PARKING
MADE EASY

A Guide to Managing Parking in Your Community

Oregon Transportation & Growth Management Program

ACKNOWLEDGEMENTS

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1. INTRODUCTION

In every community, parking is a central, and often controversial, issue.

As a city and its stakeholders plan for their town's on-going success, they must distinguish between perceptions and realities to develop and implement an effective parking management strategy.

Studies[a] have shown that local perceptions about the adequacy of a city's parking supply can be wildly out of sync with reality.[b] For example, many people may believe that a business district has nowhere near the number of parking spaces it needs, when in fact many nearby (but perhaps less visible) spaces sit unused. Many cities use outdated parking standards based on flawed methodologies. One western city, for example, found that its existing standards would have required nearly three feet of parking for every one square foot of building in the downtown!

A successful downtown or business area has a strong sense of place and interesting, attractive destinations. People come to experience an environment that is active, diverse, and unique. They do not come downtown to park.

An effective parking management plan supports the development of a vibrant area for shopping, working, living, and playing, and meets the needs of the community's customers, employees, residents, and visitors. The plan creates an easily understandable system that is safe, affordable, and well-integrated into the entire transportation system. A successful parking plan clearly defines the role of the public sector, while providing opportunities for partnership with the private sector. Additionally, it supports and influences goals for alternative modes of access, including public transit, biking, walking, and ridesharing.

Our objective in developing this primer is to help your city understand the current dynamics of parking in your community. We will look at methods for compiling and interpreting data, policies and their effect on development, and strategies to ensure that your parking system is efficient and accommodates new economic growth.

> *"The status quo is to overbuild parking, make it free and walk away."*
> – Daniel Rowe, King County Metro, Washington

> *"Advocate for less parking and do not plan your Main Street as if it were a Walmart parking lot."*
> – Brett Wood, Kimley-Horn & Associates

2. WHY MANAGE PARKING? THE BENEFITS OF GOOD PARKING MANAGEMENT

Parking has sometimes been called the "third rail" of transportation planning. City staff and elected officals alike often avoid it for fear that residents *and* businesses will turn on them. The very phrase "parking management" can elicit an emotional response from local citizens and business people. Easy access to a parking space near a favorite store or restaurant for customers -- or to a space close to work or home for employees and residents -- can affect one's perception of an area or experience. When parking is unmanaged, conflicts occur, raising anxieties and setting a negative tone for the area.

Creating and implementing a good parking management plan will allow your community to:

a. Use Valuable Resources Efficiently

On-street parking is limited, and off-street parking is expensive, especially when cities transition from surface to structured parking. Excluding land, costs can range from $5,000 per stall in a paved surface lot to $32,000 or more per stall in a well-designed parking garage. These development costs may be passed along to consumers, resulting in higher commercial lease rates or less affordable housing. Right-sizing parking when a development is first planned can save millions of dollars. Managing the

supply effectively ensures that when new parking is added, it is supported by demand.[cd]

Parking spaces are not only expensive to build and maintain, but they also require large amounts of land. This can result in sprawling development patterns that discourage walking trips and impede better land uses than vehicle storage. If drivers must circle blocks looking for parking, they waste time and gas while contributing to traffic congestion and greenhouse gas emissions. Better management of your finite parking resources can pay dividends beyond simple cost savings.

b. Create Order and Reduce Anxiety

Business customers, visitors, employees, and residents appreciate a system that simplifies decision-making and makes their visit effortless and efficient. When the parking system lacks order, people get frustrated and may even question whether a return trip to your business district is worth the trouble or not.

In 2006, Salem, Oregon had over 200 30-minute parking stalls within its 1,200 stall downtown on-street parking inventory. The long-term parking quickly filled up each day, leaving only 30-minute

stalls available. With few parking options in sight, customers used these spots and frequently returned to find parking tickets on their cars. People became frustrated with "heavy handed" enforcement and lack of options. Parking study surveys revealed that customer visits averaged 1.5 hours. Rather than continue to issue tickets, the city adjusted the time limits to two hours on the majority of 30-minute stalls to better correlate time stays to actual customer need. The number of 30-minute stalls was reduced from over 200 to 35, providing the right space and reducing tickets.

c. Encourage Transit, Walking, and Biking

Most experts agree that there is a direct relationship between parking management and travel behavior – parking policies influence whether people will access an area using alternatives to driving – e.g., transit, biking, walking, or ridesharing.[e] If the management system is effective, it will also yield a more efficient parking supply, particularly if long-term parkers (i.e., those who stay more than 4 hours) switch from driving to another mode. Reduced demand for long-term parking improves turnover rates, which increases the economic value of the parking stall.

One survey found that the combination of off-street parking fees and discounted transit passes led to a significant and immediate change in the travel behavior of Lloyd District employees in Portland, Oregon. The fee-and-transit-pass combo triggered a 10 percent mode shift away from solo driving in the first year of the program's implementation. This, in turn, reduced vehicle miles traveled by nearly 40,000 per week.

Besides freeing up parking for priority users, a system that encourages the use of non-driving options can yield health, environmental, and economic benefits. Commuters who use transportation options derive wellness benefits that lead to healthier employees and reduced health care and retention costs for employers. A 2005 study found that employees who bike, walk, or ride transit to work can increase productivity by 50% and cut sick time in half.[fg] Environmental benefits include cleaner air and reduced greenhouse gas emissions. And economic benefits include lower transportation costs, which can consume as much as 20% or more of a family's total budget.

d. Encourage Parking Turnover

In business districts, parking spots that turn over – i.e., one car exits the spot and is replaced by a new car – represent real value for nearby businesses.

In 2003, the City of Bend conducted a simple exercise with a representative group of downtown business owners. The owners were asked what the typical customers -- everyone from window shoppers to those who made high-priced purchases -- spent on a typical visit to their business. The average sale was

determined to be about $20. At the same time, the City was conducting a parking study that tracked the average number of times a parking stall would turn over in the course of a 10-hour day. In Bend, an on-street parking stalls turned over about 7.7 times per day.

With this information, the value of an on-street parking space to downtown businesses was estimated. Table 1 summarizes the Bend exercise.

Table 1: Turnover and Stall Value

Average daily turnover per occupied stall	Average retail sale per customer transaction	Daily potential retail sales per occupied stall	Number of shopping days per year	Annual potential retail sales per occupied stall
7.7	$20	$154	303	$46,662

Old Pasadena parking meter

This calculation is admittedly simplistic; however, as the table illustrates, there is a direct correlation between the number of customer vehicle trips to the retail curb space and potential economic value to the adjacent businesses. In Bend, a single parking stall has the potential to produce *at least* $154 in daily customer sales or over $46,000 per stall per year. If customers take the "park once" approach and visit multiple shops on a given trip, the value may be even higher.

e. Generate Revenue

Parking should be managed first and foremost to ensure access for your priority customers. However, if parking is priced, a portion of the income generated through parking charges can (and arguably should) be reinvested in the locations where they are collected. Net revenues may be reinvested in main street redevelopment or maintenance programs, landscaping, promotions, and investments that improve pedestrian access to the area. Such "shared benefit districts" directly help the district or neighborhood impacted by parking and parking charges -- and often make paying a fee easier to swallow. Some communities, such as Pasadena, California, tell customers what their parking fee pays for right on the meter!

f. Get the Right People in the Right Parking Space

When communities reach a consensus with respect to who should have priority to specific parking spots, whether on- or off-street, they can develop policies that get the right user to the right place.

In a 2008 poll in Everett, Washington, downtown business owners were asked, "Where do you and

> *"If employees aren't walking, customers are."*
>
> – Rick Williams, RWC Consulting

your employees park on a typical business day?" Eighty percent of respondents believed that their employees had either parked in off-street facilities or had arrived by alternative modes. When asked, "Where do your business peers and their employees park on a typical business day?", the same respondents believed that their peers were monopolizing on-street parking.[h] The irony of the Everett study: while everyone agreed that employees parking in on-street spaces prioritized for customers was a problem, none of the businesses would associate themselves with contributing to the problem. If employees aren't walking, customers are. Here, customers are defined as shoppers, but it may refer to patients, students, or other groups.

Questions to ask include:

♦ Who should have priority access to on-street parking?

♦ What is the purpose of off-street parking?

♦ If parking is constrained, who gets bumped to guarantee the priority user is accommodated, and what options need to be developed for non-priority users?

♦ Should employees or residents be allowed to park on-street in commercial business areas?

♦ Should employees be allowed to park on-street in residential areas?

♦ What is the role of the City in providing parking for visitors, employees, and residents?

There are no right or wrong answers to these questions. These are brainstorming questions intended to foster discussion and generate ideas, eventuallly leading to group consensus on strategies that support priorities.

Portland, Oregon

Boulder, Colorado

Boise, Idaho

Vancouver,
British Columbia

THE RIGHT PEOPLE IN THE RIGHT SPACE

✔ In Tigard, area businesses and citizens agreed that on-street parking should be prioritized for short-term visitors, underscoring a need for on-street time limits and off-street options for employees.

✔ In Springfield, there was consensus that on-street employee parking should be limited in the downtown core. This led to creation of an on-street employee permit program on the periphery of the downtown and changes to make residential permit programs easier to establish.

✔ In both Gresham and Corvallis, the cities have decided to help manage both on- and off-street parking. This decison helps to ensure that strategic priorities are served.

✔ In other cities, the city neither owns off-street parking nor envisions a role in providing it. The provision of off-street parking falls to the private sector, requiring strategic public/private partnerships.

3. SUCCESS FACTORS - ELEMENTS OF A GREAT PLAN

Many cities in Oregon have established a comprehensive set of parking services to improve access to commercial and residential areas; they include Bend, Eugene, Hood River, McMinnville, Portland, and Salem in Oregon. Other examples include Boulder, Colorado; Charleston, South Carolina; Kalamazoo, Michigan; Ventura and Santa Monica, California; and Vancouver, British Columbia. These programs focus on access to destinations rather than on parking as an isolated or accessory function. Their success factors include:

a) **Development of a strategic parking management plan** aligned with larger community goals for transportation access, economic development and livability.

b) A plan that **puts customers first** and values short-term access to destinations as an engine for economic vitality and business district revitalization. Business owners and employees recognize that they must relinquish the best on-street spaces to customers and accept enforcement of short-term limits.

c) **Agreement** on a common definition of the parking market. This would include agreement on priority users, appropriate parking time limits, roles and responsibilities for managing parking, and triggers for decision-making.

d) A **holistic perspective** that recognizes on- and off-street parking supplies, public and private, as integrated and mutually supportive.

e) **Coordinated parking rates,** where applicable, between on- and off-street facilities. If the on-street system is constrained, customers need a less expensive (or comparably-priced) option off-street.

f) Excellent **marketing, communications, and branding** of parking programs, services, and options. Keeping the user informed is a key factor in almost all successful programs.

g) **Centralized and coordinated management** of parking services, structured to support and enhance short-term access to stores and other destinations. In the sample cities explored here, centralization of management has occurred through public/private partnerships between the city and a downtown business association, parking authority, or economic/business improvement district.

4. PUBLIC INVOLVEMENT

Parking is a hot-button issue, and all the affected groups and interests should be involved in the planning process from the outset. Never be afraid to involve a broad spectrum of stakeholders, including:

- ✓ Employers of varying sizes and sectors
- ✓ Property owners and managers with day-to-day experience on the site
- ✓ Developers
- ✓ Downtown residents and adjacent neighborhood association representatives
- ✓ Shoppers
- ✓ City (and/or County) staff and officials
- ✓ Employees
- ✓ Business association representatives
- ✓ ODOT regional planners or district staff, especially if the project area includes a state highway
- ✓ Disability and low-income advocates
- ✓ Bicycle, pedestrian, and transit advocates
- ✓ Schools and Safe Routes to Schools representatives
- ✓ Hospitals, colleges and universities
- ✓ The local transit agency

You can also conduct one-on-one interviews, perform intercept or online surveys, or host open houses to solicit input on parking issues from various stakeholders. Some may even become part of a formal stakeholder advisory committee (SAC).

