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Abstract

This article discusses how design strategies of roads, buildings and public can be used to incorporate health. The document is split into four sections which discuss the detailed direction on how communities can consider their individuals must take into account the specific needs of the environment and what direction planners must take to generate a healthy community. The first section discusses how a community can use their comprehensive plan to envision and ensure healthy lifestyles by incorporating the importance of health into the planning processes. Section 2 how a community's code can design an environment to "incorporate health consideration into regulatory language". Section 3 discusses a drafting new development codes and Section 4 provides a checklist of principles that can be used to promote a healthy community. The examples provided include walkable streets, multimodal connectivity, mixed uses, accessible parks and open space, green infrastructure and more, as ideas on how to implement health themed practices into community design.

Resource



In The Development Review Process



American Planning Association

Making Great Communities Happen

Guidance for Health in the Development Review Process is a product of the American Planning Association (APA)'s Planning and Community Health (PCH) Center. APA provides leadership in the development of vital communities by advocating excellence in community planning, promoting education and citizen empowerment, and providing tools and support necessary to effect positive change.

APA conducts applied, policy-relevant research that advances the state of health in planning practice. APA's research, education, and advocacy programs help planners create communities of lasting value by developing and disseminating information, tools, and applications for built and natural environments. APA's PCH Center advances practices that improve human environments to promote public health through active living, healthy eating, and health in all planning policies.

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Knowledge of how planning decisions impact the public's health has greatly increased in recent years. The availability of resources and increased emphasis on community engagement has led to the incorporation of health elements, language, and data in a growing number of plans and policies. Most communities use a comprehensive or general plan to guide land-use decisions. Implementation of these plans is accomplished through a series of mechanisms—zoning codes and other regulations, capital improvements programs, and other policies for decision making. Together, the comprehensive plan and how it is implemented can have a powerful impact on community health. Over the last few years, the American Planning Association (APA) has focused on comprehensive plans and health as a priority of its Planning and Community Health Center. *Guidance for Health in the Development Review Process* builds on this work by addressing the why and how of incorporating health into the development review process.

Guidance for Health in the Development Review Process complements the current guides and toolkits focused on street and neighborhood design to promote active living. Documents such as the Active Design Guidelines, the National Association of City Transportation Officials (NACTO)'s Street Design Guide, and the criteria outlined in the LEED-ND rating system serve as useful guides for the public and private sectors alike. Intended primarily for public-sector planners at the city and county levels, this guidance document is designed to support planners with the regulatory aspect of implementing a project that incorporates elements of these and other resources (see Appendix B).

APA hopes the information and resources in this document will assist planners' efforts to promote health in their communities. To our knowledge, this is the first document of its kind designed with planners in mind. Each of the four sections builds on the previous one, presenting more detailed and applied direction for how health can be considered in context-sensitive environments and what planners can do to lead the way in creating healthy communities.

KEY AUDIENCE:

- Local Government Planners

SECTIONS



SECTION 1: *Making the Case*

The comprehensive plan guides a community through the policies, strategies, and actions necessary for achieving its vision. This vision is largely implemented through regulatory tools that ensure our communities foster healthy lifestyles. The importance and need for integrating health into all planning processes is described in this section.

SECTION 2: *Development Code Provisions for Promoting a Healthy Built Environment*

In many communities, the development code guides the implementation of design principles. In order to create healthy built environments, a municipality's development code must incorporate health considerations into regulatory language. This section identifies the principles of a healthy built environment and the development code provisions most applicable to their implementation.

SECTION 3: *Applying a Health Lens*

The creation of a new development code is an immense undertaking for a municipality. Without a complete code rewrite, it is still possible to apply a health lens to the development review process. This section explains how.

SECTION 4: *Checklist*

Organized into six sections, this checklist provides detail on the considerations, elements, and features that promote healthy built environment principles. The review of a development application can apply these principles to ensure health-promoting activities are enabled through design.

SECTION 1

MAKING THE CASE

A healthy community is vibrant, active, and inclusive. Planners are uniquely positioned in the community to lead the way in promoting activities and behaviors that underlie healthy lifestyles. Through a Health in all Planning approach, planners can use a number of tools to pursue upstream efforts that create healthy places. Sound, efficient, and implementable plans and policies have the ability to create places where health-promoting activities are the easiest choice. A Health in all Planning approach takes health beyond the comprehensive plan and integrates health into a plan's next steps, strategies, actions, and tools. These tools (sometimes known as the planner's toolkit) include zoning, code amendments, permitting, environmental requirements, and design standards. Using such tools to ensure our communities are places where we can walk, bike, work, play, and gather is crucial for individuals and families to live healthy lifestyles.

WHAT IS HEALTH IN ALL PLANNING?

Health language and considerations in all governing land-use documents: comprehensive plan, small area plan, processes, zoning and other development code, siting policies, etc.

Every policy, code, or standard governing the built environment should flow from the goals and strategies identified in a comprehensive or land-use plan. Local governments (municipalities and counties) use these regulations in varied ways. In some states, the Future Land Use Map is the guiding document for permitting development. In other areas, the zoning code, land development code, or other emerging tools provide the legal mandate guiding development review. The differing regulatory hierarchies make the creation of a one-size-fits-all tool or regulatory guidance impractical. Instead, this document serves as **model guidance** for ensuring health is a consideration in the decision-making process for the review and approval of

HEALTH IN ALL PLANNING IDEAL:

A Development Code that facilitates the implementation of Healthy Built Environment principles

development plans—from a planned unit development to the subdivision and site levels. This model guidance is not meant to be comprehensive; instead, it is an *adaptable and evolving tool that can be applied to your jurisdiction's unique process.*

The full integration of health considerations into planning and land-use decisions requires that health be considered as a key element throughout the decision-making process. A complete Health in all Planning approach consistently applies a health lens to all planning documents. With the comprehensive plan as a guide, the zoning code, development regulations, design standards, and capital investment strategies should align to promote the overall goal of improving community health. The comprehensive plan typically includes a Future Land Use Map, labeling areas into broad categories. A municipality's zoning code provides more detail regarding use, density, and intensity of specific sections of a community. Zoning regulations also establish the three-dimensional building envelope and site layout standards. Subdivision regulations define the standards and conditions under which a tract of land can be divided into individual lots, including street layout and specifications. Design standards address the physical design of a particular site or neighborhood, including buildings, landscape, vehicular circulation and parking, etc. All together, these documents provide planners with the structure for creating healthy, livable communities.

