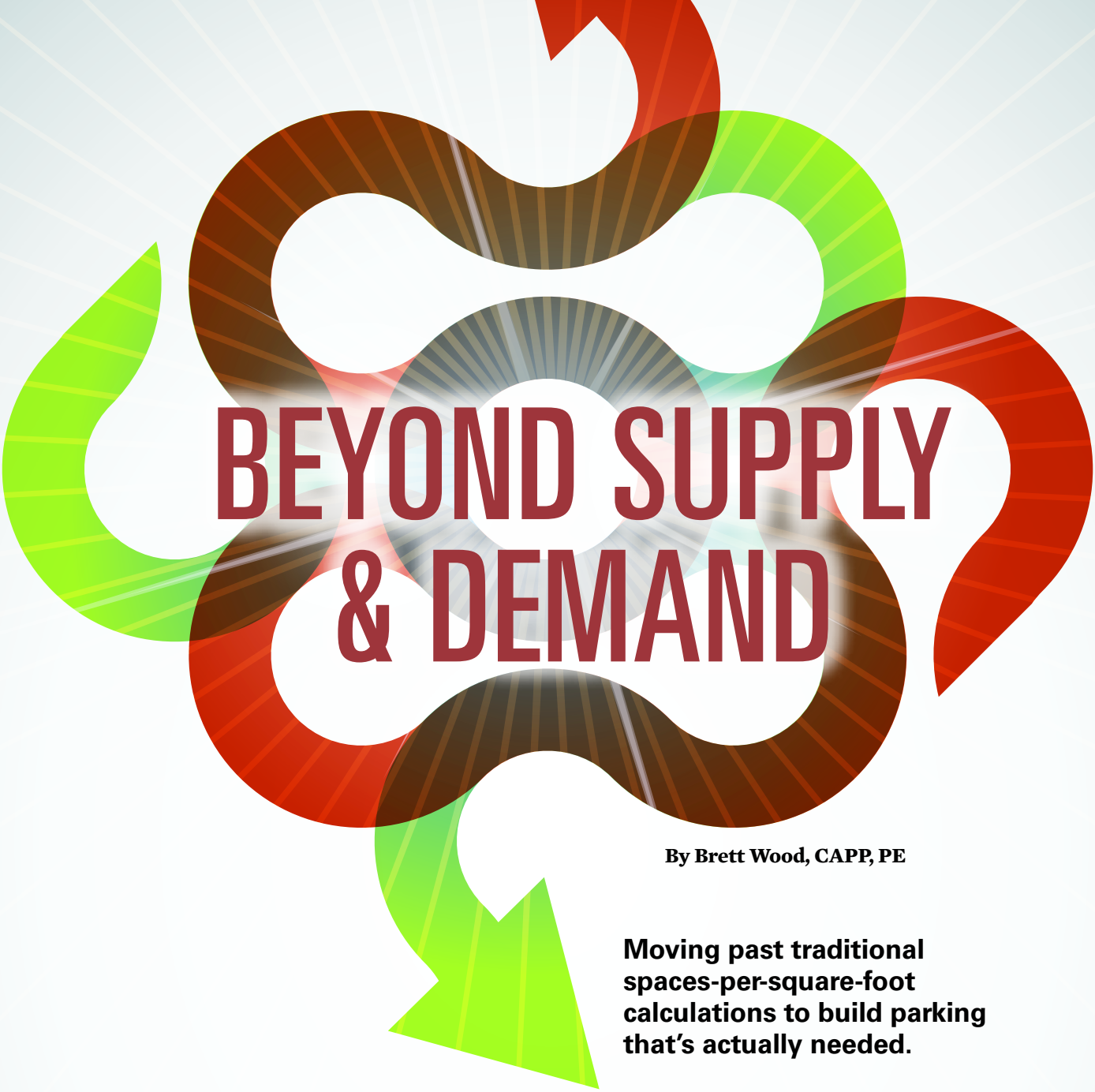

BEYOND SUPPLY & DEMAND

By Brett Wood, CAPP, PE

Moving past traditional spaces-per-square-foot calculations to build parking that's actually needed.

