed building performance rating. However, project teams may follow the Exceptional Calculation Method (ASHRAE 90.1-2004 G2.5) to document measures that reduce process loads. Documentation of process load energy savings shall include a list of the assumptions made for both the base and proposed design, and theoretical or empirical information supporting these assumptions.

OR OPTION 2 PRESCIPTIVE COMPLIANCE PATH A

Comply with the prescriptive measures of the ASHRAE Advanced Energy Design Guide for Small Office Buildings of the ASHRAE Advanced Energy Design Guide for Small Retail Buildings, as appropriate to building type. The following restrictions apply:

- Buildings must be under 20,000 square feet
- Buildings must be office or retail occupancy.
- Project teams must fully comply with all applicable criteria as established in the Advanced Energy Design Guide for the climate zone in which the building is located.

Green Construction & Technology (How)

GCT Credit 2 Continued:
Energy Efficiency in Buildings (1 to 3 points)

OR OPTION 3 PRESCRIPTIVE COMPLIANCE PATH B

Comply with the Basic Criteria and Prescriptive Measures of the Advanced Buildings Benchmark Version 1.1 with the exception of the following sections: 1.7 Monitoring and Trend-logging, 1.11 Indoor Air Quality, and 1.14 networked Computer Monitor Control. The following restrictions apply:

- Project teams must fully comply with all applicable criteria as established in Advanced Buildings Benchmark for the climate zone in which the building is located.

Category 2: For residential buildings 3 stories or fewer:

Qualify as an ENERGY STAR Home by either a performance path (through a HERS Index rating) or a prescriptive path (Builder Option Package or BOP).

Green Construction & Technology (How)

GCT Credit 2 Continued:
Energy Efficiency in Buildings (1 to 3 points)

2 POINTS CAN BE EARNED AS FOLLOWS:

Design and construct at least 90% of all buildings in the project such that they meet one of the following requirements according to the appropriate category:

Category 1: For non-residential buildings and residential buildings over 3 stories:

OPTION 4 WHOLE BUILDING ENERGY SIMULATION

Demonstrate a minimum 15% improvement in the proposed building performance rating compared to the baseline described above in OPTION 1 of Category 1.

OR OPTION 5 PRESCRIPTIVE COMPLIANCE PATH A

Comply with the prescriptive measures of the ASHRAE Advanced Energy Design Guide for Small Office Buildings or the ASHRAE Advanced Energy Design Guide for Small Retail Buildings, as described above in OPTION 2 of Category 1.

Category 2: For residential buildings 3 stories or fewer:

Qualify as an ENERGY STAR Home by either a performance path (through a HERA Index rating) or a prescriptive path (Builder Option Package or BOP).

Green Construction & Technology (How)

GCT Credit 2 Continued:
Energy Efficiency in Buildings (1 to 3 points)

3 POINTS CAN BE EARNED AS FOLLOWS:

Design and construct at least 90% of all buildings in the project such that they meet one of the following requirements according to the appropriate category:

Category 1: For non-residential buildings and residential buildings over 3 stories:

OPTION 6 WHOLE BUILDING ENERGY SIMULATION

Demonstrate a minimum 20% improvement in the proposed building performance rating compared to the baseline described above in OPTION 1 of Category 1.

OR OPTION 7 PRESCRIPTIVE COMPLIANCE PATH A

Comply with the prescriptive measures of the ASHRAE Advanced Energy Design Guide for Small Office Buildings or the ASHRAE Advanced Energy Design Guide for Small Retail Buildings, as described above in OPTION 2 of Category 1.

Category 2: For residential buildings 3 stories or fewer:

Exceed the ENERGY STAR Home requirements by achieving a minimum HERS Index of at least 80 for IECC Climate Zones 1-5 (generally the southern United States), or at least 75 for IECC Climate Zone 6-8 (generally the northern United States).

Green Construction & Technology (How)

GCT Credit 3: Reduced Water Use

(1 to 3 points)

Intent: Minimize water use in buildings and for landscape irrigation to reduce the impact to natural water resources and reduce the burden on municipal water supply and wastewater systems.

Requirements: OPTION 1 INDOOR (1 to 2 points)

Design and construct at least 90% of all buildings in the project such that they meet one of the following requirements according to the appropriate category (1 point):

Category 1: For non-residential buildings and residential buildings over 3 stories:

Employ strategies that in aggregate use 20% less water than the water use baseline calculated for the building (not including irrigation) after meeting the Energy Policy Act of 1992 fixture performance requirements. Calculations are based on estimated occupant usage and shall include only the following fixtures (as applicable to the building): water closets, urinals, lavatory faucets, showers, ad kitchen faucets.