When working with a SAC, don't be surprised if the most vocal critics of "the parking problems" are also the most resistant to change. An effective way to get past politics, skepticism, suspicion, or personal agendas is to establish ground rules. The following rules have been used in Oregon cities as a means to get everyone started on the right foot:

Support for the project area. Committee members should strongly support the project area—whether it be the downtown, main street, business district or something else — and buy into the idea that the area

> *"Public parking should be viewed as a community resource with three guiding principles to drive decision-making: Encourage Economic Activity, Enhance Neighborhood Livability, and Reinvest the Parking Dollar where it is collected. These guiding principles also help build strong support among diverse stakeholders."*
>
> *– Jeff Petry, Parking Services Manager, Eugene, Oregon*

group, collecting feedback, and communicating solutions and strategies reached through the planning effort.

Attendance. Each member should make a reasonable, good-faith effort to attend scheduled meetings. This assures understanding of the project and creates a group of stakeholders who are well-informed about parking issues in the project area.

Open-mindedness. Each member should recognize that addressing parking problems and improving access will likely challenge the status quo and require change. Participants may occasionally need to be reminded that they would not be doing this work if there were not problems that needed fixing.

Courtesy to others. Each member should agree to respect the views of others, treat everyone with courtesy, and speak honestly without dominating the conversation.

can become more vital, livable, and prosperous than at present.

Liaison and feedback. Committee members should agree to serve as effective liaisons to their organizations, relating the activities of the planning

5.   GETTING TO YES – GUIDING PRINCIPLES FOR ACCESS

It's been said that everyone is a parking expert. If you've driven a car and parked it, you probably have an opinion on parking. Despite an abundance of personal opinions, there is often little agreement on the purpose of parking on a specific street, in a lot or garage, or within the entire parking supply. Not all parking is created equal; certain parking spaces are best prioritized for specific users, such as shoppers or drivers with disabilities. For any parking space in question, it is critically important that stakeholders agree on what the priority purpose is, who it is intended for, and what outcomes they want to achieve.

Unfortunately, many cities leap into parking management strategies before their purpose or appropriateness for the area is clear.

Avoid this misstep by developing a succinct set of guiding principles first. These principles, developed through consensus, will define your goals for parking and will guide near- and long-term decisions regarding management. Reaching consensus on principles with your stakeholder advisory committee may be time-consuming, but it is extremely important. Many cities have even had their guiding principles adopted by City Council and included in the policy element of their code and planning documents.

Begin by posing a number of questions, each representing a different theme, to your planning group:

Themes Regarding the Study Area:

♦   What attracts people to this area?

♦   What makes the area special?

♦   What keeps you (the stakeholder) here?

♦   When you think of an "ideal downtown," what elements come immediately to mind?

♦   Which of these elements are in place in your downtown or district? Which are not?

Developing Consensus

- What would you like to see as an outcome? For example, under a new parking management program, what benefits would be derived for your business and for the downtown?

- What is not working in the district from a general perspective, and how does it relate to parking and access?

- What works well in the district generally and from a parking and access point of view?

- Who has priority to use the parking?

- Who is our primary customer? Who do we want them to be?
  - Retail, Residential, Visitors, Employees (in priority order)
  - Today vs. 5 years from now?

- Who should manage the parking (publicly controlled versus private)?

- What conditions will trigger changes to the parking policies?

The "Is" and the "Should"

- Should the city have a role in the future provision of off-street parking in the area?

- Should developers be required to provide parking with new development?

- In the future, for whom should publicly controlled off-street lots be prioritized?

- Today, the use of alternative modes (transit, bike, walk) by employees is ….?

- In the future, the use of alternative modes by employees should be…?

- How should access for low-income users be ensured?

Answers to these questions generally lead to a consensus that translates well into guiding principles. As an example, these principles were developed with stakeholders by the City of Tigard:[i]

GUIDING PRINCIPLES FOR PARKING AND ACCESS – TIGARD, OREGON

A. Coordination

✔ Centralize management of the public parking supply and ensure that a representative body of affected private and public constituents from within the downtown routinely informs decision-making (e.g., a coordinated relationship with a new downtown business association).

✔ Implement measurements and reporting that ensure Guiding Principles are supported and achieved.

✔ Manage the public parking supply using the 85% Rule (see Chapter 6) to inform and guide decision-making.

B. Priority Customer

✔ Recognize that on-street parking is a finite resource and should be managed to provide a rate of customer/patron turnover that supports district vitality.

✔ Reserve the most convenient on-street parking spaces to support the priority customer.

✔ The on-street parking system in the downtown must be designed in a manner that assures turnover and minimizes conflicts between the priority visitor (stays of 2 hours or less) and other users.

GUIDING PRINCIPLES FOR PARKING AND ACCESS – continued

C. Efficiency and Balance

✓ Provide sufficient parking to meet employee demand, in conjunction with an access system that provides balanced and reasonable travel mode options.

✓ Encourage/incentivize shared parking in areas where parking is underutilized.

✓ Work to facilitate shared use agreements between different users (public and private) to direct parking demand into these facilities and maximize existing parking resources.

D. Intuitive & High Quality

✓ Make downtown parking user-friendly – easy to access, easy to understand.

✓ Provide an "access product" that is of the highest quality to create a safe and positive customer experience with parking and access associated with the downtown.

✓ Provide safe, secure and well-lit parking to allow a sense of security at all times on-street and off-street.

✓ Through the City's public information system, provide a clear and consistent message about auto parking, preferably under a common brand.

6.   THE 85% RULE – WHAT DOES IT MEAN FOR YOUR PARKING SUPPLY?

The "85% Rule" is an operating principle and industry-based management tool for ensuring better access to destinations.

Anyone involved in parking will inevitably run across the "85% Rule." Though this concept has been a common tool for decades, it drew wider attention when discussed by UCLA Professor Donald Shoup in his 2005 book, *The High Cost of Free Parking*[j]. Shoup suggests that on any single block, parking should be priced to ensure that 15% of the total spaces are available. Where less than 15% are available, the cost of parking should be raised until occupancy rates fall to 85%. Eighty-five percent is the level at which a city's competing objectives are well met: 85% of the spaces are in use, which means that a valuable and limited resource is being efficiently used; and 15% of the parking spaces are available at any time, so customers are assured that they will be able to quickly find a space close to their destination.

Thus, higher rates should be charged on blocks with higher occupancies, and lower rates on blocks with lower occupancies. This is called variable rate or performance-based pricing. According to Shoup, charging a "fair market price" for high-demand spaces increases turnover, thereby strengthening business, reducing congestion, improving air quality, and generating a revenue source for cities to reinvest in the area.

The 85% Rule is an important guiding principle to include in any parking management plan for the reasons stated above. Unfortunately, some cities
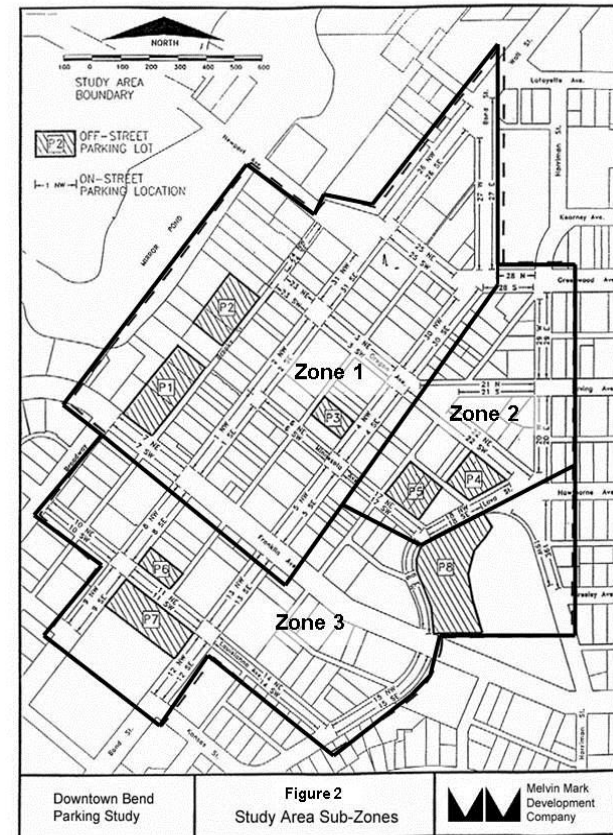
Bend Parking Management Zones
Bend divided its downtown into 3 zones so that it could tailor parking strategies to areas with different demand characteristics.

have implemented this strategy before having a clear reason to do so.

Any city should be cautious with a simple application of the 85% Rule, but particularly smaller cities that have traditionally operated with free parking. Some cities have created "parking benefit districts" in which parking fee revenues go into a special fund that benefits businesses in the district. When local merchants see that parking revenues are spent on public improvements that benefit their businesses, they are more likely to support the parking fees.

Identifying Parking Zones
A key step in applying the 85% Rule is deciding how big an area to include when evaluating whether 85% of the spaces are in use. These areas, or "parking zones," can be small – covering a block or key shopping street -- or they may cover several blocks or a whole neighborhood, retail district, or parking management zone. Professor Shoup recommends that the 85% Rule be applied to individual blocks.

Portland divided its downtown into 13 parking management zones in its downtown. Vancouver, Washington, has five zones, and Bend and Canby, Oregon each have three, Rather than applying the 85% Rule to individual blocks, these cities apply it to a walkable area to ensure easy access to parking within that area. Each zone encompasses a distinct neighborhood or district, such as a retail core, government district, restaurant row, or university. The goal is to manage parking so that 15% of the spaces in each district remain available and priority users are within a walkable distance of both their vehicle and destination.

Implementing the 85% Rule
Cities that already have parking meters and/or pay stations are better equipped to initiate programs that stratify rates by demand, whether at the block level (as in San Francisco) or by zone (as in Portland).[1] In smaller cities, however, the cost of equipment and the expense of managing flexible rates might not be covered by the increased

Downtown Hood River, Oregon

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[1] In Portland, parking districts have different hourly rates because of occupancy/demand variations between districts (e.g, Downtown at $1.60/hr, Central Eastside at $1.25/hr and Lloyd District at $1.00/hr).

revenues expected, particularly in downtowns with pockets of high demand surrounded by underutilized supply. In these locations, the first step toward implementing the 85% Rule may be adjusting time limits to the needs of customers, the desired level of turnover, and enforcement capabilities (see Section 8). As a parking zone or management district reaches 85% occupancy, it suggests more stringent parking management strategies, such as adjusting time stays, increasing enforcement, or pricing parking.

85% Should Not Be Your Only Goal

The on-street parking supply is a finite resource. It may reach a point where more than 85% of the available on-street parking spaces are occupied much of the day. At this point, just increasing rates can indeed reduce parking demand, but may do so by discouraging people from coming to your downtown or business district. In other words, managing on-street parking may not be a complete solution. If parking gets so expensive that people choose not to come downtown or to the business district, it may be appropriate to increase the parking supply or to

institute Transportation Demand Management (TDM) measures (see Section 13). Options would include more off-street parking and better transit, bike and other non-drive alone opportunities. Methods for evaluating the need for a large parking supply are discussed in Section 7 (Data Collection). The overall goal is to make 15% of the parking spots available to ensure quick and easy access to destinations.
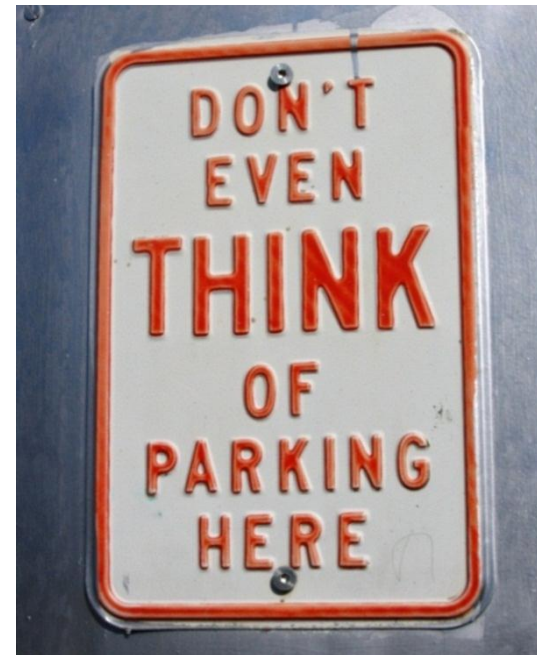
Application of the 85% Rule *on-street* should be complemented with *off-street parking and transportation options* to ensure that the overall access to local goods and services is enhanced. A 2006 paper on parking guidance systems noted that

any successful parking management plan must understand that when on-street parking rates are higher, lower-cost options must be available off-street or through other modes for customers unwilling or unable to pay the on-street premium[k].   Where cities own the off-street parking supply this may be easier. But in cities with little control of the off-street system, public partnerships and shared-use arrangements with private stakeholders are critical, as is strategic

planning and programming for non-auto based opportunities to access a destination.