SECTION 2

DEVELOPMENT CODE PROVISIONS FOR PROMOTING A HEALTHY BUILT ENVIRONMENT

Development regulations broadly refer to the package of government policies, incentives, and programs a community uses to manage how a particular piece of property is developed. The adoption of unified development codes that combine zoning, subdivision, and other land development regulations is on the rise. Incorporating all development regulation mechanisms into one legal document enables better implementation of the policies and strategies outlined in the comprehensive plan.

In many communities, the development code is the reference point for how a municipality reviews a proposed development. To ensure a development is consistent with advancing a community's vision and health-related goals, the municipality's development regulations must include language that promotes the incorporation of healthy built environment principles into new development. The chart on page 7 identifies the principles that promote healthy communities and connects them to the development code sections most applicable for implementation.

The overhaul of a municipality's development code is a significant undertaking. In many instances, an advisory committee is established to oversee the development code update. Working with local government staff and consultants, a code diagnosis or audit is conducted to identify issues with

the existing development regulations. Combining the audit results, community engagement, stakeholder feedback, and the comprehensive plan, an annotated outline of the new development code is created. Through continuous dialogue between the advisory committee, local government staff, stakeholders, and consultants, a draft of the new code is written and once complete, shared with the public for review and comments before formal adoption.

Across the country, cities and counties are pursuing comprehensive code revisions designed to foster livable and healthy spaces. These investments of both time and public resources can create the condition that enable developers, architects, and other related professions to design, finance, and build places that promote physical activity, social cohesion, and economic development.

HEALTH IN ALL PLANNING IDEAL:

Include representatives from the health sector on the advisory committee tasked with overseeing the comprehensive development code update

SECTION 2

DEVELOPMENT CODE PROVISIONS FOR PROMOTING A HEALTHY BUILT ENVIRONMENT

Healthy Built Environment Principles	Applicable Code Provisions
Complete, walkable streets	<ul style="list-style-type: none"> • Subdivision Design Standards (street/lot layout, connectivity standards, etc.) • Street Design Standards (vehicle lanes, bicycle lanes, sidewalks, transit provisions, pedestrian crossings, etc.) • Building Design Standards (location/setbacks, massing, façade articulation, entrances)
Multimodal connectivity	<ul style="list-style-type: none"> • Subdivision Design Standards • Street Design Standards • Parking Requirements • Bicycle Requirements (bike lanes, parking)
Mixed uses	<ul style="list-style-type: none"> • Zoning • Planned Unit Development Ordinance (emphasizing consistency and connectivity with adjacent land uses)
Accessible parks and open space	<ul style="list-style-type: none"> • Subdivision Design Standards for open space • Park/Open Space Requirements (open space requirements, parkland dedication ordinance) • Complete Streets Policies • Street Design Standards
Green infrastructure	<ul style="list-style-type: none"> • Landscaping Requirements • Stormwater Management Regulations • Park/open space Requirements • Subdivision Requirements • Street Design Standards • Parking Lot Design Requirements
Access to facilities and services	<ul style="list-style-type: none"> • Planned Unit Development Ordinance • Adequate Public Facilities Ordinance • Transportation Impact Analysis (addressing multiple modes)

SECTION 3

APPLYING A HEALTH LENS

A best practice within the planning profession is to revise the development code after the adoption of a new comprehensive plan or zoning code. This ideal process is not the reality in many cities. In most instances, the process takes years and requires considerable financial resources.

In the interim, there are varying ways to ensure health, broadly, is part of the plan review process. For example, jurisdictions can add representatives from the local health department to the review and recommendations process for site plans, planned unit developments, and subdivision plans. Planners and development review specialists can also work with real estate professionals from the onset of project development to ensure that proposed plans incorporate features that promote a healthy built environment. Additionally, health considerations can be a criterion in the review process for site plans, subdivisions, and planned unit developments. The checklist in Section 4 is a guide for identifying how health can be specifically addressed in the review process.

HEALTH IN ALL PLANNING IDEAL:

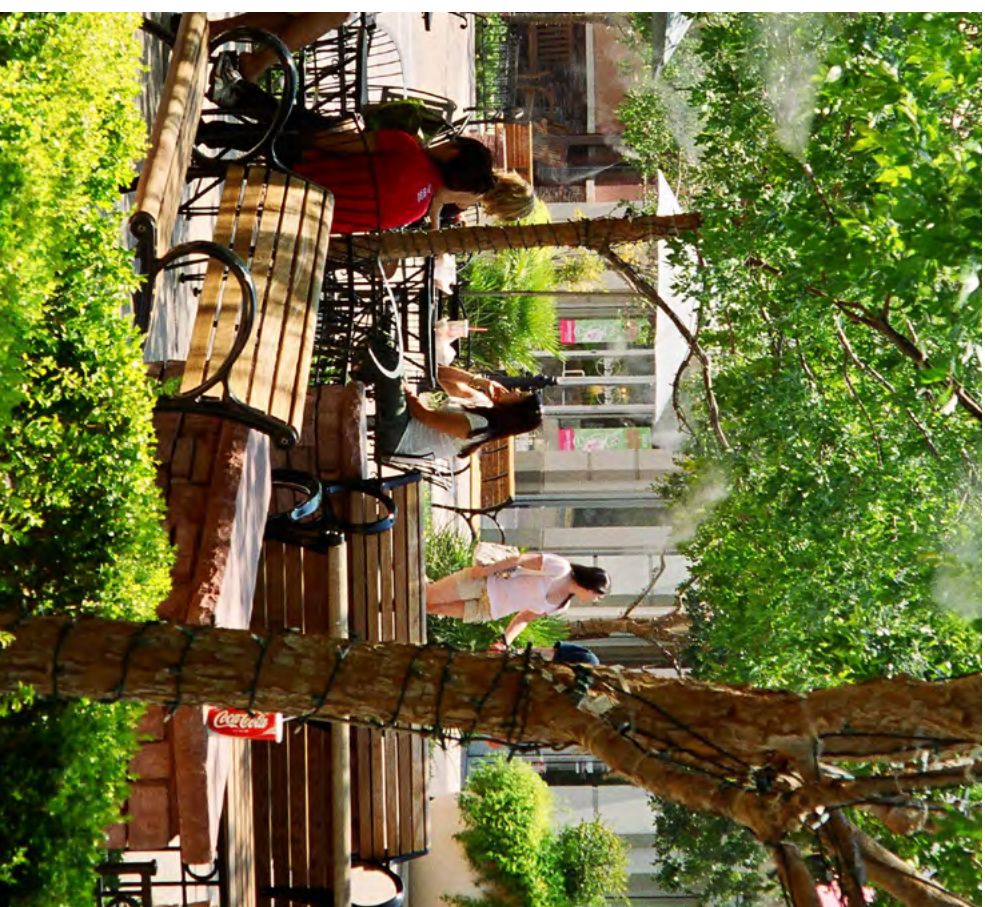
Include representatives from the health sector in the development review team

