



# THE ROLE OF SUSTAINABILITY IN PARKING PLANNING, DESIGN AND OPERATIONS

**We** have been inundated in recent years with endless amounts of information related to sustainability. In our home life, we see endless articles and advertisements for “green” or “energy efficient” versions of virtually every product under the sun – from light bulbs, cleaning products and clothes to automobiles of all shapes and sizes. Regardless of our role in the industry, from design and construction to owners and operators, in our professional lives we’ve been hit with countless information sources on “smart growth,” “green design,” and the integration of sustainable technologies.

Every industry has its own take on how sustainability influences its products and services, and on the scope of responsibility of those who develop and market them. Parking is no different. We face a unique challenge as we attempt to implement sustainable design strategies into the planning, design and construction of parking facilities, and collaborate with a cadre of organizations who would prefer to eradicate or strictly limit automobile use.

Many outside of our industry may consider a “sustainable” parking facility an oxymoron, but this is simply not the case. There are many opportunities available to integrate “green” design and economically efficient practices into parking. We continue to identify and incorporate these strategies into parking projects, whether in downtown or mixed-use communities, at educational or healthcare institutions, or in transit-oriented developments.

As a community of professionals, we have the opportunity to define “sustainability” in terms of parking planning, design, and operations, and separate truly sustainable ideas from “greenwashing,” or the intentional mislabeling of products and services as “green” solely to increase market share. If we are to succeed, it is essential that we embrace sustainability and the implementation of efficient building practices as part of our social responsibility. Sustainability has advanced beyond a trend into a movement that is not slowing down, but evolving at a rapid pace. No longer seen purely as an additive to design, sustainability has moved toward integration in process and form.

#### **Sustainable Planning Strategies in Parking**

As parking professionals we understand that automobiles aren’t going anywhere, and appreciate the critical role they play in our transportation and lifestyle choices. Yet, we must continue to stay educated on the sustainability movement, and serve as leaders in improving and executing sustainable strategies as they pertain to parking, operations and transportation issues.

The most fundamental argument for structured parking as a sustainable design practice is density — structures are a more efficient use of land by their nature. Rather than paving acres of land for surface parking to support the needs of a development or campus, structured parking provides an opportunity to meet parking demand using a fraction of the space of a surface lot. Densely building parking, as well as other buildings, preserves significant portions of land for further development or open space, which can take the form of natural habitat or landscaped plazas and planted green space. In addition to the preserving or creating pervious surfaces, these



Federal, state and local incentives abound to install photovoltaic panels; Nexus Properties elected to install these panels to generate electricity to serve the energy demands of the facility as well as power electrical vehicle charging stations. Photo courtesy Nexus Properties.

areas allow daylight, views, and direct access to the outdoors, which impact not only individual productivity, but potentially real estate value.

In addition to increasing density, structured parking facilities can actually result in a decrease in vehicle miles traveled (VMT) in a particular area, as well as the need to build less spaces by applying shared-use principles. Locating parking facilities in a mixed-use or

from these mixed-use communities, as people still easily work in and visit cities while living on the outskirts or even the suburbs. Transit systems carry millions of people from suburban communities and commuter towns to and from cities every day, significantly reducing carbon emissions from automobiles, while decreasing stress on the already vulnerable infrastructure of our streets, highways and interstates.

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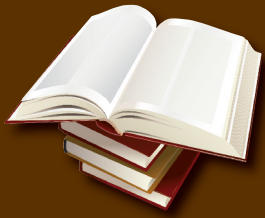
transit-oriented development offering a variety of destinations provides the opportunity for people to park once and walk to varied destinations, rather than driving to multiple locations, each scattered miles apart.

Mixed-use developments incorporate two or more elements — residential, commercial/retail, office, institutional, or other land uses (i.e., parking). This development type reduces the need to access a car for every trip, at the same time creating an attractive, pedestrian-oriented community. Adding transit to the program mix enhances these synergies even further, creating transit-oriented developments that serve the destination needs of their visitors and residents, while reducing such a dependence on automobiles to commute.

Along this same line of thought, many larger cities throughout the United States also benefit

While the recent popularity of mixed-use and transit-oriented communities will no doubt continue to have a positive impact on the planning practices of both our cities and suburbs, parking is a critical element to their success. Most people today still choose to own automobiles and depend on them for specific needs, even if they can also utilize transit or car-sharing programs on a regular basis. Parking facilities provide the essential infrastructure for these developments, supporting the continued parking needs of those who live and work in these communities. Parking plays an extremely important role in serving the residents and visitors of these developments. Integrating mixed-use office, retail or restaurant space can help to create a more attractive, pedestrian-friendly streetscape by increasing the amount of street level activity.





At the 2010 fall meeting of the International Parking Institute's Board of Directors, they approved the creation of the IPI Sustainability Committee.

The committee will initiate and investigate projects or programs that educate, inform and benefit the parking and transportation industry regarding sustainable practices. The committee will work collaboratively and represent IPI with other organizations to promote and advance environmental initiatives.