Category 2: For residential buildings 3 stories or fewer:

Comply with 2 out of 3 of the following requirements:

- The average flow rate for all lavatory faucets must be ≤2.0 GPM.
- The average flow rate for all shower heads must be ≤2.0 GPM.
- The average flow rate for all toilets, including dual-flush toilets, must be ≤1.3 GPF.

Green Construction & Technology (How)

GCT Credit 3 Continued:

Reduced Water Use (1 to 3 points)

2 POINTS CAN BE EARNED AS FOLLOWS:

Design and construct at least 90% of all buildings in the project such that they meet one of the following requirements according to the appropriate category:

Category 1: For non-residential buildings and residential buildings over 3 stories:

Employ strategies that in aggregate use 30% less water than the water use baseline calculated for the building (not including irrigation) after meeting the Energy Policy Act of 1992 fixture performance requirements. Calculations are based on estimated occupant usage and shall include only the following fixtures (as applicable to the building): water closets, urinals, lavatory faucets, showers, and kitchen faucets.

Category 2: For residential buildings 3 stories or fewer:

Comply with all of the following requirements:

- The average flow rate for all lavatory faucets must be ≤2.0 GPM.
- The average flow rate for all shower heads must be ≤2.0 GPM.
- The average flow rate for all toilets, including dual-flush toilets, must be ≤1.3 GPF.

Green Construction & Technology (How)

GCT Credit 3 Continued:

Reduced Water Use (1 to 3 points)

OR OPTION 2 OUTDOOR (1 point)

For irrigation, use only captured rainwater, recycled wastewater, recycled graywater, or water treated and conveyed by a public agency specifically for non-potable uses.

OR

Install landscaping that does not require permanent irrigation systems. Temporary irrigation systems used for plant establishment are allowed only if removed within one year of installation.

A point from Option 2 may be earned independently or be added to those earned under Options 1, for a maximum of 3 points.

Green Construction & Technology (How)

GCT Credit 4: Building Reuse and Adaptive Reuse (1 to 2 points)

Intent: Extend the life cycle of existing building stock, conserve resources, reduce waste, and reduce environmental impacts of new buildings as they relate to materials manufacturing and transport.

Requirements: Incorporate into the project the reuse of one building that maintains at least 50% (based on surface area) of the existing building structure (including structural floor and roof decking) and envelope (including exterior skin and framing, and excluding window assemblies and non-structural roofing material). Hazardous materials that are remediated as a part of the project scope shall be excluded from the calculation of the percentage maintained (1 point).

For projects reusing portions of two or more existing buildings, 1 additional point can be earned by incorporating into the project the reuse that achieves the greater of the following:

- 50% of 1 existing building plus an equivalent amount reused among one or more buildings (based on surface area, as defined above); or
- 20% of the existing building stock (based on surface area, as defined above).

Green Construction & Technology (How)

GCT Credit 5: Reuse of Historic Buildings

(1 point)

Intent: Encourage use of historic buildings in a manner that preserves their historic materials and character.

Requirements: Incorporate into the project one or more buildings that have been:

- designated, listed, or identified by a local government as a historic or contributing structure in a locally designated historic district pursuant to a local preservation ordinance; OR
- designed, listed, or identified as a historic or contributing structure in a historic district under a state historic register or on the National Register or Historic Places;

AND

Rehabilitate the building(s) in accordance with local or federal standards for rehabilitation, and:

- obtain confirmation form the municipality, and/or the local historic preservation commission that the plan(s) for rehabilitation meet the local standards for an historic rehabilitation, OR
- obtain confirmation from a State Historic Preservation Office or the National Park Service that the rehabilitation satisfies the Secretary of the Interior's "Standards for Rehabilitation."

Green Construction & Technology (How)

GCT Credit 6: Minimize Site Disturbance Through Site Design (1 point)

Intent: Preserve existing tree canopy, native vegetation and pervious surfaces while encouraging high density, smart growth communities.

Requirements: OPTION 1- Locate the development footprint on areas that are 100% previously developed and for which the zone of construction impact is 100% previously developed.