A development plan is required for all kinds of projects: from a small single-family home to mixed use development to conceptual documents for subdivisions and planned unit developments. This checklist has applicability to each of these development types. The checklist's sections are broad categories typically found in the code sections that govern site plan review. Depending on the use and size of the development under review, more of these checklist sections might apply.

HEALTH IN ALL PLANNING IDEAL:

Consider healthy built environment principles at the first stage or discussion of a proposed development

Each category of development review can incorporate health as a consideration when identifying recommendations for the local zoning board or planning commission. The content identified in this checklist is meant to serve as a guide for planning review staff to ensure that developments encourage healthy living, instead of contributing to negative health outcomes.



SECTION 4

CHECKLIST

Health is a broad concept that can be promoted or mitigated through the design and layout of roads, buildings, and public spaces. These characteristics of our environment are enforced through the development review process. The following checklist is designed to guide a local government planner through a development review process that incorporates health-related criteria. Through these six categories, the checklist identifies specific considerations, elements, and features necessary for healthy spaces, neighborhoods, and communities:

- Location
- Transportation
- Infrastructure
- Open Space
- Access to Goods and Services
- Other Considerations

For each of the categories, the checklist is broken down into the following:

- *Questions to Consider:* broad issues connecting land-use decisions to health implications. Such questions can be answered by assessing whether the development plan contains certain elements and features.
- *Elements:* aspects of the proposed development's application that address the checklist's broad issues.
- *Features:* specific, identifiable markers found within the proposed development's application. Appendix A offers a list describing each feature.
- *Applicable Code Section:* Development review is a regulatory process. The approval or denial of a development application must be tied directly to a code provision. If the jurisdiction's development code explicitly references the features that have been shown to support healthy built environment principles, space for this is included.
- *Health Connection, Behavior, or Outcome:* Lastly, how each of these elements and features corresponds to a particular health connection, behavior, or outcome is identified.

LOCATION

The location and desired use of a possible development has a direct influence on community health. Before a development enters the review phase, a best practice is to work with local government officials on the best use of a particular parcel(s) or identify the best parcel(s) for a desired use. An open and early dialogue between local officials, land owners and developers, and residents can lead to a collaborative process that promotes improved social cohesion and community engagement. The following considerations should be addressed through discussion and dialogue between the public and private sectors:

HEALTHY BUILT ENVIRONMENT PRINCIPLES:
 Multimodal Connectivity; Green Infrastructure; Mixed Uses; Access to Facilities and Services

Questions to Consider	Elements	Features	Applicable Code Section	Health Connection, Behavior, or Outcome
Does the proposed development connect with the built environment?	Infill Redevelopment Contiguous with Existing Development			<ul style="list-style-type: none"> ↗ physical activity ↘ access to infrastructure, jobs, and services
Does the plan address potential environmental concerns?	Environmental Suitability Analysis Surrounding Land Uses			<ul style="list-style-type: none"> ↘ exposure to natural hazards ↘ exposure to industrial or similar hazards
Is the proposed site and development addressed in any existing health assessment?	Consistency with County or City Health Assessment and Plans			<ul style="list-style-type: none"> ↗ knowledge of existing conditions: pollutants, air quality, disease prevalence, etc.

TRANSPORTATION

An increase in population or daily trips is the expected result of any new development. The incorporation of transportation considerations is often a required element of the review process. A site plan or master plan that incorporates connectivity as a design element facilitates more opportunities to use active transportation, a key consideration for incorporating physical activity into daily behavior.

HEALTHY BUILT ENVIRONMENT PRINCIPLES:
 Complete, Walkable Streets; Multimodal Connectivity; Accessible Parks and Open Space; Access to Facilities and Services

Question to Consider	Elements	Features	Applicable Code Section	Health Connection, Behavior, or Outcome
Does proposed development plan promote active living?	Context-Sensitive Street Design Trails and Linear Parks within Development Plan	Adequate Sidewalk Width		↗ perceived safety ↘ physical activity
		Bike Lanes/Paths		
		Intersection Design		
Is the proposed site connected to existing multimodal transportation networks?	Context-Sensitive Street Design	Bike Lanes		↗ access to infrastructure, jobs, and services ↘ physical activity ↗ street safety
		Walkability Features		
		Multi-Use Paths		
		Transit Stops Within or Adjacent to Development		
		Car Share Facilities		
Participation in Transportation Demand or Mobility Management Program	Bike Parking/Bike Share Facilities			
		Parking Maximums		

INFRASTRUCTURE

The proposed use and design of a development will impact local infrastructure—stormwater, wastewater, potable water, etc. These utility systems ensure the attainment of environmental health goals while promoting healthy built environment principles.