Whether at the block or zone level, the 85% Rule is a powerful demand-based management tool. It supports the unique parking and economic development priorities of your business district while supporting your guiding principles.

7. DATA COLLECTION: SEPARATING PERCEPTION FROM REALITY

Fact-Finding and Analysis of Parking Usage and Demand

As you develop a parking management plan, it is essential that policy and strategy recommendations be based on sound data. Accurate information about your parking system's daily dynamics can and should be used to educate critics on how parking management practices can benefit your downtown and its users. In other words, knowledge is power.

We strongly recommend that you incorporate periodic data collection into your parking management program, both when initiating a plan, and as the central method for tracking success and triggering strategy implementation.

> *"Data collection is critical. You need to understand how parking actually works and tie solutions to data."*
>
> *Daniel Rowe, Transportation Planner, King County Metro*

Cataloging the Inventory

The most fundamental element of your parking data is the inventory of supply: you need to know what parking you have and where it's located. For most downtowns, a catalog was created at one time or another (more than likely a long time ago by someone you don't know), but is not often, if ever, updated. To complicate matters, parking systems are always changing, so there needs to be a concerted effort to keep the inventory up to date.

Parking surveyor in Everett, Washington

Parking District Boundary

The first step is to define the parking district boundary. In some cases boundaries may already have been created as enforcement areas. If a boundary has not been created, it should include all of the business district (or other study area) plus at least one or two blocks on all sides of this area.
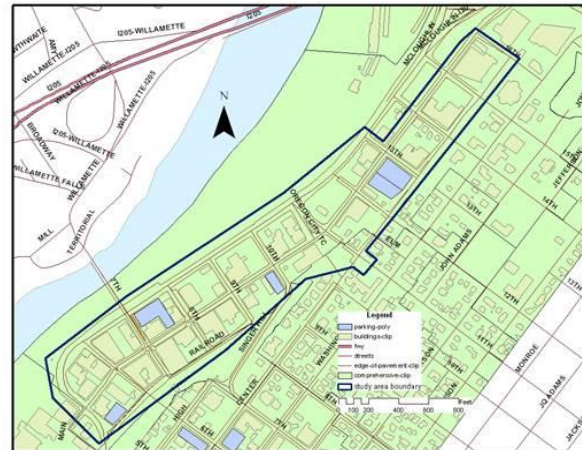
Parking district boundary map. Courtesy of Oregon City, Oregon

Block Numbering

The next step is numbering blocks (Figure 1), which is particularly helpful if you plan on mapping the inventory in a Geographic Information System (GIS). Assign each block within your parking district a number, letter, or other unique identifier. In some cases block numbers will already have been established (e.g., on public works maps for utilities), which can simplify the process and reduce administrative ambiguity.

Figure 1 : Assigning Block Numbers

Block Face Identifier

A block face is defined as one side of the street between two intersections. Each face for each numbered block should then be assigned an identifier, beginning with the north face and working clockwise . In the example in Figure 2, the north block face is labeled "A", the east face"B", the south face"C", and the west face "D".

Figure 2: Parking Inventory Diagram
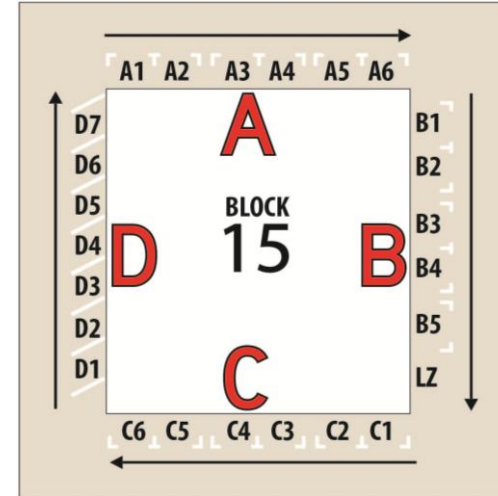
Stall Numbering

Finally, each parking stall on the block face should be numbered (Figure 2). Numbering begins at "1" for each block face, working clockwise around the block. Every stall will then have a unique identifier combining the block number, block face letter, and stall number. For example, the stall ID for block number 15, block face B, stall number 4 would read "15B4". Where on-street stalls are not striped, use a measuring wheel and count one stall for every 23 feet, leaving 8 feet on either side of curb cuts (e.g., driveways) and 10 – 12 feet at the end of blocks to provide safe sightlines at intersections. Verify these dimensions with your Public Works department prior to the inventory.

Stall Type

In addition to stall IDs, you'll need to record the type of stall. This can be as simple as noting the posted time stay (one hour, two hour, loading zone, handicapped, etc.), or adding other distinguishing elements, such as whether the stall is angled or parallel, striped or not striped, metered (including type of meter) or signed. Table 2 provides an example of the inventory by stall type in downtown Lake Oswego.

Table 2: Inventory Summary by Stall Type

Downtown Lake Oswego Parking Stall Breakout		
On-Street Stalls by Type	Number of Stalls	% of Total Stalls
15 minutes	3	<1%
1 hour	122	15.7%
2 hours	155	19.9%
4 hours	74	9.5%
No Limit	415	53.4%
On-Street Parking Stalls	777	100%
Public Off-Street (5 sites)	532	24.5%
Private Off-Street (87 sites)	1,637	75.5%
Total Off-Street Parking Stalls	2,169	100%
Total Supply Surveyed	2,946	

Off-Street Lots and Garages

Locate and identify off-street parking facilities in the study area by name and street address, and note the main point of entry using the appropriate block face ID. Each facility should be inventoried according to location, stall capacity, and facility type (e.g., surface lot, garage).

In addition to being good general practice, accurately and frequently updating your parking system inventory is the basis for any parking utilization or turnover study you conduct.

Block #	Off-Street Lot ID	Total Stalls	Lot/Business	Notes
10	10A	9	The Villager Apts (C Street)	
10	10A	11	Villager Apts. (alley off C St.)	alleyw ay perpendicular to C Street
10	10C	18	Tenant and Customer Parking (Soldera Properties)	
10	10D	30	Edw ard Jones	
10	10D	10	Sixpence Antiques	south of
10	10D	5	Dennis Gomes AGW	reserved
11	11B	31	GEF Consultants	enter off alley (off C side of block)

Off-street inventory summary example

Conducting the Survey: Fundamental Guidelines

Choose a day for your survey that best represents a typical day, with brisk parking activity. Stakeholder input may be helpful in determining the best day to survey.

Surveyor's route template

As a general rule, avoid surveying on Mondays and Fridays, as these days tend to have a high degree of variability due to shortened work weeks, employees taking long weekends, etc. Weekend surveys can be performed based on your individual needs and schedule of events and activities. Any week with a major holiday should be avoided, since it can alter travel behavior.

Theoretically, a valid, representative parking survey can be conducted at any time of the year, but there are a few considerations. Factors that can skew or invalidate results include extreme weather, major events or festivals, school (or out of) session, and the holiday shopping season. Seasonal factors should also be considered. Is your community dependent on tourism? A typical Saturday during peak season may be *exactly* when you want to survey if that's when you're experiencing parking problems. You may need to survey more than once in a year to build a catalog of data over different seasons. The important thing is to minimize factors that may cause the validity of your data to be challenged.

The Customer Determines the Ideal Time to Survey
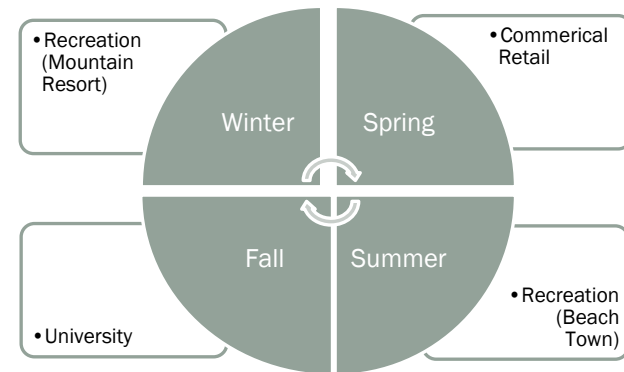
An average downtown weekday survey is at least 10 hours, from the beginning of the office workday (8:00 AM) to the end of business for a smaller-size retailer (6:00 PM). There are plenty of exceptions to this

example, including earlier and/or later start times depending on commuter habits, the presence of unique businesses, or robust restaurant/ entertainment activity in the early evening hours. Parking data can be used to tell a story, and it's important to capture the beginning, middle, and end. Make sure you collect a representative block of data to properly tell the parking story.

Properly preparing for your survey is vital, as the more care is taken beforehand, the smoother the survey process will go. Using a good base map, divide the parking study area into compact survey routes with contiguous block faces. As each route will be surveyed every hour on the hour during the survey period, the routes should preferably take no longer than 45 minutes to complete, allowing the surveyor some down time. Each route should be surveyed concurrently with all others, beginning at the top of each hour and conducted in the same exact order as the previous hour. This will assure that the data represents the entire district at a single point in time, and that each stall is being recorded one hour from the previous sampling. This is particularly important when conducting a turnover study and is also good practice when doing a utilization study, discussed below.

Parking Inventory

Utilization Survey:
How many cars are parking on a block face or in a lot during each hour of the day?

- Peak Hour
- Surplus/Deficit
- Total Vehicle Hours Parked

Turnover Survey:
How long does the average user park, and of the vehicles parked, how many are violating the posted time stay?

- Peak Hour
- Surplus/Deficit
- Total Vehicle Hours Parked
- Average Time Stay
- Average Time Stay by Stall Type
- Turnover
- Violation Rate
- Unique Vehicles

Measuring Parking: Utilization and Turnover

There are two primary types of parking surveys: utilization and turnover. Each requires a different amount of preparation time and different number of personnel, and each yields a different degree of detail in the results.

Simple utilization surveys are generally cheaper and less time-consuming to conduct. Their primary function is to generate peak-hour information, which captures occupancy by time of day and identifies areas of surplus and constraint. Turnover surveys are more costly and require more time, but also generate more detailed information, such as average duration of stay, turnover, and violation rates at time-limited stalls.

Utilization (Occupancy)

On-Street Surveys

As noted, utilization surveys collect less detailed information, but require less preparation and fewer personnel. These surveys focus on block faces rather than on individual stalls, and ask a simple question: "How many cars are parked on a block face or in a lot during each hour of the day?" Consequently, the survey template is also simple (see Table 3). A utilization survey does not distinguish among stall types, but focuses purely on the volume of vehicles in the survey area at a particular time of day. It yields two measurements: peak-hour occupancy and total vehicle hours parked.