The parking supply and demand study is one of the oldest staples in the parking professional's toolbox. It happens in all sorts of parking departments and operations, and is always intended to answer the questions:

- How much parking do I have?
- How much parking do I need?
- Who uses my parking?
- Where should I put new parking?

For years, we have answered these questions through a systematic methodology that assigns parking needs to land use categories based on historical patterns. For example, a mom and pop diner in Des Moines, Iowa, needed 10 spaces for every 1,000 square feet. At some point, an engineer/planner documented this, and now it is taken as gospel. Based on this limited data, a five-diamond fusion restaurant in Atlanta is now required to provide 10 spaces for every 1,000 square feet. Too much? Too little? We'll have to find out when the restaurant opens.

What's that old adage about history repeating itself? I think the one I am looking for is "Those who cannot remember the past are condemned to repeat it." In regards to the way we are evaluating supply and demand, maybe it's those who can't forget the past who are doomed to repeat it. Many urban planners, smart growth proponents,

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and parking planners have been shouting for years that the way we plan for and provide parking in our downtowns and campuses is archaic and leads to an inevitable overabundance of underutilized parking.

For parking professionals well-versed in the "Shoupian" philosophies of market-based parking pricing and elimination of minimum parking requirements, this criticism of traditional parking planning methods is nothing new. These principles are the foundation of right-sized parking, which aims to provide the right mix of supply to meet actual demand rather than predict demand based on the highest possible generation characteristics (for example, planning for parking demands on the day after Thanksgiving for a shopping center). Right sized parking—a staple of smart growth practices—uses actual parking characteristics from a community to define parking requirements, rather than relying on national averages to define parking supply.

Many progressive communities, such as King County, Wash., and San Jose, Calif., have undertaken studies in recent years to right-size their parking supply. Their typical study process involves collecting actual parking occupancy data as it relates to either residential uses or retail establishments. Using this data and an understanding of the actual land use mixtures within the study area, these teams have begun to calculate their own parking generation rates for their communities, allowing for a more accurate mix of parking and land use density that is tailored specifically to them.

Why Now?

This movement to right-size parking supply is prevalent because of the resurgence of America's downtown and urban settings. The urban lifestyle began to make a comeback in the 1980s and today's young professionals and college graduates are more apt to move to an urban setting than the generations preceding them. Projections for future demographic growth across the U.S. predict that this trend will continue for the next few decades. As a direct result of this urban renaissance, parking planning has been elevated, with urban parking planning at the forefront of any new development. Many times, the parking required may determine the viability of a new project and whether it can move forward or not.

The problem is that we are still applying the historical parking practices we learned from our experiences in the suburbs of America. The result often is an overabundance of parking supply in our downtowns. A recent study completed in Dallas showed more than 55,000 parking spaces in the downtown with an average occupancy between 50 and 60 percent. A study in one section of downtown Atlanta, Ga., showed more than 90,000 parking spaces, with around 50 percent occupied.

Using generic industry standards, we can project that the cost of the overbuilt parking spaces was $1.5 billion and the development density forfeited could be near 27 million square feet—which are staggering numbers. As an industry, we have over-planned for parking and limited the influence of shared parking by restricting spaces; we are treating our downtowns like so many fragmented strip shopping centers. Over-parking in a shopping center, of course, results in a few hundred extra spaces. Over-parking in a downtown area could result in thousands of extra spaces and a significant loss in potential development, resulting in huge potential reductions in the tax base.