HEALTHY BUILT ENVIRONMENT PRINCIPLES: Green Infrastructure; Accessible Parks and Open Space; Access to Facilities and Services

Questions to Consider	Elements	Features	Applicable Code Section	Health Connection, Behavior, or Outcome
Does the site plan incorporate stormwater best management practices (BMPs)?	Green Stormwater Infrastructure	Pervious Surfaces Usable Open Space Bioretention Stormwater Reuse		↗ water quality ↗ physical activity ↘ potable water usage for non-drinking purposes ↘ nonpoint source pollution
Does the plan address projected impact of development on existing wastewater infrastructure?	Capacity in Public Sewer System Inclusion of Environmental Health data			↗ environmental health indicators, such as water and soil quality ↘ exposure to environment health hazards
Does the plan address the projected impact of development on the existing potable water infrastructure?	Drinking Water Access in Public Spaces Capacity in Municipal Water Supply			↗ potable water access

OPEN SPACE

Connection to nature is well-documented to positively influence human health. Exposure to trees, open space, and access to communal gathering spaces improve health through reduced air pollution, reduced heat island effects, and increased physical activity opportunities. Open space as a category is sometimes considered in the development review process, but often not as a required element. As cities and counties assess their current review criteria, open space requirements that contribute to supporting human health can be written into local regulatory codes.

HEALTHY BUILT ENVIRONMENT PRINCIPLES:
Complete, Walkable Streets; Green Infrastructure; Accessible Parks and Open Space;

Questions to Consider	Elements	Features	Applicable Code Section	Health Connection, Behavior, or Outcome
Do parks and open space opportunities exist in the area surrounding the site location?	Distance to Nearest Park via Streets and Sidewalks	Green Infrastructure		<ul style="list-style-type: none"> ↗ air quality ↗ physical activity ↘ heat island effect
Do parks and open space opportunities exist within the proposed development?	Connection to Existing Parks and Open Space	Multi-Use Paths	Community Gathering Space	
	Dedicated, Usable Park Space	Park Design Merits Needs of Future Residents		<ul style="list-style-type: none"> ↗ physical activity ↗ social cohesion
	Distance from Residences to Identified Park Location via Internal Street Network			

ACCESS TO GOODS AND SERVICES

Access to goods and services is rarely considered in the review stage of any development project. This category is important for ensuring that all citizens have equitable access to nutritious, affordable food; primary care; and community services, such as libraries and community centers. For an Ideal Health in all Planning approach, development plans should address how the proposed use and location increases access to goods and services, particularly in underserved areas.

HEALTHY BUILT ENVIRONMENT PRINCIPLES:
Multimodal Connectivity; Mixed Uses; Access to Facilities and Services

Questions to Consider	Elements	Features	Applicable Code Section	Health Connection, Behavior, or Outcome
Does proposed development address access to fresh, healthy, and affordable food?	Distance from Fresh Food Store	Space for Community Gardens		↗ awareness of food and nutrition issues
		Space for Urban Farm		↗ healthy food access
		Codes that Permit Accessory Gardens		↘ fresh food access
Does proposed development address access to community services?	Distance from Primary Care Facilities	Codes that Permit Livestock in Residential Districts		
		Distance from Primary Care Facilities		↗ access to health care
		Distance from Hospitals		↗ social cohesion
Does proposed development address access to community services?	Distance from Other Community Services (library, senior center, etc.)			↗ access to social services

OTHER CONSIDERATIONS

A number of other health-promoting design elements can be considered in the development review process. Like access to goods and services, these considerations do not neatly fit into a site plan or development review category. This, though, does not diminish their importance in building equitable, healthy places. If these are not a regulatory requirement, they should be addressed through an incentive structure promoting health site design.

HEALTHY BUILT ENVIRONMENT PRINCIPLES:
Complete, Walkable Streets; Mixed Uses; Access to Facilities and Services

Questions to Consider	Elements	Features	Applicable Code Section	Health Connection, Behavior, or Outcome
Does the development promote safety and security?	Crime Prevention Through Environmental Design (CPTED) Techniques			<ul style="list-style-type: none"> ↗ perceived safety ↗ social cohesion
Does the proposed use of development promote economic activity?	Retail and Commercial Development			<ul style="list-style-type: none"> ↗ financial security ↗ perceived safety ↗ eyes on the street ↘ reduced stress
Does the residential component of the plan address healthy housing?	Smoke Free Housing			<ul style="list-style-type: none"> ↗ social cohesion
	Universal Design			<ul style="list-style-type: none"> ↗ neighborhood stability ↘ asthma prevalence and symptoms
	Housing Affordability			
	Located in Medically Underserved Area			
Will the plan take equity considerations into account?	Displacement of Existing Residents			<ul style="list-style-type: none"> ↗ access to services, jobs, transportation, and other infrastructure systems
	Disparity in Health Outcomes from Data Sources, such as Morbidity Rates, Disease-Prevalence, Quality of Life Index, etc.			<ul style="list-style-type: none"> ↗ health equity

APPENDIX A:

DESCRIPTION OF ELEMENTS AND FEATURES

LOCATION

Infill: Infill is the development of vacant lots or parcels within an existing development. Communities use infill development to encourage development in or near a city center that utilizes the existing street grid, utility lines, and other infrastructure. Many ordinances allow for infill projects that deviate from the base zoning in a district but work in context of the neighborhood.

- Examples of Infill Ordinance:
 - Sanford (Florida), City of. 2015. *Code of Ordinances, Part III: Land Development Regulations, Schedule E: Additional Requirements and Provisions for Specific Uses, Section 15.0: Urban Infill Development Projects*. Available at https://www.municode.com/library/fl/sanford/codes/code_of_ordinances?nodeId=PTIILLADERE_SCHEDULE_EADREPRSPUS_S15.0URINDEPR.

Redevelopment: Redevelopment refers to the reuse or improvement of developed land. Many communities have specific redevelopment agencies that create redevelopment plans, invest in infrastructure, and purchase land. For the purposes of development review and guidance for Health in the Development Review Process, the term redevelopment applies to projects aligned with existing redevelopment efforts in the local area or transformation of a particular parcel to increase density and walkability (in accordance with current community efforts).

