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# CANONS OF SUSTAINABLE ARCHITECTURE *and* URBANISM

*A Companion to the Charter of the New Urbanism*

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GLOBAL CLIMATE CHANGE and habitat destruction, accelerated by global settlement patterns of sprawl, pose significant challenges requiring a global response. The scale and extent of these problems has come into sharp focus in the decade since the execution of the Charter of the New Urbanism. Timely action is both essential and presents an unprecedented opportunity.

THESE ENVIRONMENTAL CHALLENGES complicate equitable development the world over. Holistic solutions must address poverty, health and underdevelopment as well ecology and the environment.

TOGETHER, the transportation and building sectors account for the majority of energy and non-renewable resource usage, making the design and planning of the totality of the built environment essential in tackling these problems.

SMART GROWTH, GREEN BUILDING AND NEW URBANISM each have produced advances in resource and energy efficiency. Yet they alone are insufficient and are sometimes even at odds with one another in tackling this challenge. It is time for each of their specific strategies to be integrated.

THE CHARTER OF THE NEW URBANISM provides a powerful and enduring set of principles for creating more sustainable neighborhoods, buildings and regions. They have provided guidance to policy makers, planners, urban designers and citizens seeking to address the impact of our towns and cities on the natural and human environment. Meaningful change has been achieved by simultaneously engaging urbanism, infrastructure, architecture, construction practice and conservation in the creation of humane and engaging places that can serve as models.

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YET THE PROFOUND NATURE of the environmental crisis calls for amplification and more detailed enrichment of the Charter. It is imperative for a unified design, building and conservation culture to advance the goals of true sustainability.

AS A SUPPLEMENT to the Charter of the New Urbanism, a set of operating principles is needed to provide action-oriented tools for addressing the urgent need for change in the planning, design and building of communities. These practical principles shall be global in scope and in information sharing. In their application, actions must respond to local conditions and be continuously developed and refined over time.

WE PROPOSE THESE Canons as time-honored operating principles for addressing the stewardship of all land and the full range of human settlement: water, food, shelter and energy. They simultaneously engage urbanism, infrastructure, architecture, landscape design, construction practice and resource conservation at all scales:

*General:*

1. Human interventions in the built environment tend to be long lived and have long-term impacts. Therefore, design and financing must recognize long life and permanence rather than transience. City fabric and infrastructure must enable reuse, accommodating growth and change on the one hand and long-term use on the other.
2. The economic benefits shall be realized by investing in human settlements that both reduce future economic impacts of climate change and increase affordability. Patient investors should be rewarded by fiscal mechanisms that produce greater returns over the long term.
3. Truly sustainable design must be rooted in and evolve from adaptations to local climate, light, flora, fauna, materials and human culture as manifest in indigenous urban, architectural and landscape patterns.

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4. Design must preserve the proximate relationships between urbanized areas and both agricultural and natural lands in order to provide for local food sources; maintain local watersheds; a clean and ready water supply; preserve clean air; allow access to local natural resources; conserve natural habitat and to guard regional biodiversity.
5. Globally, human settlements must be seen as part of the earth's ecosystem.
6. The rural-to-urban transect provides an essential framework for the organization of the natural, agricultural and urban realms.
7. Buildings, neighborhoods, towns and regions shall serve to maximize social interaction, economic and cultural activity, spiritual development, energy, creativity and time, leading to a high quality of life and sustainability.

*The Building and Infrastructure*

1. The primary objective of the design of new buildings and the adaptive reuse of older ones is to create a culture of permanence with well-crafted, sound, inspired and beloved structures of enduring quality. Places shall promote longevity and the stewardship of both our natural and man-made environments.
2. Architecture and landscape design derive from local climate, flora, fauna, topography, history, cultures, materials and building practice.
3. Architectural design shall derive from local, time-honored building typologies. Building shells must be designed to be enduring parts of the public realm. Yet internal building configurations must be designed to be flexible and easily adaptable over the years.
4. The preservation and renewal of historic buildings, districts and landscapes will save embodied energy, as well as contribute to cultural continuity.
5. Individual buildings and complexes shall both conserve and produce renewable energy wherever possible to promote economies of scale and to reduce reliance on costly fossil fuels and inefficient distribution systems.
6. Building design, configuration and sizes must reduce energy usage and promote easy internal vertical and horizontal walkability. Approaches to energy design should include low technology, passive solutions that are in harmony with local climate to minimize unwanted heat loss and gain.

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7. Renewable energy sources such as non-food source biomass, solar, geothermal, wind, hydrogen fuel cells and other non-toxic, non-harmful sources shall be used to reduce carbon and the production of greenhouse gases.
8. Water captured as precipitate, such as rainwater and that internally harvested in and around individual buildings, shall be cleaned, stored and reused on site and allowed to percolate into local aquifers.
9. Water usage shall be minimized within structures and conserved through landscape strategies that mimic native climate, soil and hydrology.
10. Building materials shall be locally obtained, rapidly renewable, salvaged, recycled, recyclable and have low embodied energy. Alternatively, materials shall be chosen for their durability, exceptional longevity and sound construction, taking advantage of thermal mass properties to reduce energy usage.
11. Building materials shall be non-toxic and non-carcinogenic with no known negative health impacts.
12. Food production of all kinds shall be encouraged in individual buildings and on their lots consistent with their setting in order to promote decentralization, self-sufficiency and reduced transportation impacts on the environment.