Table 3 : An On-Street Utilization Survey Sample Template

Block Face ID	# of Stalls on Block Face	Record Number of Occupied Stalls							
		8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	...
15B	8	3	6	6	6	8	8	
15C	12	7	7	10	10	11	10	
15D	9	4	3	5	7	9	9	
16A	4	1	1	2	2	1	4	

Downtown District Parking Utilization
Hourly On-Street Parking Occupancies (783 stalls)

■ Friday 10-5-12 ■ Tuesday 10-9-12

Time	Friday 10-5-12	Tuesday 10-9-12
8am-9am	48.9%	61.8%
9am-10am	69.3%	77.0%
10am-11am	67.2%	74.8%
11am-12pm	65.0%	70.7%
12pm-1pm	63.5%	63.1%
1pm-2pm	64.8%	68.2%
2pm-3pm	61.3%	71.9%
3pm-4pm	55.8%	59.5%
4pm-5pm	46.1%	50.1%
5pm-6pm	33.8%	27.0%
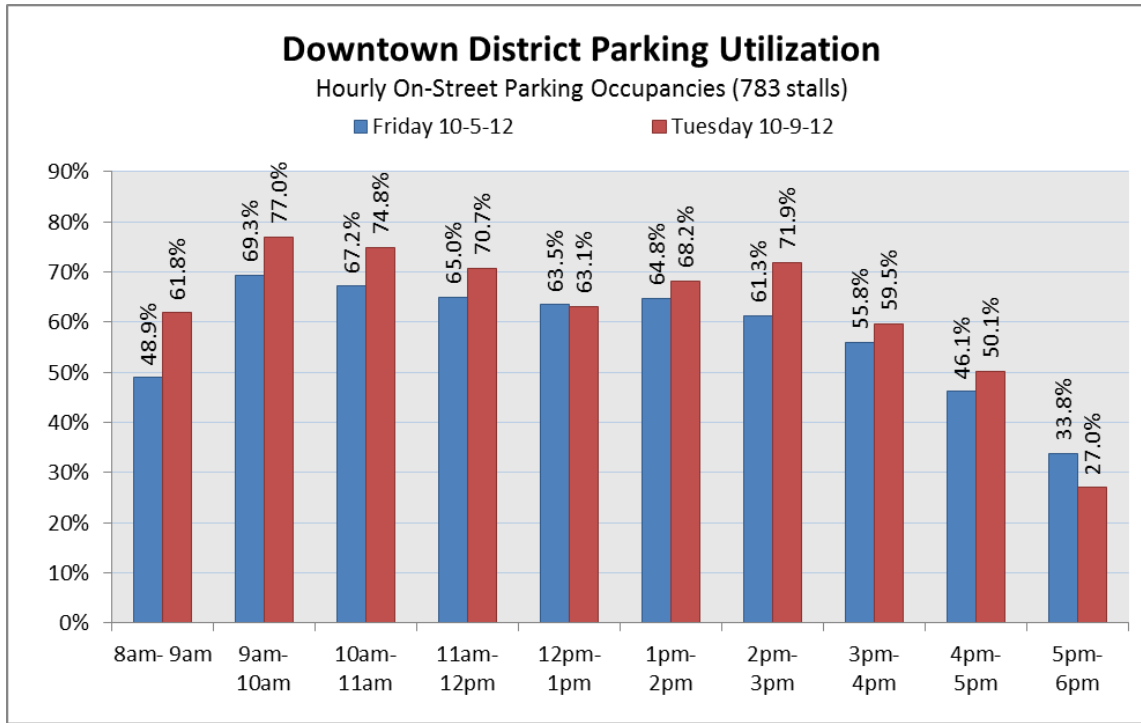
Occupancy study results (Table 3, page 24) can yield simple and effective visual charts that convey a large amount of information in a compact graphical format

Off-Street Surveys

In most cases surveying off-street facilities warrants simply counting the occupied stalls, unless the stalls are time-limited or a turnover analysis is justified. Counting all off-street stalls each hour can be extremely time consuming, requiring an abundance of personnel and consent from multiple property owners. Consequently, it can be cost prohibitive. A frequently used sampling technique may be used instead.

As with any sampling, be sure that the sample is as representative of the total supply (e.g., sample universe) as possible. For example, if the off-street supply is made up of hundreds of small off-street stalls and one or two large lots, make sure you are surveying a proportionate number of small lots to large lots. Also be sure the sample is geographically representative, sampling a proportionate number of stalls from each part of the study area. A well thought out sample can conserve financial resources and save time.

Parking data can and should be used to tell a story — it is important to capture the beginning, middle and end. Therefore, make sure you collect a representative block of data to properly tell the story of your downtown.

Figure 3: Hourly Occupancy Map (Color coded by intensity of use)

Example Parking District Occupancy Map
9:00 - 10:00 AM

N

Color	Legend
>85%	No Parking
84% - 70%	Study Area
69% - 55%	
<55%	

Feet
0 80 160 320 480 640

RICK WILLIAMS CONSULTING
Parking & Transportation
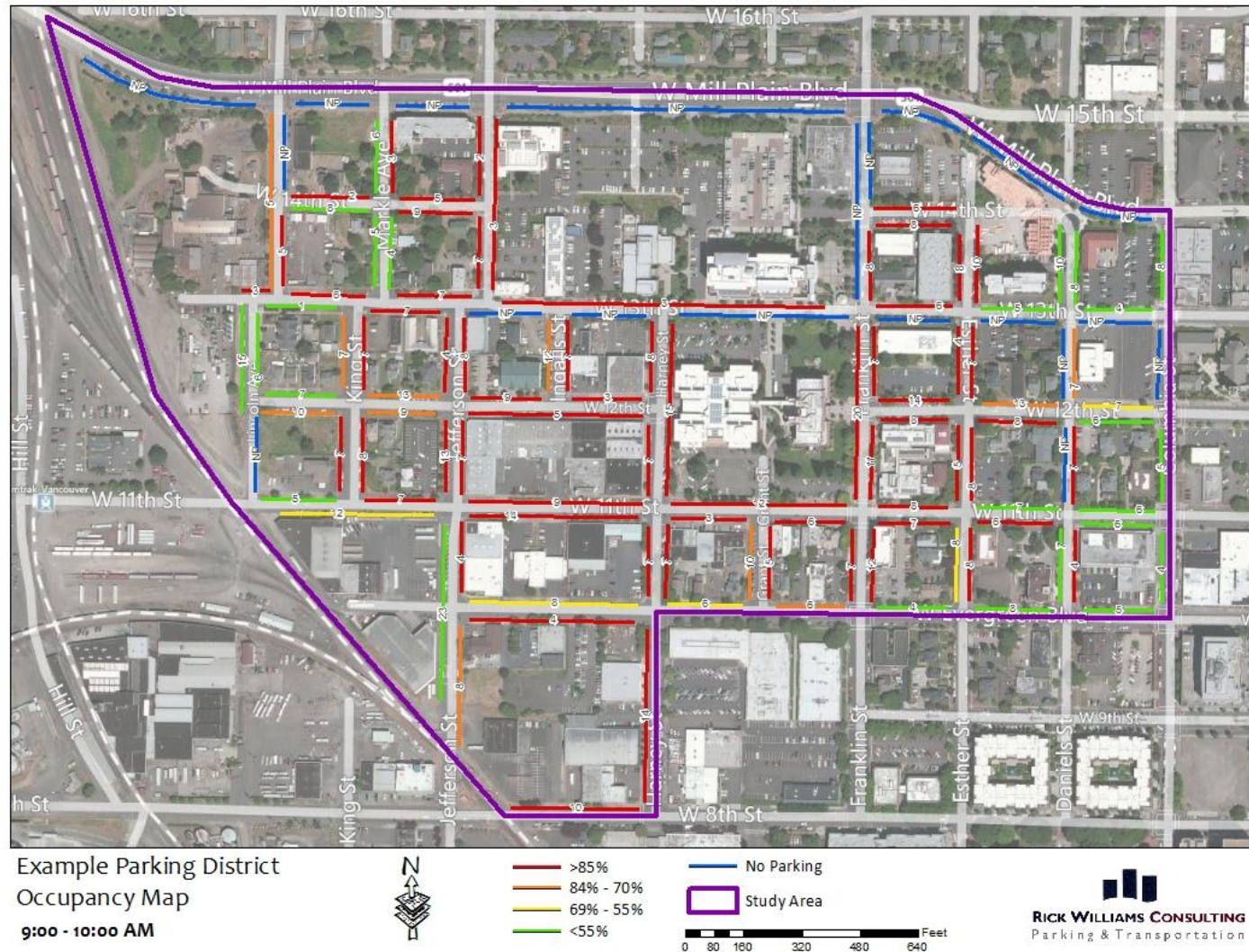
Turnover

If time and resources permit, conducting a turnover survey can provide more detailed information about your parking system. Turnover surveys ask, "How long does the average user park in the business district?", and, "Of the vehicles parked, how many are violating the posted time stay?" The emphasis here is on the individual stall rather than on the entire block face or lot. As a result, the template looks quite a bit different, listing individual stalls in each row (see Table 4).

Instead of simply noting whether a stall is occupied, the turnover survey records a portion of the license plate number as a means of identifying the particular vehicle parked. Recording this information, especially in a busy downtown, can be time-consuming. This is why surveyors conducting a turnover study typically cover about half as much ground as those conducting a utilization study. Some experts report success collecting turnover data with video, speeding up collection on the front end; however, data will still need to be processed on the back end.

With the data collected from a turnover survey, a number of parking characteristics can be evaluated, including:

♦ Turnover rate

♦ Average time stay for all stalls in the system

Survey Tips

Surveyors can look a little suspicious when they're out collecting data. Drivers may even adjust their parking behavior when they see people with clipboards recording information, often thinking the surveyors are enforcement staff.

This may skew the results to show greater parking compliance or enforcement than normal. To minimize this, do not draw attention to your surveyors by making them wear official vests or alerting parking enforcement staff about the study.

Cover your bases and protect your survey staff by notifying the Police Department that authorized surveyors will be conducting a parking study on a particular day, and provide each surveyor with a letter to that effect on City letterhead in case a curious onlooker asks, "What are you doing?"

♦ Average time stay by stall type—useful to gauge whether most trips can be accommodated within the posted time stay or whether stays should be recalibrated to better match user need.

• Violation rate

• Violation hours, or the percentage of total vehicle hours parked in excess of the posted time stay

• Number of vehicle trips made to and from the study area. Trips are identified and quantified by unique license plates observed.

"Cities need to take ownership of their enforcement and make sure it reflects their values. When (enforcement) contractors and property owners take a cut of enforcement revenue, it can create perverse incentives for heavier-handed enforcement. A preferred approach would have parking staff take an informational approach first."

Jeff Petry, Parkind Services Manager, City of Eugene

Table 4: Turnover Survey Sample Template

Block Face ID	Stall #	Stall ID	Time Stay	Record License Plates					
				8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM
15B	1	15B1	2.0		124B	124B	124B	874A	
15B	2	15B2	2.0	078D		555X	555X	9X54	22TT
15B	3	15B3	LZ	387T		XYU4	XYU4		
15B	4	15B4	2.0		9952	9952		ST55	ST55
15B	5	15B5	2.0		2727	2727	2727	4468	4468
15C	1	15C1	3.0	WVT4	WVT4	R754	791Q	791Q	T457
15C	2	15C2	3.0	U514		I087	I087	690Q	690Q
15C	3	15C3	3.0		P448	Y791	0907	0907	

8. ENFORCEMENT

An enforcement program is a vital piece of your parking management plan, ensuring that the system is being used as intended. It should not, however, be viewed as a revenue stream, which can create an aggressive enforcement environment that deters visitors. Preferably, enforcement revenues are

We noticed your old permit hanging high,
On the day before the Fourth of July.

Instead of issuing a parking citation,
We want you to begin the holiday in celebration.

Remember to put your July permit on display,
We hope you have a great Independence Day!

Happy Fourth of July!

*Example of Eugene's "cheesy" friendly
parking pass reminder poems*

deposited not into your city's general fund, but into a downtown enterprise fund that supports both the parking program itself and other investments in the area where fees are collected—for example, downtown beautification projects. Such reinvestments make parking fees more palatable overall.