OR OPTION 2- Depending on the overall density of the project, do not develop or disturb a proportion of the land that has not been previously developed on the site, exclusive of any land excluded from development by law or required to be preserved as a prerequisite of LEED for Neighborhood Development and stipulate in CC&Rs or other binding development documents that the undisturbed area will be protected from development in perpetuity. Densities and minimum percentages are as follows (mixed use projects should use the lowest applicable density or calculate a weighted average per the methodology in NPD Credit 1: Compact Development):

Residential Density (DU/acre)	Non-Residential Density (FAR)	Minimum percentage of previously undeveloped site area to leave undisturbed
< 15	< .50	20%
15-21	.50-1.00	15%
> 21	> 1.0	10%

Green Construction & Technology (How)

GCT Credit 7: Minimize Site Disturbance During Construction (1 point)

Intent: Conserve existing natural areas and protect trees to provide habitat and promote biodiversity.

Requirements: OPTION 1- Locate the development footprint on areas that are 100% previously developed and for which the zone of construction impact is 100% previously developed.

OR OPTION 2- For portions of the site that are not previously developed: identify limits of building area through the creation of building footprint zones; and limit all site disturbance to 40 feet beyond the building perimeter; 10 feet beyond surface walkways, patios, surface parking and utilities less than 12 inches in diameter; 15 feet beyond primary roadway curbs and main utility branch trenches; and 25 feet beyond constructed areas with permeable surfaces (such as pervious paving areas, stormwater detention facilities and playing fields) that require additional staging areas in order to limit compaction in the constructed area.

Green Construction & Technology (How)

GCT Credit 7 Continuded: Minimize Site Disturbance During Construction (1 point)

OR OPTION 3- AVAILABLE FOR SITES WITH TREES ONLY

Survey the site to identify:

- trees in good or excellent condition as determined by a certified arborist,
- any Heritage or Champion trees of special importance to the community as defined by a jurisdictional City, County or State Forester because of their age, size, type, historical association or horticultural value,
- the caliper of all trees at 4'6" above ground (diameter at breast height or D.B.H.), and
- any invasive species of tree present on the site, and whether those species threaten the health of other trees to be preserved on the site, as determined by a certified arborist.

Preserve the following on the site that are also identified as in good or excellent condition:

- all Heritage or Champion trees identified,
- a minimum of 75% of all non-invasive trees (including the above) over 18" in caliper (D.B.H.) and
- a minimum of 25% of all non-invasive trees (including the above) that are over 12" in caliper (D.B.H.) if deciduous, and 6" in caliper (D.B.H.) if conifer.

Green Construction & Technology (How)

GCT Credit 7 Continued: Minimize Site Disturbance During Construction (1 point)

Develop a plan, in consultation with and approved by a certified arborist, for the health of the trees, including fertilization and pruning, and construction tree protection plans and specifications which are to include protection fencing located at the drip line of each tree, and specifying that if trenching or other disturbance is necessary within the drip line, this work must be done by hand. If a certified arborist has determined that the health of the trees to be preserved is threatened by invasive vegetation, develop a plan for invasive vegetation removal and restoration.

Stipulate in CC&Rs or other binding development documents that the preserved trees will be protected from development in perpetuity.

Green Construction & Technology (How)

GCT Credit 8: Contamination Reduction in Brownfields Remediation (1 point)

Intent: Encourage brownfields cleanup methods that reduce contaminant volume or toxicity and thereby minimize long-term remediation or monitoring burdens.

Requirements: Earn SLL Credit 1: Contaminated Brownfields Redevelopment;

AND

Use cleanup method(s) for 100% of the remediation that treat, reduce or eliminate the volume or toxicity of contaminated material found on the site. Cleanup methods which include only capping or translocation of contaminated material to an off-site location will not achieve this credit.

Green Construction & Technology (How)

GCT Credit 9: Stormwater Management

(1 to 5 points)

Intent: Reduce pollution and hydrologic instability from stormwater, prevent flooding, and promote aquifer recharge.

Requirements: OPTION 1- FOR PREVIOUSLY DEVELOPED SITES OR ANY SIZE AND INFILL SITES OF LESS THAN 7 ACRES

Implement a comprehensive stormwater management plan for the project that infiltrates, reuses, or evapotranspirates runoff from 90% of the average annual rainfall or 1" of rainfall from a percentage of the project's development footprint and other areas that have been graded so as to be effectively impervious, as listed below:

Minimum 15% of the development footprint (1 point)
Minimum 30% of the development footprint (2 points)
Minimum 45% of the development footprint (3 points)
Minimum 60% of the development footprint (4 points)
Minimum 75% of the development footprint (5 points)

Green Construction & Technology (How)

GCT Credit 9 Continued:

Stormwater Management (1 to 5 points)