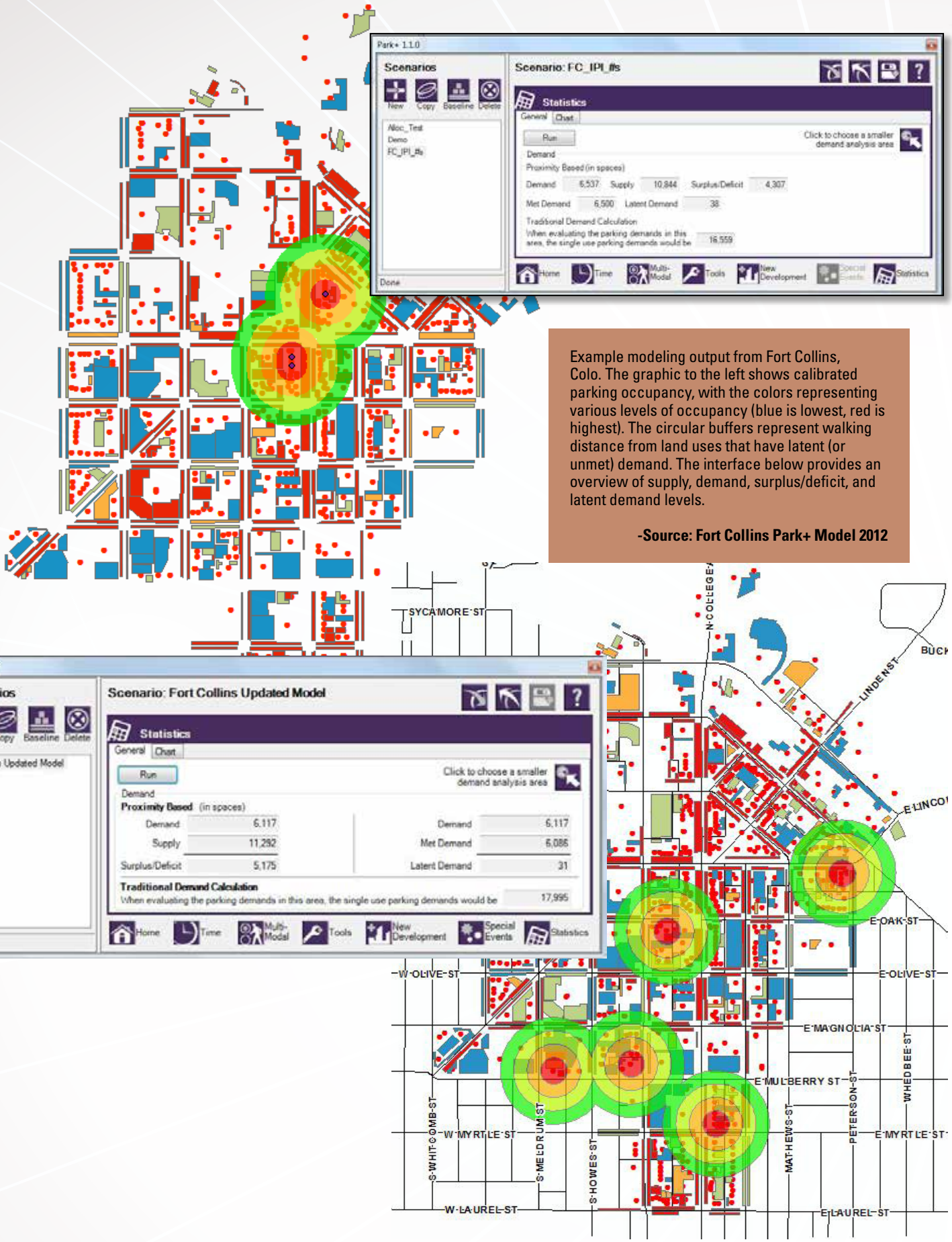
How Do We Reverse the Course?

Now that we are aware of the problem, how do we plan differently? It starts with realigning our understanding of parking. The parking and downtown industries have made great strides in recent years to better understand shared parking and its effects on demand. We must apply those principles and expand our thinking further. It's time we begin to view parking as a system and apply management and modeling capabilities that evaluate it in this manner. Too often, we look at parking in a vacuum, but if we started to look at it more like our transportation systems, we might find a better fit.

By approaching parking demand analysis like a traditional travel demand modeling exercise, we can begin to more accurately predict where parking wants to be and define unique and realistic parking generation rates for each individual land use, rather than land use categories. Why should we continue planning for all restaurants to park at 10 spaces per 1,000 square feet? Why shouldn't a four-star steakhouse park differently than a one-star taco stand? By applying a unique proximity-based calibration engine and a logical modeling technique that predicts demand allocation for land uses, parking and urban planners can begin to find the right mix of parking, development, and downtown or campus vibrancy.

What's the best part of this approach? It can be done with tools and data we already have on hand. Using geographic information systems, we can catalog land uses and parking characteristics, and evaluate spatial relationships between development and parking supply. Using newer parking technology (enhanced revenue control equipment, back end management systems, or parking sensors), we can mine parking occupancy data to fuel the calibration equations for this new modeling approach.