Some cities may find it financially difficult to employ full-time parking enforcement staff. It's important to note that the level of enforcement is less critical than simply conducting *some* form of parking compliance. Sixteen hours of enforcement a week is not as comprehensive as 40, but is exponentially better than none. Cities transitioning from a system with no monitoring can assign an existing staff position the responsiblities of part-time enforcement. To be most effective, the enforcement hours should be randomized so as not to be predictable.

*Turn a Negative into
a Positive*

Some cities view parking enforcement as community relations opportunities:

Eugene uses these clever, if "cheesy," notes to remind monthly parking pass holders who forget to post a new pass at the beginning of the month.

The City of Hood River created a ticket validation program with Main Street businesses. If a customer needs to rush out of the store before his meter expires, the business owner can offer to "validate" his ticket so that the customer can continue to shop. The business pays a small portion of the ticket; the City picks up the rest.

<div style="background-color:#9e3020;color:white">

9.   DEVELOPMENT CODES – ARE YOU ENCOURAGING YOUR PLAN'S SUCCESS?

</div>

Any city interested in managing parking effectively should begin with an assessment of the policy objectives that the city's parking management plan should support. Most cities have comprehensive plans that outline economic development objectives, urban form visions, and multi-modal transportation goals. Sometimes what's missing is a strategic alignment between these goals and the local zoning and development regulations. For example, many communities have determined they want to cut greenhouse gas emissions, promote better health through active transportation, provide affordable housing, and reduce the burden of high transportation costs. Yet local zoning and development regulations often undercut such goals

"In some American cities, so much of the center has been cleared to make way for parking that there is more parking than there is city. If they clear away any more of what's left, there would not be much reason to go there and park."

- William H. Whyte, The City: Rediscovering the Center

in two ways: They spread destinations so far apart that it's impractical to get around except by driving. And they require excessive parking, which creates a hostile environment for walking and biking.

Parking requirements are typically embedded in local zoning codes and may address several questions: How much parking is required to serve specific land uses, such as office, retail, or apartment complexes? Where on the site should the parking go? How can parking facilities be made to fit in with their neighbors and preserve the pedestrian-friendliness of local streets? Should parking lots be landscaped? Can they be shared by property owners and businesses? Here we discuss parking issues that local policies and codes can, and arguably should, address.

Amount of Parking

Most zoning codes set minimum parking requirements. Because many cities lack the money and staff to conduct their own surveys on local parking needs, they often copy standards from other cities or rely on generic recommendations contained in the Institute of Transportation Engineers' *Parking Generation* manual. In recent years, however, this manual has drawn criticism for advocating standards that are outdated, excessive, inappropriate for mixed-

use areas, contrary to multi-modal transportation goals, or all of the above. The ITE recommendations are based on parking needs during peak demand periods at a few isolated, single-use developments in low-density settings where transit is unavailable and the potential for bicycling and walking is overlooked. The assumption is that every trip, no matter how short, will occur by car. As Mark Hinshaw writes in *True Urbanism*, the *Parking Generation* manual is a "useful guide for building auto-dependent communities, but not for mixed-use and walkable communities."

When set too high, minimum parking requirements can create several problems. They promote the consumption of land that could otherwise support more productive activities. They skew travel-mode choices in favor of driving and away from such "carbon-lite" modes as walking, bicycling, carpooling, or transit. They degrade the pedestrian environment

"At five spaces per 1,000 square feet — a typical minimum requirement for a suburban office — parking consumes nearly two-thirds of the developed area."

- Jeffrey Tumlin, Sustainable Transportation Planning: Tools for Creating Vibrant, Healthy, and Resilient Communities

in local business districts. They force developers to devote large sums of money on parking – costs that get passed along as higher commercial rents and more expensive housing. And they often undercut policy goals set forth in local comprehensive plans.

Inadequate parking standards, on the other hand, may discourage people from patronizing business districts, engender fear among local entrepreneurs that sales will suffer, and cause parking problems to spill over into residential neighborhoods. If people find parking too big a hassle, businesses worry that they will shop elsewhere.

Parking standards should be based on sound, preferably local, data, not on generic standards, and should be aligned with local parking needs and community goals. Instead of copying ordinances from other cities or relying on ITE's *Parking Generation*, communities can conduct their own parking analyses. Ways to do this are explained in Sections 7 and 10, which address data collection and right-sizing parking.

Parking Minimums and Maximums
Many cities have reduced their minimum parking requirements or gotten rid of them altogether, especially in downtowns and mixed-use areas. Still other cities, concerned about the influence of parking on travel behavior – and about the deadening visual impact of parking lots – have imposed caps on the number of spaces allowed. Ways to determine

appropriate parking ratios for your community are discussed in Chapter 11 on Parking Standards.

Access to Transit Stops

Large or poorly designed parking lots can act as a barrier for people walking to or from transit stops. To address this issue, the Oregon Transportation Planning Rule (TPR) requires larger cities (over 25,000) with transit service to adopt code provisions that facilitate more convenient access to transit. For example:

• New retail, office, and institutional buildings near major transit stops must be located within 20 feet of the stop.

• New buildings near transit stops must provide reasonably direct connections (e.g., separated walkways through parking lots) between building entrances and transit stops.

• Codes must allow for redevelopment of unneeded parking for transit-oriented uses, such as bus shelters or transit-oriented development.

This TPR requirement is generally known as the "building orientation" requirement. For details on TPR requirements, see OAR 660-012-0045(4)(a)-(e)

Historic Areas

Minimum parking ratios are especially difficult for historic buildings to meet. Historic property owners must often demolish adjoining structures to accommodate required parking, thereby degrading the pedestrian environment and visual cohesiveness of the historic area.

In some cities, buildings in downtown historic districts are exempted altogether from local parking requirements. The rationale: private market forces already ensure an adequate parking supply. Examples of such cities include Fairfax City and Staunton, Virginia, and Philadelphia. Buildings constructed before 1974 are similarly exempted in Denver's historic Lower Downtown area. To guard against demolitions for surface parking lots, historic buildings in this area may not be demolished without the approval of a design review board and a specific plan for a new replacement structure.

Parking Location

Placement of the parking matters greatly. As Philip Langdon writes in *A Better Place to Live,* "Even relatively small gaps between buildings can kill people's willingness to walk farther and cause retail establishments to lose business." Many codes encourage auto-oriented development by allowing large parking lots in front of buildings set far back from streets and sidewalks. But cities that want to maintain vibrant, pedestrian-friendly streets require parking to be located in back of, or to the side of, the

buildings it serves. Such arrangements yield a more animated streetscape and avoid the creation of dead spaces that make walking dull and unpleasant. Parking lots in front of buildings are prohibited in Bellevue, Washington.

Credits for On-Street Parking

On-street parking, especially in downtowns, is prized for several reasons. It gives customers easy access to local stores and provides a buffer between speeding traffic and the sidewalks, thereby making pedestrians feel safer and more comfortable as they walk. And by slowing traffic, on-street parking enables motorists to see up-close what a business district has to offer.

To reduce development costs and the need to pave over more land for parking, some city codes allow property owners to credit on-street parking spaces toward the number of off-street spaces required. The Oregon Transportation Planning Rule explicitly sanctions this idea.

Where on-street parking is already in place, it might be scaled back at intersections to install curb extensions that help pedestrians cross roads, and improve sight distance for both pedestrians and motorists.

Landscaped Parking Lots

Many cities require that parking be landscaped to soften the harsh visual and heat-island effects of surface parking lots and to preserve pedestrian-friendly environments. Codes often call for shrubs, plantings or decorative walls along parking lot perimeters (to screen views of cars) as well as shade trees throughout the lot. The landscaping and trees enhance an area's attractiveness, which can benefit nearby businesses and enhance surrounding property values. Oregon's Transportation Planning Rule requires parking lots over three acres to provide such features as street trees and planting strips. Landscaping should not impede pedestrian travel between adjoining properties, however.

"All parking lots should be planted with sufficient trees so that within 10 years 70 percent of the surface area of the lot is shaded."

- Peter Calthorpe, *The Next American Metropolis*

Fairfax City, Virginia, amended its code to allow developers to meet landscaping requirements by retaining tall, mature trees already on the site instead of installing small planter islands with little bushes and saplings every twelve parking spaces. Ordinances requiring such islands at regular intervals sometimes make it hard to preserve existing trees.

Shared Parking

It's recognized that the demand for parking often shifts during the day as people go to work, shop, and dine in the evening. By amending codes to allow

neighboring (or nearby) businesses and institutions to share parking, cities can improve their parking system's overall efficiency and allow the same demand to be satisfied by fewer spaces. Shared parking arrangements enable parking spaces to serve more than one land use.

Cannon Beach's code allows shared parking, but to ensure that shared-parking agreements between property owners are enforceable, the city requires that such agreements be written and accompanied by parking easements. Easements cannot be changed without the city's knowledge. Many cities allow developers and builders to contribute, through the payment of in-lieu fees, to the construction of strategically located municipal parking garages available to anyone. This offers an attractive alternative to requiring each and every property owner to provide off-street parking to serve his or her building.

Parking Garage Design

Like surface parking lots, parking garages lined with blank walls can also deaden the street, degrade the pedestrian environment and disrupt the continuity of business districts. Many communities have demanded that structures be designed to better fit the surrounding environment, and local codes often seek to temper the negative effects of blank walls often found on parking garages.

Columbus, Ohio's, code, for example, requires that the height, mass, building materials and detailing of parking garages be compatible with those of surrounding structures and that well-defined, dedicated pedestrian entrances be provided. "When feasible," the code says, "parking structures should be wrapped on their exterior with other [land] uses [such as retail shops] to conceal the parking structure and create an active streetscape... on commercial corridors." These "wrapping structures" are sometimes called "liner buildings" and help to maintain the street's vibrancy.

Other treatments for, or alternatives to, blank garage walls include decorative grillwork, murals, other art work or plantings. Charleston, South Carolina, requires garage proposals to undergo design or site plan review to improve their appearance and compatibility with surrounding structures, especially

Can you spot the parking garage?
Charleston, South Carolina

historic buildings. Louisville, Kentucky's policy says that parking garages should be "designed to promote comfort and safety for pedestrians on the street and the sidewalk." Garages there must relate well to their neighbors and meet the same guidelines applied to new buildings generally.

TRANSPORTATION PLANNING RULE

Oregon's <u>Transportation Planning Rule</u> requires that jurisdictions in a Metropolitan Planning Organization (MPO) area adopt a Transportation System Plan that includes a parking plan. (See OAR 660-012-0020 (2) (g). These plans must lead to a reduction in the amount of parking while encouraging the use of alternative modes of transportation – e.g., walking, cycling, carpooling and using transit.

To meet the TPR, a parking management plan must either reduce the total number of parking spaces by 10% per capita or adopt a series of parking management measures, including:

✓ Lowering minimum requirements for off-street parking

✓ Setting maximum parking requirements in downtowns, community centers, and transit-oriented developments

✓ Allowing on-street parking and shared parking to count toward meeting parking requirements

See OAR 660-012-0045(5)(c))

PARKING IN THE PORTLAND METRO REGION

In the Portland Metro area, the Regional Transportation Functional Plan requires that city and county parking regulations meet certain standards. In addition, these jurisdictions must adopt parking policies and management plans for 2040 Centers and Station Communities. The plans must include an inventory of parking supply and usage as well as an evaluation of bicycle parking needs. The policies must consider such strategies as: exemptions from minimum parking standards, parking districts, shared (and/or) structured parking, bicycle parking, timed parking, differentiation between employee parking and parking for customers, visitors, and patients, real-time parking information, priced parking, and parking enforcement.