OPTION 2- FOR ALL OTHER SITES

Implement a comprehensive stormwater management plan for the project that infiltrates, reuses, or evapotranspirates runoff from 90% of the average annual rainfall or 1" of rainfall from a percentage of the project's development footprint as listed below:

Minimum 20% of the development footprint (1 point)
Minimum 40% of the development footprint (2 points)
Minimum 60% of the development footprint (3 points)
Minimum 80% of the development footprint (4 points)
Minimum 100% of the development footprint (5 points)

Notes: a) The stormwater management plan should identify practices to be employed, such as permeable pavements, rainwater harvesting systems or green roofs.

b) For all purposes of this calculations in this credit, the development footprint will include typically impervious surfaces included in the definition of "development footprint," such as roofs and pavements, even though the surfaces may be made pervious as part of the stormwater management plan.

Green Construction & Technology (How)

GCT Credit 10: Heat Island Reduction (1 point)

Intent: Reduce heat islands to minimize impact on microclimate and human and wildlife habitat.

Requirements: OPTION 1- NON-ROOF

Provide any combination of the following strategies for 50% of the non-roof impervious site landscape (including roofs, sidewalks, courtyards, parking lots, and driveways):

- Shade (within five years of occupancy)
- Paving materials with a Solar Reflectance Index (SRI) of at least 29
- Open grid pavement system
- Place a minimum of 50% of parking spaces under cover (defined as underground, under deck, under roof, or under a building). Any roof used to shade or cover parking must have an SRI of at least 29;

OR OPTION 2- ROOF

Use roofing materials that have a Solar Reflectance Index (SRI) equal to or greater than the values in the table below for a minimum of 75% of the roof surface of all buildings within the project; or install a “green” (vegetated) roof for a least 50% of the roof area of all buildings within the project. Combinations of SRI compliant and vegetated roof can be used provided that they collectively cover 75% of the roof area of all buildings.

Roof Type	Slope	SRI
Low-Sloped Roof	≤2:12	78
Steep-Sloped Roof	≥2:12	29

Green Construction & Technology (How)

GCT Credit 11: Solar Orientation (1 point)

Intent: Achieve enhanced energy efficiency by creating the optimum conditions for the use of passive and active solar strategies.

Requirements:

OPTION 1- BLOCK DESIGN (AVAILABLE FOR PROJECTS EARNING AT LEAST 2 POINTS UNDER NPD CREDIT 1: COMPACT DEVELOPMENT)

Locate project on existing blocks, or design and orient project, such that for 75% or more of the project's blocks, one axis of each block is within 15 degrees of geographical east/west, and the east/west length of each block is at least as long, or longer, as the north/south length of the block.

OR OPTION 2- BUILDING DESIGN (AVAILABLE FOR ALL PROJECTS)

Design and orient 75% or more of the project's buildings such that one axis of each building is at least 1.5 times longer than the other, and such that the longer axis is within 15 degrees of the geographical east/west axis. The length to width ratio shall be applied only to the length of walls enclosing conditioned spaces; walls enclosing unconditioned spaces such as garages, arcades, or porches cannot contribute to credit achievement. South-facing vertical surfaces of buildings counting towards credit achievement must not be more than 25% shaded at time of initial occupancy (measured at noon on December 21st).

Green Construction & Technology (How)

GCT Credit 12: On-Site Energy Generation (1 point)

Intent: Reduce air, water, and land pollution from energy consumption and production by increasing the efficiency of the power delivery system. Increase the reliability of power.

Requirements:

OPTION 1- (PRESCRIPTIVE) ELECTICAL BASELINE

Develop on-site energy generation system(s) with peak electrical generating capacity of at least 5% of the project's specified electrical service load.

OR OPTION 2- (PERFORMANCE) TOTAL ENERGY BASELINE

Develop on-site energy generation system(s) with capacity of at least 5% of the project's annual electrical and thermal energy consumption, as established through an accepted building energy performance simulation tool.

For both options, total CO2 emissions shall be less than or equal to national average of CO2 emissions for grid supplied electricity, which shall be calculated as the sum of 1545 lb per MWh produced by the on-site power generation system and 145 lb per MMBtu of thermal energy produced by the on-site power generation system.

For both options, calculations for total on-site energy can include future site or building-integrated systems stipulated through CC&Rs or other binding documents.

Green Construction & Technology (How)

GCT Credit 13: On-Site Renewable Energy Sources

(1 point)

Intent: Encourage on-site renewable energy self-supply in order to reduce environmental and economic impacts associated with fossil fuel energy use.