The committee is:

**Casey Jones, CAPP, MPA,**  
**Co-Chair**

Boise State University

**Rachel Yoka, LEED AP BD+ C,**  
**CMSP, Co-Chair**

Timothy Haahs & Associates, Inc.

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**H. Dean Penny, P.E.**

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**Brian Shaw**

University of Pennsylvania

**Rick Siebert, CAPP**

Montgomery County Government

**Michelle Wendler**

Watry Design, Inc.



The Allentown Transportation Center in Allentown, Pa. integrates structured parking with a LANTA bus station at grade to serve residents and commuter in an urban location.

### LEED and Parking: A Complex Relationship

At this time, the United States' Green Building Council's (USGBC) LEED rating systems are the most common and accepted system for measuring the sustainability of a building. While other systems, such as Green Globes and AIA 2030, are becoming more widespread and acknowledged, LEED continues to increase market share and public attention. The USGBC's rating systems will continue to evolve and change, but at this time it is not possible for a stand-alone parking structure to obtain LEED certification. Under LEED 2009, a project must meet all prerequisites and achieve an established point value through earning credits for sustainable strategies.

According to the LEED New Construction (NC) rating system, since garages create an open-air environment, indoor air quality cannot be measured and therefore cannot meet Indoor Environmental Quality (IEQ) Prerequisite 1: Minimum Indoor Air Quality Performance. Stand-alone garages also have difficulty meeting the requirements for water use reduction (20 percent minimum) and energy savings.

While LEED certification is both admirable and noteworthy, the overarching mission of LEED (and other systems for green design and building) is to develop buildings that will create a more healthy and sustainable environment overall, and contribute to energy reduction. One of the driving forces of the sustainability movement is the correlation between green building practices and the accompanying operational cost savings over the building's

lifecycle. Regardless of certification or its pursuit, we can actively apply many strategies to the design and construction of parking facilities. What's more, employing these strategies can enable even a stand-alone garage to contribute to the overall LEED certification of a campus development.

### Selected Strategies Relevant to Parking and Transportation:

#### Planning, Location, and Transportation

- Plan early to locate facilities near mass transit or in a dense mixed-use development.
- Reduce the amount of parking required, applying shared-use strategies.
- Provide preferred parking for carpools and vanpools.
- Provide priority parking for low-emitting and fuel-efficient vehicles.
- Provide recharging stations for electric vehicles.
- Provide car-sharing services using low-emitting and fuel-efficient vehicles.
- Provide shuttle systems to increase mobility and reduce individual automobile use.
- Include bicycle storage areas and conditioned shower and changing rooms.

#### Lighting, Energy Use, and Renewable Energy

- Create a holistic energy model with software, to plan and design an energy efficient building.
- Commission building systems (electrical, solar, etc.) to ensure that they operate as designed, potentially identifying additional cost savings over time.
- Install renewable energy technologies, including photovoltaic panels, wind power, bio-fuels, co-generation, and hydrogen fuel cells.
- Reduce energy demand and use through the photocell receptors, timers, computerized controllers and/or dimmers.
- Install a "cool" roof to decrease roof temperatures and the heat island effect.
- Install energy-efficient electrical and mechanical systems.
- Retrofit existing garages with solar panels and energy efficient lighting systems.
- Screen facilities to limit the amount of light pollution spilling out of the structure onto surrounding areas.

#### Construction and Building Practices

- Document strategies that prevent construction activity pollution.
- Use regional materials to reduce transportation impacts.
- Develop and implement a waste management plan.

- Use salvaged, refurbished or reused materials to discourage use of virgin materials.
- Use materials with recycled content.
- Dedicate areas to the storage and collection of recyclable materials.

#### Water Use and Stormwater Practices

- Install water-saving fixtures to reduce water use.
- Implement a rainwater recycling system.
- Carefully select native adapted plantings that do not require irrigation.
- Install pervious paving and other landscape strategies to increase filtration.
- Install a green roof to increase pervious area and decrease roof temperatures.

#### Innovation

- Create an educational program based on the sustainable strategies in a facility.
- Institute green cleaning programs for interiors.
- Develop innovative strategies or apply technologies not yet considered by LEED and other systems.

While a stand-alone garage cannot yet obtain LEED certification, it is possible for a mixed-use



parking facility to do so. Mixed-use parking facilities with a significant footprint of conditioned interior space in the form of offices, retail or restaurant space, or even a residential component, can help the facility to meet the previously mentioned prerequisites, and increase the chances of obtaining certification. As these facilities become more prevalent, serving mixed-use and transit-oriented developments,

opportunities to integrate sustainable technologies increase, in both number and complexity.

The planning, design and construction practices we exercise today are critically important to the sustainable growth and development of our future communities. "Big picture" planning strategies must consider issues such as reduction VMT and traffic congestion, as well as pedestrian convenience, to reduce carbon emissions and create attractive, high-value smart-growth developments. Meanwhile, our buildings must integrate energy and resource-efficient design and construction practices so that they can contribute positively – both environmentally and economically.

As parking professionals, we understand the importance of parking to successful development. We have a responsibility to educate ourselves and others as to the many opportunities to implement sustainable strategies, not just in parking planning practices, but also through design, construction and operations. ■

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