See Title 4, Section 3.08.410, A-I, of Metro's Regional Transportation Functional Plan at http://library/oregonmetro.gov/files/chap308.pdf

PARKING IN MULTI-MODAL MIXED USE AREAS

In 2012, the Oregon Transportation Planning Rule was amended to encourage the creation of Multi-Modal Mixed-Use Areas (MMAs). The impetus for this amendment came from local officials who believed that the TPR, together with the Oregon Highway Plan (OHP), forced communities to apply auto-centric mobility standards – e.g., level-of-service standards or vehicle-to-capacity ratios – that undermined efforts to maintain (or create) pedestrian-friendly environments in downtowns and other mixed-use areas. The goal of the revised TPR is to encourage walking, bicycling, and the use of transit through mixed-use, higher-density development and multi-modal transportation systems. Within designated MMAs, local governments need not consider motor vehicle congestion standards when considering plan or zone changes.

In MMAs, local codes must either not require off-street parking or must allow fewer parking spaces than required outside the MMA. MMAs must also give developers more flexibility in meeting minimum parking requirements, whether through shared parking arrangements, long-term leased parking, or permission to count on-street spaces toward parking minimums.

Examples of local code treatments of parking issues follow.

Bellevue, Washington (Shared Use)

The City of Bellevue Comprehensive Plan Policy encourages "shared use" parking agreements between property developments. The policy was created to facilitate more efficient use of the downtown's parking supply, maximize underutilized stalls, and reduce the amount of total parking built over time. A 2010 parking occupancy study found that peak-hour occupancy in off-street facilities was just 62%, meaning hundreds of off-street stalls sat empty—fertile ground for shared use opportunities.[l] However, Bellevue's parking development code in many instances restricts the use of off-street parking to "accessory uses."

Simply defined, accessory uses limit the use of parking at a specific site to customers of the site itself; sharing with "non-accessory users" is not allowed by code. The policy is to share parking, yet the code does not allow it.[m] Several Oregon cities have experienced similar disconnects on this specific issue and have moved to resolve them. Examples include Lake Oswego and Portland (e.g., the NW Parking Plan District).

Milwaukie, Oregon (Mixed Use)

Many cities maintain minimum parking standards for specific land uses, leading to parking codes that are both cumbersome and counterproductive. These requirements are often based on national parking standard guidance and applied to specific land uses within a new development project, which naturally leads to over-building and inefficiencies.

For instance, the City of Milwaukie had 59 separate parking minimums for 59 different uses, with requirements ranging from zero to 15 stalls per 1,000 square feet! In 2008, Milwaukie collapsed its downtown parking code to five land use types: residential (ownership), residential (rental), commercial/retail, institutional, and freestanding (single use).[n] Through a downtown parking utilization study, the City calculated a parking demand rate that was representative of all land uses in the downtown operating as a mixed-use environment. In other words, Milwaukie began treating its downtown as a single large development site, whose peak hour was representative of the average demand for any use located within the downtown. This simplified local development standards, which will result in more efficient parking in the future.

Spokane, Washington (Historic Buildings)

Prior to 2005, a number of older and historic buildings were razed in downtown Spokane to make way for surface parking lots. Large areas of the downtown were threatened because, for some property owners, tearing a building down to create a surface lot made more financial sense than maintaining and upgrading older buildings. While the City had a policy that encouraged the preservation of historic buildings, its parking code allowed them to be replaced with stand-alone parking lots.

After completing a parking study in 2006, the City refined its policy and code to prohibit stand-alone lots. The city encourages new parking facilities to be in structures, and if surface lots are created, they must now be accompanied by buildings. Since that time, many older buildings have either been renovated or sold to new owners. Louis Meuler, of the City of Spokane, notes that the study's documentation of significant parking surpluses was instrumental in generating support from City Council and private sector stakeholders for these code changes. The argument that there wasn't enough parking downtown and that surface lots were needed to cover the deficit no longer held water.

Gresham, Oregon (Mode Split)

In its Comprehensive Plan, the City of Gresham adopted mode split goals of 50% drive-alone trips and 50% alternative mode access for its downtown. "Mode split" refers to the percentage of trips made via a particular mode, whether single-occupant vehicle, transit, biking, walking, or ridesharing. Gresham's policy goals were established to leverage local and regional investments in transit and light rail, foster a more compact urban form in its downtown, contribute to sustainability, and reduce development costs as parking transitioned from surface to structured. However, parking development requirements in the Gresham code generally set minimum levels that would result in drive-alone rates well in excess of 50%. To address this disconnect, the City engaged in a public process to evaluate new parking standards that related maximum parking requirements to mode split goals. To meet the desired goals, the existing parking maximum of approximately 3.4 stalls per 1,000 square feet, which facilitates an 85% drive-alone rate, would need to be reduced to 2.0 stalls per 1,000 square feet, which facilitates the 50% drive-alone rate that the vision for the area targets. Gresham continues to work toward strategies that balance its transportation and land use vision with its code.

10. RIGHT-SIZED PARKING

Historically, parking policy and code development in most cities focused extensively on the uniform provision of parking in order to avoid conflicts between land owners or to remain consistent with "peer cities." In *The High Cost of Free Parking*, Donald Shoup notes that communities relied heavily on general guidance documents such as the *Parking Generation Manual* produced by the Institute of Transportation Engineers (ITE). This manual observes peak parking occupancies at different sites to produce a parking generation rate for that type of land use. Unfortunately, ITE parking generation rates are based on limited samples and, most often, from suburban locations where driving rates and peak-hour parking are much higher than in mixed-use business districts.[o] Further exacerbating the problem, planners have often required parking capacity be sized to accommodate the 30th busiest hour for a particular land use. This amounts to planning for the highest demand that might theoretically be experienced—akin to building for Christmas.[p]

This approach typically assumes that all trips will be made by motor vehicle and that demand is consistent throughout the year. This over-states parking demand in mixed-use developments and gives little consideration to the urban context or a site's accessibility by other modes. Studies routinely find that where minimum parking requirements are in place, they often require more parking than actual demand warrants. This is costly, wastes land, and the impacts are long-term.

Even more importantly, parking standards in many cities relate parking requirements specifically to individual land uses, as opposed to considering all of the land uses in an area as a whole. However, examining the different land uses collectively allows managers to adjust parking rules to account for such factors as:

♦ Different peak hours of use by type of business.

♦ Flucuations in the number of employees absent from work due to illness, vacations, and business travel. This averages about 15% of the workforce.

♦ Use of local data to identify peak hours versus national standards.

♦ The percentage of trips using transportation modes other than a motor vehicle.

When considered from an economic perspective, "right-sized" parking may substantially reduce development costs, saving hundreds of thousands to millions of dollars (see Table 6, page 42).

The concept of right-sized parking is not to force a standard that would under-supply parking. Rather, it is to account for variations in local travel patterns and transportation alternatives and then to match land use development requirements to these factors.

Table 5 and Figure 4, representing the parking requirements of an actual mid-sized Oregon city, illustrate this concept.

As Table 5 shows, the redevelopment of a park-and-ride lot included a mix of land uses ranging from retail to residential (Column A). The amount of area for each use is listed in Column B. The goal of the project was to provide parking to meet the uses of the new development as well as replace the lost park-and-ride capacity. Using ITE guidance, demand for parking was calculated for each land use (Column C) and translated into stall demand (Column D). According to ITE, a total of 631 stalls would be needed to replace the park-and-ride and support the new land uses.

Based on the development code of the sample city, parking was also calculated for each use within the project (Column E), resulting in a total City parking requirement of 708 stalls (Column F).

> *"Right-sizing enables your community to align its parking standards with its goals. If you apply the ITE formula to your downtown – you'll almost always overbuild."*
>
> *Brett Wood, P.E., Kimley-Horn & Associates*

Table 5: Comparison of Parking Requirements from a Sample City[2]

A	B	C	D	E	F
Development Components	Square Footage No. of Units	ITE Modeled Parking Demand Ratio	Number of Stalls as Stand-Alone Uses	Code Minimum	Stall Total per Code Minimum
Retail	15,000 SF	3.0/1,000 SF	45	2.55/1,000 SF	38
Restaurant	7,000 SF	8.0/1,000 SF	56	5.00/ 1,000 SF	40
Hotel	150 rooms	0.8/room	120	0.5/room	75
Residential	290 units	1.0/unit	290	1.5/ unit	435
Park-and-Ride			120		120
"PEAK DEMAND" – Individual Uses			631		708

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[2] The project sample presented here is based on an actual mixed-use project that was in planning and proforma development in 2012. Rick Williams Consulting helped establish a right-sizing model for use by the developer during negotiations with the city to reduce parking requirements for the project.

As Figure 4 demonstrates, *actual occupancy counts* taken for similar land uses near the development site and at the park-and-ride show that demand fluctuates during a typical day for each of the land uses within the project. If local demand factors are put into play, the sample project's actual peak-hour demand for parking is 427 stalls at 8:00 PM. The difference between actual parking demand and ITE rates or current City code standards will result in an excess of 204 - 281 stalls for this project. The cost of providing the required level of parking threatened the feasibility of this project. This is not an isolated example.

Figure 4: Actual Parking Demand by Land Use
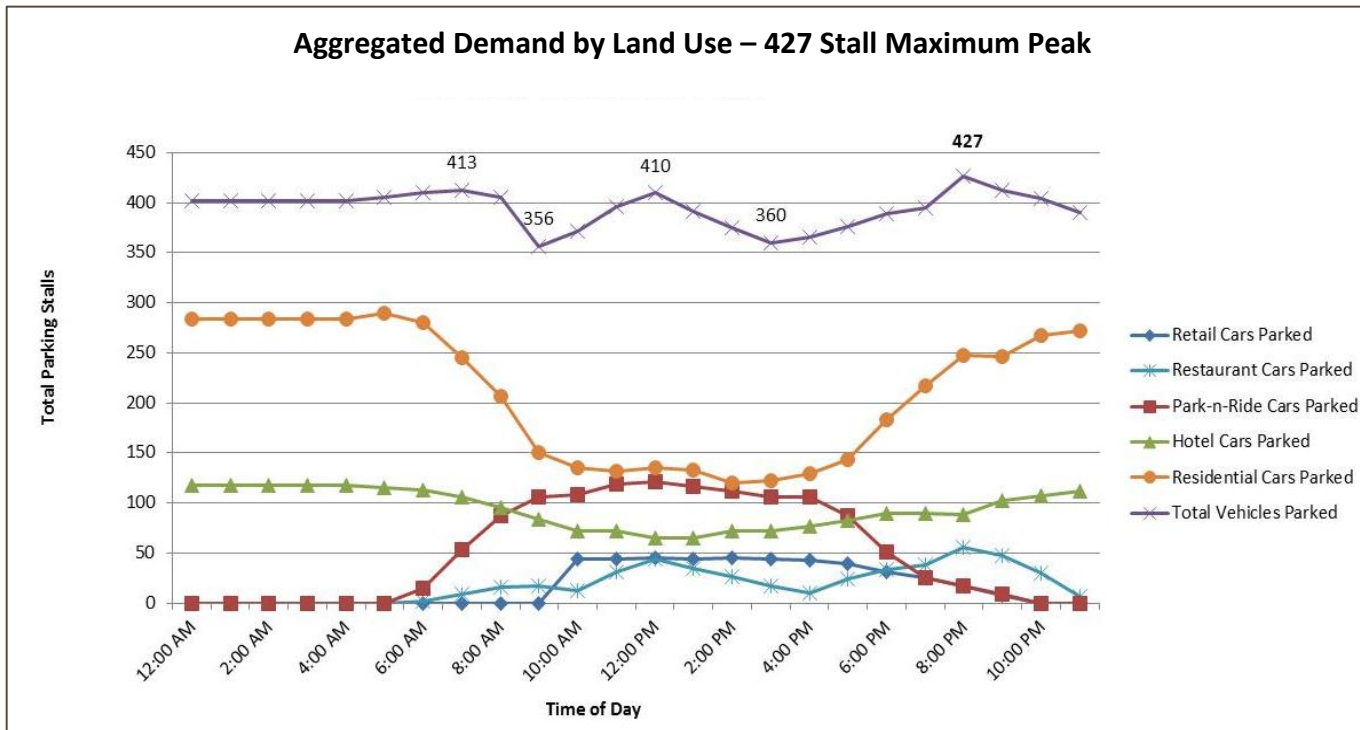
ITE or city code would require 631 or 708, respectively, for the same project (minimum parking standard for each individual use).