Requirements:

OPTION 1- (PRESCRIPTIVE) ELECTICAL BASELINE

Design and incorporate the use of shared on-site non-polluting renewable energy generation technologies such as solar, wind, geothermal, small scale/micro hydroelectric, and biomass with peak electrical generating capacity of at least 5% of the project's specified electrical service load.

OR OPTION 2- (PERFORMANCE) TOTAL ENERGY BASELINE

Design and incorporate the use of shared on-site non-polluting renewable energy generation technologies such as solar, wind, geothermal, small scale/micro hydroelectric, and biomass with peak electrical generating capacity of at least 5% of the project's annual electrical and thermal energy consumption, as established through an accepted building energy performance simulation tool.

For both options, calculations for total on-site energy can include future site or building-integrated systems stipulated through CC&Rs or other binding documents.

Green Construction & Technology (How)

GCT Credit 14: District Heating and Cooling

(1 point)

Intent: Reduce air, water, and land pollution resulting from energy consumption in buildings by employing energy efficient district technologies.

Requirements: Design and incorporate into the project a district heating or cooling system for space conditioning of all buildings in the project (a least 2 buildings total) such that at least 80% of the project total square footage is connected, and at least 80% of the project total heating or cooling load is connected.

The efficiency of each component of the system which is regulated by ASHRAE/IESNA 90.1-2004 must have an overall efficiency performance at least 10% better than specified by the ASHRAE/IESNA 90.1-2004 Prescriptive Requirements. Additionally, pumping power must not exceed 2.5% of the thermal energy output (with one kWh of electricity equal to 3,413 Btu). Combined Heat and Power (CHP) district systems can achieve this credit by demonstrating equivalency relative to the above criteria.

Green Construction & Technology (How)

GCT Credit 15: Infrastructure Energy Efficiency

(1 point)

Intent: Reduce air, water, and land pollution resulting from energy consumption.

Requirements: Design or purchase any street lights, water and wastewater pumps and treatment systems that are included as part of the project to achieve a 15% energy reduction beyond an estimated baseline energy use for this infrastructure. If any traffic lights are installed as part of the project, use LED technology.

Green Construction & Technology (How)

GCT Credit 16: Infrastructure Energy Efficiency

(1 point)

Intent: Reduce pollution from wastewater and encourage water reuse.

Requirements: Design and construct the project to divert at least 50% of the wastewater generated by the project, and reuse wastewater to replace the use of potable water. Provide for on-site wastewater treatment to a quality defined by state and local regulations for the proposed reuse.

50% of the wastewater is calculated by determining the total wastewater flow using conventional design practices in gallons per day and demonstrating that 50% of that volume enters an alternative, on-site process.

Green Construction & Technology (How)

GCT Credit 17: Recycled Content in Infrastructure

(1 point)

Intent: Use recycled materials to reduce the environmental impact of extraction and processing of virgin materials.

Requirements: Use the indicated recycled materials in all the following applications, if present in the project.

For roadways, parking lots, sidewalks, and curbs (above-ground structured parking and underground parking are exempt from this requirement):

- Any aggregate base and aggregate subbase shall be 90% by volume recycled aggregate materials such as crushed Portland cement concrete and asphalt concrete.
- Any asphalt base shall be a minimum 15% by volume recycled asphalt pavement.
- Any asphalt concrete pavement shall: a) be a minimum 15% by volume recycled asphalt pavement, OR; b) be a minimum 75% by volume rubberized asphalt concrete from crumb rubber from scrap tires (crumb rubber modifier), OR; c) include a minimum of 5% (of total weight) or pre-consumer or post-consumer asphalt roofing shingles.
- Any Portland cement concrete pavement shall contain: a) recycled mineral admixtures (such as coal fly ash, ground granulated blast furnace slag, rice hull ash, silica fume, or other pozzolanic industrial byproduct) to reduce by at least 25% the concrete mix's typical Portland cement content, AND; b) a minimum of 10% by volume reclaimed concrete material aggregate.

Piping made of Portland cement concrete shall contain recycled mineral admixtures (such as coal fly ash, ground granulated blast furnace slag, rice hull ash, silica fume, or other pozzolanic industrial byproduct) to reduce by at least 25% the concrete mix's typical Portland cement content.

Green Construction & Technology (How)

GCT Credit 18: Construction Waste Management

(1 point)

Intent: Divert construction and demolition debris from disposal in landfills and incinerators. Redirected recyclable recovered resources back to the manufacturing process. Redirect reusable materials to appropriate sites.