*The Street, Block, and Network*

1. The design of streets and the entire right-of-way shall be directed at the positive shaping of the public realm in order to encourage shared pedestrian, bicycle and vehicular use.
2. The pattern of blocks and streets shall be compact and designed in a well-connected network for easy, safe and secure walkability. This will reduce overall vehicular usage by decreasing travel time and trip length. Design shall strive to minimize material and utility infrastructure.
3. The positive shaping of the public realm shall focus on creating thermally comfortable spaces through passive techniques such as low albedo and shading with landscape and buildings. The techniques shall be consistent with local climate.
4. The design of the streets, blocks, platting, landscape and building typologies shall all be configured for both reduced overall energy usage and an enhanced quality of life in the public realm.

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5. Roadway materials shall be non-toxic and provide for water reuse through percolation, detention and retention. Green streets integrate sustainable drainage with the role of the street as defined public space. Their design shall maintain the importance of the building frontage and access to the sidewalk and roadway, balancing the desirability of surface drainage with the need for street connectivity and hierarchy.
6. A wide range of parking strategies (such as park-once districts, shared parking, parking structures, reduced parking requirements, minimized surface parking areas and vehicle sharing) shall be used to constrict the supply of parking in order to induce less driving and to create more human-scaled, amenable public space.

*The Neighborhood, Town and City*

1. The balance of jobs, shopping, schools, recreation, civic uses, institutions, housing, areas of food production and natural places shall occur at the neighborhood scale, with these uses being within easy walking distances or easy access to transit.
2. Wherever possible, new development shall be sited on underutilized, poorly designed or already developed land. Sites shall be either urban infill or urban-adjacent unless the building is rural in its program, size, scale and character.
3. Prime and unique farmland shall be protected and conserved. In locations with little or declining growth, additional agriculture, parklands and habitat restoration shall be promoted on already urbanized or underutilized land.
4. Neighborhoods, towns and cities shall be as compact as possible, with a range of densities that are compatible with existing places and cultures and that hew tightly to projected growth rates and urban growth boundaries while promoting lively mixed urban places.
5. Renewable energy shall be produced at the scale of neighborhood and town as well as at the scale of the individual building in order to decentralize and reduce energy infrastructure.
6. Brownfields shall be redeveloped, utilizing clean-up methods that reduce or eliminate site contaminants and toxicity.

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7. Wetlands, other bodies of water and their natural watersheds shall be protected wherever possible, and the natural systems which promote recharge of aquifers and prevent flooding should be restored wherever possible, consistent with the urban-to-rural transect and the desirability of urban waterfronts as public spaces of extraordinary impact and character.
8. Natural places of all kinds shall be within easy walking distance or accessible by transit. Public parklands and reserves shall be protected and the creation of new ones promoted.
9. Within neighborhoods, a broad range of housing types, sizes and price levels for a population of diverse ages, cultures and incomes can provide for self-sufficiency and social sustainability, while promoting compact cities and regions.
10. A steady source of water and the production of a wide range of locally raised foods within an easily accessed distance establish the self-sufficiency and overall size of neighborhoods and/or small towns. Nearby rural agricultural settlements shall be promoted to preserve local traditional foods and food culture.
11. Projects shall be designed to reduce light pollution while maintaining safe pedestrian environments. Noise pollution should also be minimized.
12. The design of neighborhoods and towns shall use natural topography and shall balance cut and fill in order to minimize site disturbance and avoid the import and export of fill.

*The Region*

1. The finite boundaries of the region shall be determined by geographic and bio-regional factors such as geology, topography, watersheds, coastlines, farmlands, habitat corridors, regional parks and river basins.
2. Regions shall strive to be self-sustaining for food, goods and services, employment, renewable energy and water supplies.
3. The physical organization of the region shall promote transit, pedestrian and bicycle systems to maximize access and mobility while reducing dependence on automobiles and trucks.
4. The spatial balance of jobs and housing is enabled at the regional scale by extensive transit systems. Development shall be primarily organized around transit lines and hubs.

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5. The siting of new development shall prefer already urbanized land. If undeveloped land is used, then the burden for exceptional design, demonstrable longevity and environmental sensitivity shall be more stringent and connections to the region shall be essential.
6. Sensitive or virgin forests, native habitats and prime farmlands shall be conserved and protected. Imperiled species and ecological communities shall be protected. Projects to regenerate and recreate additional agricultural areas and natural habitat shall be promoted.
7. Wetlands, other bodies of water and their natural watersheds and their habitats shall be protected.
8. Development shall be avoided in locations that disrupt natural weather systems and induce heat islands, flooding, fires or hurricanes.