Contiguous with Existing Development: This language is used to discourage “leapfrog” development and encourage a compact urban form as an extension of the existing built environment. In reference to development review, sites, subdivisions, and planned unit developments can connect to existing development via sidewalks, trails, access ways, and streets.

- *Sample Code:*
 - Fort Collins (Colorado), City of. 2015. Land Use Code. Article 3: General Development Standards, Division 3.7: Compact Growth Standards. Available at https://www.municode.com/library/co/fort_collins/codes/land_use?nodeId=ART3GEDEST_DIV3.7COURGRST.

Environmental Suitability Analysis: An environmental suitability analysis assesses the suitability of the site for various land uses, including industrial or agricultural activity, as well as land conservation. These assessments can be used to promote community health by identifying, classifying, and prioritizing land in order to promote sustainable land-use plans and decisions that result in increased physical activity and access to parks and open spaces. More resources:

1. Atlanta Regional Health Forum (ARHF). 2006. *Land Use Planning for Public Health: The Role of Local Boards of Health in Community Design and Development*. National Association of Local Boards of Health. Available at <http://www.cdc.gov/healthylives/publications/landusenalboh.pdf>

Surrounding Land Uses: The environmental impact of land uses on a particular site can have large impacts on surrounding areas. Agriculture uses large amounts of chemical inputs, industry creates various toxic and carcinogenic pollutants, and brownfields are often scattered throughout cities and counties, negatively impacting human health. Conversely, green open spaces provide a number of environmental services (such as carbon sequestration and water purification) that positively impact human health and transportation planning can reduce aggregate and per capita pollution by reducing vehicle travel and use of alternative modes. Comprehensive planning strategies spatially manage and consider the negative and positive impacts various land uses have on individual and community health. More resources:

1. Victoria Transport Policy Institute. 2006. *Promoting Public Health through Smart Growth: Building Healthier Communities through Transportation and Land Use Policies and Practices*. Available at https://www.vtppi.org/s gbc_health.pdf

Consistency with County/City Health Assessment and Plans: County or city health departments are required to conduct Community Health Needs Assessments (CHNA) and corresponding Community Health Improvement Plans (CHIP). These assessments and plans include existing health conditions of the entire geographic area as well as targeted neighborhoods or census tracts. The information in the CHNA and CHIP can reveal what areas of

the city are most exposed to air pollutants and at higher risk of injuries from traffic-related incidents. Consistency between the proposed development and the existing CHNA and CHIPS can better align built environment interventions that improve health outcomes. More Resources:

1. Community Commons: <http://www.communitycommons.org/chna/>
2. Local Health Department

TRANSPORTATION

Context-Sensitive Street Design: Context-sensitive street design is a planning and design approach that uses the context, or setting, of a roadway to determine design features, rather than simply basing roadway designs on hierarchical functional classifications. Localities can operationalize context-sensitive design by adopting street design standards that vary by context in addition to thoroughfare type. For example, the street design standards for an arterial boulevard in a walkable, urban environment would include different space allocations and design features than the standards for an arterial boulevard in a low-density rural area.

- *Adequate Sidewalk Width:* Proposed sidewalks within the development follow a tiered approach that reflects the surrounding land use. For example:
 - Commercial, Retail, and Mixed-Use: 8-12'
 - Residential: 5'
- *Bike Lanes:* A bike lane is a portion of the roadway that has been designated by striping, signage, and pavement markings for the preferential or exclusive use of bicyclists. More Resources:
 1. NACTO's Urban Bikeway Design Guide <http://nacto.org/publication/urban-bikeway-design-guide/bike-lanes/>
- *Context-Specific Intersection Design:* In coordination with the proposed street designs, intersections within the proposed development are designed to be compact, integrate time and space, and offer shared spaces for each mode of trans-

portation. More Resources:

1. NACTO's Street Design Guide: <http://nacto.org/publication/urban-street-design-guide/>
- *Use-Specific Parking Maximums:* Setting a maximum amount of parking spaces that can be added to a development promotes a more livable, pedestrian-friendly area. Like parking minimums, parking maximums should be appropriate to local context and the type of development proposed.
 - Sample code:
 - Bellevue (Washington) City of: 2015. *City Code*. Title 20: Land Use Code. Chapter 20.20: General Development Requirements. Section 20.20.590: Parking, circulation, and walkway requirements. Available at <http://www.codepublishing.com/wa/bellevue/>.
 - Sets a maximum number of spots allowed, based on use.
 - *Walkability:* Walkability is a way of measuring how friendly an area is to pedestrians. Measurement criteria vary from place to place, but generally, a "walkable" neighborhood has good physical infrastructure such as well-maintained sidewalks and street connectivity, and neighborhood services accessible in a compact area.
 - Sample Code:
 - Alexandria (Virginia), City of: *Zoning Ordinance*. Article II: Definitions, Section 2-201-1: Walkability Index. Available at https://www.municode.com/library/va/alexandria/codes/zoning?nodeId=ARTIIDE_2-201.1WAIN.
 - *Multi-Use Paths:* Multi-use paths are intended to be used for walking, biking, and other forms of non-motorized transportation. Often, they are separated physically from roadways and sidewalks. The Federal Highway Administration suggests that multi-use paths be at least 10 feet wide and conform to accessibility standards with regard to grade, surface materials, and markings or signage. More Resources:

1. Federal Highway Administration. 2014. "Best Practices Design Guide." Available at http://www.fhwadot.gov/environment/bicycle_pedestrian/publications/sidewalk2/sidewalks214.cfm
- *Trail and Linear Parks within Development Plan*: Communities measure recreation opportunities in a number of ways. Trails and linear parks can increase access to recreation opportunities within a subdivision or planned development. The suggested level of service standard is 5-10 acres per 1000 people, which was developed by the National Parks and Recreation Association (NPRAs). Some places set a goal of having parks within a quarter mile of residences. More Resources:
 1. Austin (Texas), City of. 2013. "Achieving Child-Friendly Infill Development in Austin's Early Suburbs." Available at https://www.austintexas.gov/sites/default/files/files/SN_White_Paper_-_Family_friendly_Infill_Early_Suburbs_081113.pdf
 - Establishes a desired LOS of pocket parks within 1/4 mile of residences, or 1/8 of a mile in areas with high concentrations of multifamily housing.