Table 6 below summarizes actual parking occupancy and demand studies conducted over the past five years across a number of cities. None of these projects were right-sized, and parking over-build ranged from a low of 23% to a high of 124%. Many of these cities provided this excessive parking in surface parking lots – an incredibly inefficient use of land that could have been put to better uses.

A 2008 study in Redmond, Washington estimated that, if current standards were continued, there would be nearly three square feet of parking for every one square foot of building in the downtown! The city has since begun to address this problem through new right-sized standards.

Right-sized parking standards are also supported by trends indicating declines in auto ownership and the number of licensed drivers, especially among young workers now entering the workforce.[q]

Table 6: Summary of Built Supply to Actual Mixed-Use Demand – Sample Cities

City	Actual Built Supply/ 1000 SF	Actual Demand/ 1,000 SF[3]	Gap between parking built and actual parking demand	Percentage of overbuild to actual demand	Avg. Additional Cost per 50,000 gsf (surface parking)[4]	Avg. Additional Cost per 50,000 gsf (garage parking)[5]
Beaverton, OR	4.15	1.85	2.30	124%	$805K	$3.68 mil.
Bend, OR	3.0	1.90	1.10	58%	$385K	$1.8 mil.
Corvallis, OR	2.0	1.50	0.50	33%	$175K	$800K
Milwaukie, OR	3.00	2.14	0.86	40%	$301K	$1.38 mil.
Oregon City, OR	2.00	1.43	0.57	40%	$200K	$912K
Redmond, OR	2.62	1.54	1.08	70%	$378K	$1.73 mil.
Salem, OR	3.15	2.04	1.11	54%	$385K	$1.77 mil.
Springfield, OR	1.88	1.11	0.78	70%	$273K	$1.25 mil.

[3] Actual demand is the relationship of documented number of vehicles parked in the peak hour to actual occupied building area.

[4] Surface parking assumed at $7,000 per stall (which can vary by area depending on land costs).

[5] Structure parking assumed at $32,000 per stall (which can vary by area depending on land costs and how land is distributed/financed within a project).

Similarly, parking costs, automobile travel times, and the availability of transit influence parking demand and vary by city, thus reinforcing the need to tailor parking standards to local conditions.[r,s,t] Parking policies and codes that are "one-size-fits-all" may appear simple, but as the examples above demonstrate, they can have adverse consequences. Over-building can cause several problems: It can lead to inefficient land uses, where parking can dominate the environment and inhibit alternative transportation. It can increase development costs, thereby discouraging new businesses from locating in these areas. And it can undercut efforts to revitalize

Imbalanced parking requirements results in more land for cars than for people. Silicon Valley, California (Source: King County Metro/Shoup)

Main Streets and create affordable, livable, and economically viable communities. Keep in mind that a parking stall does not generate a single trip; it's the destination. Some competition for parking is a signal of a healthy economy. If you don't have a parking problem, you have a problem with your downtown! The focus should be on cultivating great destinations and creating a parking plan that supports that vision.

As cities grow, policies and codes that do not take into account local characteristics and demographics will have adverse impacts on urban form, vitality, efficiency, and cost. The concept of right-sized parking is not to force a standard that would under-supply parking. Rather, it is to account for variations in local travel patterns and transportation alternatives and then to match land use development requirements to these factors.

If you don't have a parking problem, you have a problem with your downtown. A parking stall doesn't generate a single trip; it's the destination that draws people.

RIGHT SIZING PARKING IN A NUTSHELL

1. *Get Your Data*: Collect your parking data regularly and keep it current.

2. *Fix Your Regulations*: Match your standards to your community vision and goals.

3. *Optimize Existing Resources*: Use what is already built through shared parking, pricing, Transportation Demand Management (TDM, see page 56), and investments in biking, walking, and transit.

4. *Communicate*: Make sure people know where parking is available, the time stay allowed, and cost.

5. *Calibrate*: Periodically check the system to measure performance and implement strategies.

11. PARKING STANDARDS

The parking codes in many cities lead to over-building. Examples from the previous section indicate that in some cases parking is over-built by as much as 124%. Recent studies in King County, Washington sampled over 200 residential and commercial mixed-use sites and found an average over-build of 33%. Parking demand is often over-estimated due to the use of outdated or inaccurate market assumptions – or to arbitrary methodologies used to set minimum parking requirements.

Over-building parking, particularly on surface lots, can deaden downtowns and be costly and inefficient for new developments working with constrained sites and varying market demands. How then to determine

what your minimum parking requirements should be, and whether you need a parking maximum?

> *Lowering a minimum does not mean that parking cannot be built, but that developers have the freedom to adapt parking needs to the market without restrictive codes.*

Begin with data collected through the methodology presented in the Data Collection section, and follow the three steps outlined below. Examples are drawn from an actual exercise conducted for the City of Hillsboro, Oregon in 2010.

STEP 1: Peak Hour Occupancy

If you've completed a parking occupancy study (i.e., counted the number of cars parked in the peak hour), you can establish a peak parking occupancy metric. Table 7 provides the means for extrapolating peak-hour data to a combined total for both on- and off-street supply. In Hillsboro, the data effort included a survey of 100% of the on-street stalls (column A, row 1) and a 75% sample of off-street stalls (column A, row 2). The peak hour occupancy (51.6%) from the

off-street sample was applied to the entire off-street supply (column A, row 3). The peak hour rate (51.6%) was multiplied by the number of total (off-stree) stalls to determine the total occupied stalls, 3,406 (column D, row 3). That number was combined with the on-street data to represent the entire parking supply. The final peak occupancy was 51.9%, (column C, row 4), or 3,904 vehicles parked at the peak (column D, row 4).

Table 7: Extrapolated Peak Hour Occupancy – Combined Supply

	Supply	# of Stalls	Peak Occupancy	Stalls Occupied	Stalls Available (empty)
	A	**B**	**C**	**D**	**E**
	On-Street Supply				
1	On-street supply (100% sample)	924	53.9%	498	426
	Off-Street Supply				
2	Off-street supply surveyed (75% sample)	4,951	51.6%	2,555	2,396
3	Extrapolated to all off-street stalls (100%)	6,602	51.6%	3,406	3,196
	Combined On and Off-Street Supply				
4	*Extrapolated to Total Supply*	7,526	51.9%	3,904	3,622

STEP 2: Occupied Building Area (Square Footage of Occupied Buildings)

For this step you'll need to quantify the total square footage of built land use in your downtown parking study zone. Hillsboro calculated its building area using county tax assessor records and physical measurement of buildings for which records were unavailable. As shown in Table 8, the total building area in the study zone was just over 2.5 million square feet (column A). Actual occupied building area was estimated using data from the Chamber of Commerce, Building Owners and Managers Association (BOMA) publications, and other real estate resources. Vacancies within the study zone were determined to be about 5% (column B), which yielded an *occupied building area* of about 2.4 million square feet (column C).

STEP 3: Built And Estimated Ratios Of Parking Demand

With occupancy information from Step 1 and land use information from Step 2, you can calculate a *ratio of built parking* spaces and a *ratio of parking demand* for your downtown or study area.

Ratio of Built Parking. Continuing in Table 8, divide the total parking supply (column D) by the total building square footage (column A) divided by 1,000 [total parking stalls/(gross square footage/1000)] to determine the ratio of built parking. This results in a ratio of 3.00 stalls per 1,000 square feet of building area (column E).

Ratio of Parking Demand. Divide the number of occupied stalls in the peak hour (column F) by the total occupied building area (column C) divided by 1,000 to determine the *ratio of parking demand* [Occupied stalls in peak hour/(occupied building area/1000)]. This results in a demand for 1.64 stalls per 1,000 square feet of land use (column G). Use this number to evaluate your current parking standards. If your city's minimum parking requirements (e.g., 2.0 stalls/1,000 SF) exceeds this demand ratio (1.64), consider revising your *minimium* to a number <u>less</u> than the observed *ratio of parking demand*, in this case, something less than 1.64 stalls per 1,000 square feet.

Table 8: Built and Estimated Ratios of Parking

A	B	C	D	E	F	G	H	I
Gross Square Footage (Built)	Estimated Vacancy Rate	Gross Square Footage (Occupied)	Total Stalls in Study Zone	*Built Ratio of Parking* (GSF)	Total Stalls Parked in Peak Hour	Ratio of Parking Demand/ 1,000 SF	Parking "Demand" w/ 15% buffer	ITE "Demand"[6]
2,510,941 SF	5.0%	2,385,394 SF	7,526	3.00/ 1,000 SF	3,904	1.64/ 1,000 SF	1.89/ 1,000 SF	2.84 – 4.00/ 1,000 SF[7]

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[6] This demand ranges is based on ITE tables for cities of Hillsboro's size.

[7] As discussed earlier in the *Primer,* ITE does not provide parking ratios based on mixed use environments. Suggested "parking demand ratios" are provided for individual uses, which (a) generally overstates actual demand, (b) does not account for the elasticity in peak demand periods between adjacent uses and (c) does not allow for efficiencies that the variety in peak demand between uses contributes to "sharing" and blending of such supplies in a mixed use downtown environment.

Ratio of Parking Demand, Plus 15% Buffer. Assuming that parking built at a ratio of 1.64 stalls per 1,000 square feet would be fully utilized in the peak hour (based on the previous demand ratio calculation), Table 8 also provides a ratio of parking demand inflated by 15%. The buffer is based on the 85% Rule, which maintains that when at least 15% of stalls are available, people become less anxious about finding a parking stall. Therefore, the *ratio of parking demand* plus 15% equates to 1.89 stalls per 1,000 square feet of land use for this area of Hillsboro (column H).

The table also provides ITE demand ratios for a variety of traditional downtown uses (column I). The ratios range from 2.84 to 4.0 stalls per 1,000 square feet, numbers that significantly exceed parking demand (even with a buffer).

Based on the findings above, Hillsboro should ensure that its parking minimums are less than the observed parking demand, which is between 1.64 and 1.89. Lower parking minimums demonstrate that your city is willing to allow market conditions to establish demand for parking. Also, <u>lowering a minimum does *not* mean that parking above the minimum cannot or will not be built. Rather developers are given leeway to adapt parking needs to the area without restrictive code processes.</u> Parking minimums that exceed demonstrated demand can degrade the attractiveness of your downtown and make your city

less competitive with peer cities or adjacent development areas.

Often codes require parking for specific land uses, but a more sensible approach is to first understand actual observed parking demand (a blended rate) for all uses in a defined area (i.e., downtown, business district, etc.) as described above. In this regard, you would be treating the downtown as a giant mixed use district. This concept promotes the notion of shared parking, upholding the urban form and most importantly preventing overbuilt parking.

Using locally derived ratios of parking demand also allows cities to consider whether or not maximum ratios need to be imposed or, as in Hillsboro (where maximums are in place), rethought. When considering parking maximums, be sensitive not only to parking demand, but to policy goals for transit, biking, walking, downtown residential living, and urban form. The cities of Portland, Beaverton, Gresham, and Hillsboro have established specific targets for drive-alone vehicles, and have made efforts to calibrate their parking standards to those goals.[u] These efforts are supported by infrastructure investments and programs for transit, biking, walking, ridesharing, and communications and education. In every case there are policies that underlie the standard, and the standard supports the policy.

Creating a more direct policy relationship between a maximum standard and its intended purpose will distinguish a city as having a parking code that is strategic and supportive of clear policy goals.