The result is a process that gets us closer to right-sized parking and allows communities and campuses to begin planning for parking demands that are more realistic when compared to their actual operations and uses.



Example modeling output from Fort Collins, Colo. The graphic to the left shows calibrated parking occupancy, with the colors representing various levels of occupancy (blue is lowest, red is highest). The circular buffers represent walking distance from land uses that have latent (or unmet) demand. The interface below provides an overview of supply, demand, surplus/deficit, and latent demand levels.

-Source: Fort Collins Park+ Model 2012

Table 1. Example Adjusted Parking Generation Rates*

Fort Collins, Colorado								
Condominiums Adjusted	**Condominiums Traditional**	**% Change**	**Restaurant Adjusted**	**Restaurant Traditional**	**% Change**	**Office Adjusted**	**Office Traditional**	**% Change**
spaces per dwelling unit			spaces per 1,000 s.f.			spaces per 1,000 s.f.		
0.91	1.52	–40%	6.6	18	–63%	2.7	3.5	–23%
Texas A&M University								
Classroom Adjusted	**Classroom Traditional**	**% Change**	**Student Residence Adjusted**	**Student Residence Traditional**	**% Change**	**Student Services Adjusted**	**Student Services Traditional**	**% Change**
spaces per 1,000 s.f.			spaces per 1,000 s.f.			spaces per 1,000 s.f.		
1.8	1.2	50%	0.93	1	–7%	3	3	50%

Who's Doing It?

Over the past year, this process has been applied in several communities and campuses throughout the country, providing local practitioners with a better understanding of their unique demand situations and putting them in better control of the evolution and management of the parking systems in their own community. These communities and campuses include Fort Collins, Colo.; Beverly Hills, Calif.; Lincoln, Neb.; Asheville, N.C.; Durham, N.C.; the University of Washington; Texas A&M University; and Arizona State University.

The tables above show examples of calibrated parking generation rates for Fort Collins, Colo., and Texas A&M University as compared to traditional parking generation rates outlined in national governing documents (ITE or ULI). Table 1 provides a comparison of land use rate categories as mined from the calibrated data. In Fort Collins, Colo., the adjusted rates all reflect a reduction in parking requirements based on actual local parking occupancy. For Texas A&M, the adjusted rates vary between uses, indicating the actual demand conditions on campus could necessitate a higher level of parking infrastructure to support parking conditions.

* *Calibrated rates presented in Tables 1 and 2 are examples based on specific occupancy data collected in the subject communities. This data is expressly applicable for these communities and should be strengthened with additional data to ensure appropriate parking planning.*

Table 2 provides a more detailed review of three restaurant types within Fort Collins, including a four-star steakhouse restaurant, a coffeehouse, and a fast food sit-down restaurant. This stratification of parking generation rates allows for a more defined assessment of parking needs when new developments or redevelopments occur. Instead of planning for generic restaurant types, city planning staff can now use specific requirements developed from existing businesses with similar characteristics of the proposed development or redevelopment.

Table 2. Restaurant Specific Generation Rates*

Restaurant Type	Adjusted Generation Rate	
Four Star Steakhouse	16.9	per 1,000 s.f.
Fast Food Sit Down	5.9	
Coffeehouse	12.6	

What It All Means

The right-sized parking approach is quickly gaining momentum in the planning and parking community. Making better decisions for parking management and infrastructure planning makes our communities and campuses more sustainable and efficient, while providing better parking and transportation and saving money in infrastructure development. Traditionally, the right-sized parking approach has been defined by local data collection and analysis, but the modeling approaches defined in the previous section are allowing parking and urban planners to better manage parking and development, without the additional workload or evaluation. Furthermore, if approached intelligently, the modeling approach allows a community to update its own data and re-calibrate the actual parking demands in an ongoing basis as the community changes over time. The modeling approach also includes the ability to evaluate demand management strategies, including parking pricing, multimodal travel, and vehicle reduction strategies.

The intent is to empower our planning and parking managers with the power to get beyond supply and demand. Once we are there, we are better equipped to grow and respond to the changing landscape of parking and urban management.

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