- *Participation in Transportation Demand or Mobility Management Program*: Municipalities often have Mobility Management or Transportation Demand Management programs, which aim to increase mobility and efficiency by influencing travel behaviors. Compliance with the local TDM program ensures multiple transportation modes—walking, biking, transit, and automobile—are considered through the plan development and implementation process. For example:
 - Arlington County, Virginia has a well-known Transportation Demand Management program for site plan development. The county works directly with real estate professionals to promote increased transit, ride sharing, walking, and biking through site plan features, such as bike share/parking facilities, carsharing services, transit stops, etc. This program was established through regulation approved by the county's Board of Commissioners in 1990: <http://www.commuterpage.com/pages/http://www.commuterpage.com/pages/special-programs/tdm-for-site-plans/>

INFRASTRUCTURE

Green Stormwater Infrastructure: Green Stormwater Infrastructure is the incorporation of stormwater management systems that mimic nature to improve water quality in an ecologically sustainable manner. Pervious surfaces, stormwater reuse, existing vegetated open spaces, the use of bioswales, bioretention basins, rain gardens, rooftop and wall or vertical gardens are examples of components often found within green stormwater infrastructure. Green stormwater infrastructure has numerous public health and environmental benefits, including reduction in air and water pollution; reduction in incidents of obesity; enhanced mental and physical health; and a reduced exposure to numerous toxins. Green stormwater infrastructure is usually found within building and construction codes, land division codes, and/or stormwater management codes as well as environmental and public health planning documents.

- *Pervious Surfaces*: Pervious surfaces usually appear in planning documents and ordinances in regards to landscaping and parking areas. Pervious surfaces allow water to filter through the surface and to reach the ground water, replenishing the water table. Some ordinances will define pervious spaces by the percentage of groundwater that reaches the underlying soil while others focus on the impact that the pervious surfaces have on the underlying groundwater or focus on the composition of pervious surfaces within particular zones. Many times, a public official will monitor the performance and composition of pervious surfaces in order to meet local and/or national environmental compliance and goals. More Resources:
 1. Oldsmar (Florida), City of. 2015. *Code of Ordinances*. Part III: Land Development Code. Article VII: Streets, Access Control and Parking. 7.8: Off Street Parking. 7.8.1: General. Available at https://www.municode.com/library/fl/oldsmar/codes/code_of_ordinances?nodeId=PTIILADECO_ARTVIISTACCPA_78OREPA_78.1GE
 2. Pineo, Rebecca, and Susan Barton. 2009. "Permeable vs. Impermeable Surfaces." University of Delaware, College of Agricultural & Natural Sciences. Available at

<http://extension.udel.edu/factsheet/permeable-vs-impermeable-surfaces/>

- *Usable Open Space*: Usable open space refers to outdoor areas, excluding parking lots, which are devoted to active and passive recreational activities. There are numerous health benefits associated with such spaces, including physical activity, which helps to increase fitness and to reduce obesity; pollution mitigation within vegetative usable open spaces; and contacts with nature, which is proven to enhance well-being. While ordinances regarding usable open space can vary greatly at times in different communities, usable open space requirements are usually specified within particular districts and can vary from district to district within a given community.

- Sample Codes:

- Long Beach (California), City of. 2015. *Code of Ordinances*. Title 21: Zoning. Chapter 21.31: Residential Districts. Division II: Developmental Standards. 21.31.230: Usable Open Space. Available at https://www.municode.com/library/ca/long_beach/codes/municipal_code?nodeId=VOII_TIT21ZO_CH21.31REDI_DIVIIDEST_21.31.230USOPSP
- Oakland (California), City of. 2015. *Code of Ordinances*. Title 17: Planning. Chapter 17.58: CBD Central Business Direct Zones Regulations. 17.58.070: Usable Open Space Standards. Available at https://www.municode.com/library/ca/oakland/codes/planning_code?nodeId=TTT17PL_CH17.58CBCEBUDIZORE_17.58.070USOPSPST

- *Bioretention*: Bioretention incorporates soils and plants that remove pollutants from stormwater runoff. The Environmental Protection Agency has designated bioretention as a stormwater best management practice. Cities and counties of all sizes have used bioretention as a technique for managing stormwater. More Resources:
 - Environmental Protection Agency: http://water.epa.gov/scitech/wastetech/upload/2002_06_28_mtb_biortn.pdf

- *Stormwater Reuse*: Stormwater reuse is generally unaddressed by regulations and codes. However, some communities do include stormwater reuse in their municipal codes, usually within land development ordinances or building codes. Water is increasingly scarce in large parts of the country and runoff is rife within urban environments as a result of the presence of non-pervious surfaces such as asphalt and concrete. The reuse of stormwater is particularly important for agricultural purposes and for use on lawns, parks, and fields. There are concerns about stormwater reuse as a result of possible human exposure to pathogens, cross-contamination of the potable water supply as well as concerns with mosquito breeding and contaminated pond sediments, all of which could have potentially large impacts on human health.

- Sample Codes:

- Basalt (Colorado), Town of. 2015. Municipal Code. Chapter 18: Building Regulations. Article II: Construction Codes. Section 18-25: Point Details. Available at https://www.municode.com/library/co/basalt/codes/municipal_code?nodeId=CH18BURE_ARTIIICOCO_S18-25PODE
- Minnesota Pollution Control Agency. 2015. Stormwater Re-Use and Rainwater Harvesting. May 14. Available at http://stormwater.pca.state.mn.us/index.php/Stormwater_re-use_and_rainwater_harvesting

Public Sewer System Capacity: Wastewater systems usually encompass pumping stations, treatment plants, and miles of underground pipes. In certain instances, existing infrastructure might be inadequate to handle the growth in demand that occurs with population growth and new developments. Municipal planners can ensure that the existing infrastructure has the capacity to support the proposed development. In many communities, an existing Adequate Public Facilities Ordinance might assist planners with ensuring that the capacity in the sewer system aligns with the proposed development. More Resources:

1. *Planner's Estimating Guide: Projecting Land Use and Facility Needs*

Environmental Health Data: Local health departments routinely monitor municipal sewer systems to ensure compliance with environmental rules and regulations. This monitoring and data collection can assist local planners with determining capacity and adequacy of the existing system, helping to limit exposure to contaminants and water borne diseases.