Requirements: Recycle and/or salvage at least 50% of non-hazardous construction and demolition debris. Develop and implement a construction waste management plan that, at a minimum, identifies the materials to be diverted from disposal and whether the materials will be stored on-site or commingled. Excavated soil and land-clearing debris don not contribute to this credit. Calculations can be done by weight or volume, but must be consistent throughout.

Green Construction & Technology (How)

GCT Credit 18: Construction Waste Management

(1 point)

Intent: Reduce the waste hauled to and disposed of in landfills. Promote proper disposal of office and household hazardous waste streams.

Requirements: Meet at least two of the following three requirements and publicize the availability and benefits of the drop-off point(s), station(s), or services:

1) Include at least one drop-off point as part of the project available to all project occupants for office or household potentially hazardous wastes such as paints, solvents, oil, batteries; OR locate project in a local government jurisdiction that provides services for collecting these materials. If a plan for post-collection disposal or use does not exist, establish one.

3) Include at least one recycling or reuse station as part of the project available to all project occupants dedicated to the separation, collection, and storage of materials for recycling including, at a minimum, paper, corrugated cardboard, glass, plastics and metals; OR locate project in a local government jurisdiction that provides recycling services for these materials. If a plan for post-collection disposal or use does not exist, establish one.

3) Include at least one compost station as part of the project available to all project occupants dedicated to the collection and composting of food wastes; OR locate project in a local government jurisdiction that provides services for composting materials. If a plan for post-collection disposal or use does not exist, establish one.

CONGRESS FOR THE NEW URBANISM

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Green Construction & Technology (How)

GCT Credit 20:

Light Pollution Reduction (1 point)

Intent: Minimize light trespass from site, reduce sky-glow to increase night sky access, improve nighttime visibility through glare reduction, and reduce development impact on nocturnal environments.

Requirements: For exterior lighting in shared portions of the project,, only light areas as required for safety and comfort. Do not exceed 80% of the lighting power densities for exterior areas and 50% for building facades and landscape features as defined in ASHRAE/IESNA Standard 90.1-2004, Exterior Lighting Section, without addenda;

AND

Stipulate CC&Rs or other binding documents that require continued adherence to these standards. All projects shall be classified under one of the following zones, as defined in IESNA RP-33, and shall follow all of the requirements for that specific zone:

LZ1- Dark (Park and Rural Settings)

Design exterior lighting so that all site and building mounted luminaries produce a maximum initial illuminance value no greater than 0.01 horizontal and vertical footcandles at the site boundary and beyond. Document that 0% of the total initial designed lumens are emitted at an angle of 90 degrees or higher from nadir (straight down).

CONGRESS FOR THE NEW URBANISM

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Green Construction & Technology (How)

GCT Credit 20 Continued:

Light Pollution Reduction (1 point)

LZ2- Low (Residential areas)

Design exterior lighting so that all site and building mounted luminaries produce a maximum initial illuminance value no greater than 0.10 horizontal and vertical footcandles at the site boundary and no greater than 0.01 horizontal footcandles 10 feet beyond the sit boundary. Document that no more than 2% of the total initial designed fixed lumens are emitted at an angle of 90 degrees or higher from nadir (straight down). For site boundaries that abut public rights-of-way, light trespass requirements may be met relative to the curb line instead of the site boundary.

LZ3- Medium (Commercial/Industrail, High-Density Residential)

Design exterior lighting so that all site and building mounted luminaries produce a maximum initial illuminance value no greater than 0.20 horizontal and vertical footcandles at the site boundary and no greater than 0.01 horizontal footcandles 15 feet beyond the sit boundary. Document that no more than 5% of the total initial designed fixed lumens are emitted at an angle of 90 degrees or higher from nadir (straight down). For site boundaries that abut public rights-of-way, light trespass requirements may be met relative to the curb line instead of the site boundary.

Green Construction & Technology (How)

GCT Credit 20 Continued:

Light Pollution Reduction (1 point)

LZ4- High (Major City Centers, Entertainment Districts)

Design exterior lighting so that all site and building mounted luminaries produce a maximum initial illuminance value no greater than 0.60 horizontal and vertical footcandles at the site boundary and no greater than 0.01 horizontal footcandles 15 feet beyond the sit boundary. Document that no more than 10% of the total initial designed fixed lumens are emitted at an angle of 90 degrees or higher from nadir (straight down). For site boundaries that abut public rights-of-way, light trespass requirements may be met relative to the curb line instead of the site boundary.