Capacity in Municipal Water Supply: Water systems usually include source facilities (wells and surface water intake points), treatment plants, pumps, and storage facilities. Municipal planners must consider a proposed development's impact on the local water supply. This consideration is particularly acute in areas affected by drought or low precipitation rates, such as the southwestern United States. More Resources:

1. *Planner's Estimating Guide: Projecting Land Use and Facility Needs*

Drinking Water Access: Municipal codes address drinking water through varying sections. The International Code Council sets requirements for drinking fountains, dependent on establishment classification and number of occupants. More Resources:

1. *Quenching Community Thirst: Planning for More Access to Drinking Water in Public Place:* <https://www.planning.org/research/publichealth/pdf/wateraccessreport.pdf>

OPEN SPACE

Parks and Open Space within Development: Parks and open spaces within developments can be secured through zoning requirements or incentives for private developers, within subdivision or neighborhood design standards & development codes within a city's code of ordinance, or within a city's land use code. Examples of open spaces include parks, plazas, trails, bike paths, playgrounds, forests, and wetlands. Parks and open spaces provide opportunities for exercise and relaxation.

- *Example of Parks and Open Space Ordinance within a Development:* Southaven (Mississippi). City of. 2015. *Code of Ordinances*. Title XIII: Zoning Regulations. Chapter 18: Development

Design Criteria. Section 13-18(d): Public Sites, Facilities and Open Spaces. Available at https://www.municode.com/library/municipipro?stateAbbr=ms&clientName=southaven&contentType=codes&productName=code_of_ordinances&nodeId=CO_TTTXIIIIZORE_CH18DEDECR_513-18_D_PUSIFAOPSP

Parks and Open Space Surrounding the Site: Parks and open space surrounding the site should be readily accessible and designed to enhance the public and health benefits of those living in the areas bordering the parks and open spaces. Codes regarding parks and open space surrounding the site can be found within a city's code of ordinances or within a land development code. Examples of open spaces include parks, plazas, trails, bike paths, playgrounds, forests, and wetlands.

- *Sample Code:*
 - Orange (Florida), County of. 2009. *Comprehensive Plan 2010-2030: Destination 2030*. Orange County Community, Environmental & Development Services. March. Available at <http://www.orangecountyfl.net/Portals/0/resource%20library/planning%20-%20development/Comprehensive%20Plan%20GOPS%202030.pdf>

ACCESS TO GOODS AND SERVICES

Distance from Fresh Food Store: The distance between the proposed development and existing fresh food outlets can positively or negatively contribute to individual diets and related health outcomes. In metropolitan census tracts, the recommended distance between a fresh food outlet and a resident is one mile. In non-metropolitan census tracts, the recommended distance is 10 miles. More Resources:

- US Department of Agriculture. "Food Deserts." Available at <http://apps.ams.usda.gov/fooddeserts/fooddeserts.aspx>

Food Production Opportunities: If applicable to the development's size and use, the incorporation of food production into the development plan or strategy should be considered. These oppor-

- *Space for Community Gardens:* the allocation of viable land for a community garden
 - *Space for Urban Farm:* most applicable to subdivision and larger planned unit developments; space for urban farms is the allocation of viable land for an urban farm enterprise
 - *Codes that Permit Accessory Gardens:* refers to zoning, health, and building codes that allow for individual residences to maintain backyard or front yard gardens for food production
 - *Codes that Permit Livestock in Residential Districts:* refers to zoning, health, and building codes that allow for the keeping of chickens and other small animals within residential boundaries
- Distance from Primary Care:* The distance between a proposed development and primary care facilities has the ability to influence how often individuals utilize preventive care. Developments, particularly those targeted to older adults and low-income residents, can increase access to care for those most in need.

Distance from Hospital: The distance between a proposed development and a hospital has emergency management and hospital implications. The consideration of both distance to facilities and accommodation of emergency vehicles into a development or site plan can increase access to necessary services in times of need.

Distance from Other Community Services: Municipalities provide residents with more than just utilities and a park system. Community services, such as libraries and community centers, are vital to health and livable communities. A new subdivision or development can increase opportunities for residents to access libraries, community centers, and other public services.

OTHER CONSIDERATIONS

Crime Prevention Through Environmental Design: CPTED is a set of strategies and design principles that aim to minimize criminal behavior through the built environment. These principles are access control, which helps designate between public, semi-private,

and private spaces; surveillance, which uses windows and other details to put “eyes on the street” to deter criminal activity; territorial reinforcement, which further delineates between public and private areas; and maintenance, which signals that people are watching out for the property and will not tolerate criminal activity. More Resources:

1. National Crime Prevention Council. 2009. Best Practices for using CPTED in Weed and Seed Sites. Available at: <http://www.nqpc.org/resources/files/pdf/training/Best%20Practices%20in%20CPTED%20-2.pdf/>.

2. Sample Codes:
 - a. Minneapolis (Minnesota). City of 2015. *Code of Ordinances*. Title 20: Zoning Code, Chapter 530: Site Plan Review, Article V: Additional Standards, Section 530.260: Crime Prevention through Environmental Design. Available at https://www.municode.com/library/mn/minneapolis/codes/code_of_ordinances?nodeid=MICCOOR_TIT20ZOCO_CH530SIPLRE_ARTVADST_530_260CRPRTHENDE.

Retail Opportunities: Site plans and related documents for nonresidential developments can incorporate retail opportunities—businesses that generate economic activity for the immediate surrounding areas. In addition to economic activity, increased retail opportunities within a neighborhood have the ability to improve access to jobs for the local population.

Smoke-Free Housing: More communities are choosing to adopt smoke-free housing ordinances for multi-unit buildings. The National Healthy Housing Standard says that smoking should be prohibited in all common areas of multi-unit buildings, and within 25 feet of entrances, air intakes, and open windows. More Resources:

1. National Healthy Housing Standard: <http://www.nchh.org/Policy/NationalHealthyHousingStandard.aspx>
2. Sample ordinances:
 - a. Berkeley (California). City of. *Smoke Free Housing Ordinance*. Available at http://www.cityofberkeley.info/uploadedFiles/Health_Human_Services/Level_3_-_Public_Health/TobaccoFreeMultiUnitOrdinance.pdf.

Universal Design: Universal design is also called inclusive design. It takes into account the needs of all people, including older people and people with disabilities. It seeks to create “barrier-free” housing that works for everyone through thoughtful design techniques. Some communities require that new subsidized housing developments utilize universal design, and some go further, applying universal design standards to all new housing construction.

Housing Affordability: Affordable housing refers to the residential units that are considered affordable—less than 30% of housing-related expenses—by households earning less than local median income. Affordable housing units can positively impact an individual’s health in several ways. When households have additional resources, they have increased options for healthy food and health care opportunities. Tenure in a residential unit and the stability it provides can reduce stress and associated health triggers. Development regulations are a proven tool for increasing affordable housing units.

Medically Underserved Areas: There are a number of ways to measure this, but the US Health Resources and Services Administration uses a 0-100 score system, where a “medically underserved area” is an area with a score of 62.0 or less. These measurements are based on the number of primary care physicians per capita, poverty, infant mortality rates, and percentage of the population over 65. More Resources:

1. US Health Resources and Services Administration: Medically Underserved Areas/Populations. Available at <http://www.hrsa.gov/shortage/mua/index.html>

Displacement of Existing Residents: Most applied to redevelopment or built-out communities, the displacement of existing residents is a strong consideration for developments that include housing. For developments that include the demolition or extensive renovation of the existing housing stock, plans submitted for review and approval can include considerations for existing residents: ability to relocate to temporary or permanent housing or ability to return to the new development.

Health Disparities: Health disparities are the preventable differences in health status between groups of people. Research focuses on a variety of factors, like race, ethnicity, sex, income, geographic location, and more. These factors are sometimes referred to as the social determinants of health. More Resources:

1. Department of Health and Human Services. 2015. “Healthy People 2020.” Available at <http://www.healthypeople.gov/2020/about/foundation-health-measures/Disparities>
2. National Library of Medicine. 2013. Medline Plus: Health Disparities. Available at <http://www.nlm.nih.gov/medlineplus/healthdisparities.html>

APPENDIX B:

ADDITIONAL RESOURCES

ACTIVE DESIGN GUIDELINES

The Active Design Guidelines provides architects and urban designers with a manual of strategies for creating healthier buildings, streets, and urban spaces, based on the latest academic research and best practices in the field. For planners, the guidelines include urban design strategies for creating neighborhoods, streets, and outdoor spaces that encourage walking, bicycling, and active transportation and recreation.

APA'S HEALTHY PLAN MAKING FACT SHEET

The comprehensive plan and the planning process can be used as tools for creating an environment that makes the healthy choice the easiest choice. This fact sheet lists strategies commonly used in the planning process to create vibrant communities, shows their connection to public health, and identifies best practices from across the country.

APA'S SMART CODES: MODEL LAND-DEVELOPMENT REGULATIONS

This report (PAS 556) is a guide to the development of model smart growth ordinances, including models that may be adapted by local governments to implement special planning policies for multimodal transportation, infill development, affordable housing, and other best practices in planning and development regulation. As used here, “smart growth ordinances” and “smart growth development codes” mean regulations intended to achieve a variety of objectives, including encouraging mixed uses, preserving open space and environmentally sensitive areas, providing a choice of housing types and transportation modes, and making the development review process more predictable.

CDC'S BUILT ENVIRONMENT ASSESSMENT TOOL

BE Tool is a direct systematic observation data collection instrument for measuring the core features and quality of the built environment related to behaviors that affect health, especially behaviors such as walking, biking, and other types of physical activity. The core features assessed in the BE Tool include: built environment infrastructure (e.g., road type, curb cuts/ramps, intersections/crosswalks, traffic control,

transportation), walkability (e.g. sidewalk/path features, walking safety, aesthetics & amenities), bikeability (e.g., bicycle lane/path features), recreational sites and structures, and the food environment (e.g., access to grocery stores, convenience stores, farmers markets, etc.).

CHANGELAB SOLUTIONS PEDESTRIAN-FRIENDLY CODE DIRECTORY

This online tool identifies specific zoning and subdivision codes designed to improve the safety and convenience for pedestrians, transit users, and bicyclists. Broken into 16 categories with numerous subcategories, this directory is a fairly comprehensive list of zoning and subdivision codes.

LEED-NEIGHBORHOOD DEVELOPMENT (LEED-ND)

The LEED for Neighborhood Development (LEED-ND) rating system is a product of the US Green Building Council, Congress for New Urbanism, and the Natural Resources Defense Council. LEED-ND criteria emphasizes projects that support the overall health, natural environment, and quality of life in our communities.

ULI'S BUILDING HEALTHY PLACES TOOLKIT

ULI's Building Healthy Places Toolkit: Strategies for Enhancing Health in the Built Environment outlines evidence-supported opportunities for enhancing health outcomes in real estate developments. Developers, owners, property managers, designers, investors, and others involved in real estate decision making can use the report's recommendations and strategies to create places that contribute to healthier people and communities, and to enhance and preserve value by meeting growing desires for health-promoting places.

URBAN STREET DESIGN GUIDE

The National Association of City Transportation Officials released its Urban Street Design Guide in 2013. This guide identifies the principles that cities can use to design streets for all modes of transportation—walking, biking, transit, and driving. Ensuring that streets are safe and inviting creates real spaces for all people.