12. PRICING – TO CHARGE OR NOT TO CHARGE

In cities or districts that have long favored free parking, the decision to impose parking fees is a significant one. In areas that already charge for parking, the decision to raise rates may be a bit easier, but concerns about public response, competition from other areas, and ease of management remain. Elements of parking management discussed in this document, particularly Guiding Principles, Data Collection, and the 85% Rule, can help you evaluate pricing as it relates to your specific circumstances. Each element should be informed by and developed through a transparent public stakeholder process.

Understand that free parking does not directly stimulate greater interest in your business districts. As mentioned in the introduction, people don't travel to a downtown or business district just to park. They come to see friends, dine, shop, or simply to enjoy the excitement and ambiance of a destination. If the *experience* is valuable, they will pay for parking or come by transit, bicycle, or foot.

That said, pricing is not the only strategy to ensure an adequate number of parking spaces. Properly calibrated time limits, effective and reasonable enforcement, and good directions to available parking spaces can maximize use of limited parking without pricing. The decision to charge for parking should be made in the context of intended outcomes. If outcomes are not being achieved, or cannot be achieved through other means, then pricing becomes an option. Consider the following questions:

♦ Can customers find parking within easy walking distance of their destination?

♦ Are businesses benefiting in foot traffic and sales because parking turns over at an effective rate?

♦ Is there a continuing conflict between employees and visitors for use of on-street spaces?

♦ Can residents save on rent if parking is unbundled from leases?

♦ Is there a need or desire to expand parking supply?

♦ Can transportation options be enhanced in order to improve access?

♦ Are there programs and services that would better support visitor and business growth (marketing, streetscape improvements, wayfinding, etc.)?

Two Case Studies (Pasadena & Lloyd District)

Pasadena, California

A well-known example of a community that transitioned from free to paid parking is Old Pasadena, California. Until 1993, this historic downtown had free on-street parking. When City staff proposed installing meters, merchants objected, fearing it would drive customers away. An agreement was reached to install meters as part of a "parking benefit district," with all revenue being spent on public investments in the meter district. Key elements of the plan included:

♦ A coordinated effort with businesses to create boundaries for the Old Pasadena Parking Meter Zone (PMZ).

♦ Installation of parking meters to manage on-street supply and establishment of a $1.00 hourly rate.

♦ An assurance that all parking revenue would stay in the Old Pasadena District.

♦ Establishment of an Old Pasadena PMZ Advisory Board made up of businesses and property owners. Members provide input on parking policies and spending priorities for the area's meter revenues.

Old Pasadena's successful paid-parking program has funded new street furniture, lighting, trees, and maintenance; enhanced police patrols; improved sidewalks; and marketing efforts, thereby supporting business and visitor growth. Since implementation of the program, business sales in Old Pasadena have risen faster than in competing shopping districts with cheaper or free parking.

Lloyd District, Portland, Oregon

In 1997, on-street parking in Portland's Lloyd District was monopolized by both employees in the district and downtown workers who would park and take light rail across the river. On a typical weekday, on-street parking was completely taken by 9:00 AM. To address this problem, city staff, the local transit agency (TriMet), and area stakeholders developed the *Lloyd District Partnership Plan* and established the following strategies:

- A parking meter district with two- and five-hour meters. Two-hour meters were placed in primary customer locations and five-hour meters in lower occupancy areas.

- A revenue sharing plan that returns 51% of the parking fee revenue to the district through the Lloyd Transportation Management Association (TMA), a private non-profit business association representing Lloyd businesses, property owners, the City, and TriMet.

- A Meter Revenue Allocation Committee (MRAC) that annually prioritizes and coordinates implementation of projects funded by meter revenue.

- Annual parking studies (occupancy and turnover) for use in advising the City and district on operational issues and rates.

- Agreements with TriMet for enhanced service and new fare products sold to businesses through the Lloyd TMA.

- A Lloyd District Business Improvement District (BID) to provide matching funds for transportation investments, as well as public safety and economic development programs.

Today, on-street parking is not an issue in the Lloyd District. Meter revenue has been invested in pedestrian improvements, public art, bicycle infrastructure, lighting, education and outreach programs, and district marketing. The Lloyd District maintains some of the highest office and retail occupancies in the Portland metropolitan area and has seen steady growth in employment and visitor trips, even during times of economic recession. The actual ratio of new parking built has dropped from an average of 3.5 stalls per 1,000 square feet to 1.6 stalls per 1,000 square feet, a significant savings to development. At the same time, transit use has increased by 46% and bicycle commuting has risen from 1% to nearly 6%. Having taken these parking management measures, Lloyd District officials estimate that they spared 30 - 40 acres of land from surface lot development.

These two case studies suggest that keeping decision-making and goal-setting under local control and connecting priced parking directly to additional public services can help a pricing strategy succeed. As parking consultants Nelson/Nygaard note, "While pricing cannot make more spaces, it can make existing spaces more productive by promoting turnover and making parking spaces more available."[v]

*Lloyd District,
Portland, Oregon*

Let the Data Decide

The decision to charge for on-street parking is not an easy one for any community. Businesses usually fear that parking fees will discourage people from coming to the area and that sales will therefore suffer. While this is a risk, it must be balanced against the risks of unmanaged parking, which may also discourage potential customers from coming to an area because convenient parking isn't readily available. People may have to either drive around to find a parking space or park a long distance from their destination. Given these 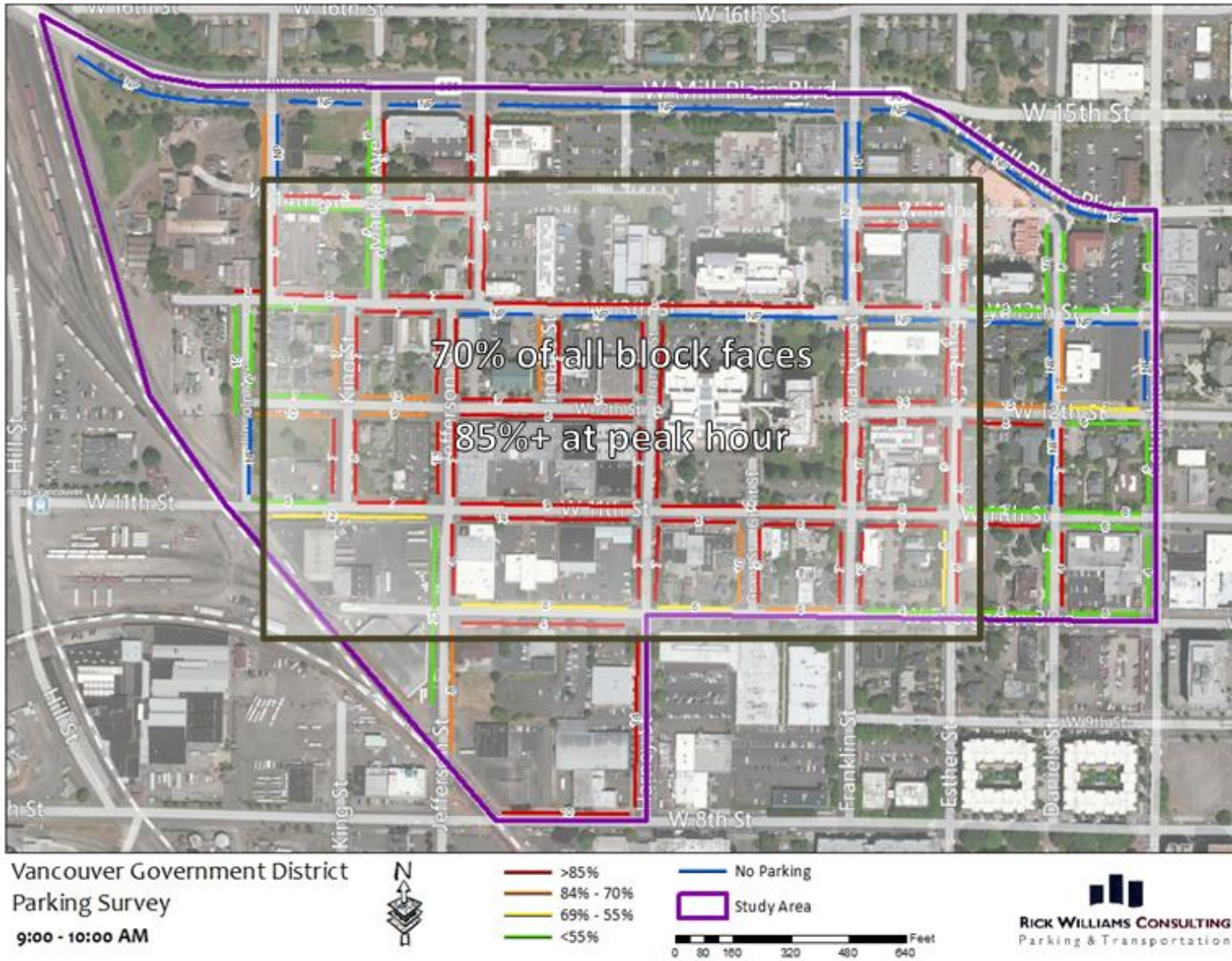considerations, the decision to price parking or to raise rates should be grounded in a data-driven program that minimizes the potential risks. The best tool for lowering risk is the 85% Rule: if your parking supply is operating at greater than 85% occupancy, there is a true demand for those stalls and people are likely willing to pay for them. The higher the occupancy—and thus the greater the demand—the lower the risk associated with charging a fee for use. The lower the occupancy, the higher the risk that pricing or increasing rates will discourage people from patronizing an area.

Vancouver, Washington

Figure 5 illustrates the use of sound parking data to make low-risk decisions. The area in question is a business enclave just northwest of the central business district in Vancouver, Washington. On-street parking in the study zone is primarily free, as opposed to paid parking in the Central Business District. As the figure shows, the area has significant parking occupancies: on nearly three-quarters of all blocks in the study area, more than 85% of the parking spaces are occupied. Discussions with area businesses and citizens led to a recommendation to replace the free parking with paid parking, as the stakeholders saw the value of pricing as a means to create more turnover and to move parkers into less-occupied areas and underutilized off-street parking. The data convinced them that the risk in moving to paid parking was minimal, particularly when weighed against the benefits.

Figure 5: Let the Data Decide – Vancouver, Washington

Vancouver Government District
Parking Survey
9:00 - 10:00 AM

▬ >85%	▬ No Parking	
▬ 84% - 70%	☐ Study Area	
▬ 69% - 55%		
▬ <55%		

RICK WILLIAMS CONSULTING
Parking & Transportation

Pricing Strategies

Performance-Based Parking Pricing

Performance-based pricing uses occupancy and turnover data to set rates and influence demand patterns to achieve a clearly stated policy objective. For some cities, the ability to move beyond a single hourly rate, which is common, will be determined by the technology needed to implement varied pricing strategies. Performance-based pricing formats include:

♦ **Sub-area pricing.** Where there are definable areas of high and low parking demand, tailor rates and time limits to smaller sub-areas to address differences in parking patterns.

♦ **Time-of-day pricing.** Where occupancy patterns vary over the course of the day, create different rates for different periods.

♦ **Seasonal adjustments.** Where demand differs based on the time of year, implement higher rates during peak season.

♦ **Event overlay.** Where major events create parking dynamics that differ from a typical day, determine whether to create more event parking by increasing on-street rates and eliminating time limits, or to keep time limits to retain on-street spaces for other businesses.

♦ **Progressive pricing.** Where parkers want longer on-street stays (e.g., for dinner followed by a show), charge a premium for additional hours to encourage off-street parking or arriving by a different mode.

♦ **Time limit extension.** Where availability is greater than one or two spaces per block and land uses do not support short-term retail parking. lengthen limits to invite longer stays or provide employee parking to protect visitor spaces elsewhere.

Coordinated Off-Street and On-Street Pricing

In many cities, on-street parking is heavily occupied but off-street facilities are underutilized. This is particularly evident in the case of free on-street parking, which entices employees to park in front of their business rather than off-street. Pricing on-street parking and providing lower-cost alternatives off-street has proven very effective in eliminating the "two hour shuffle": employees moving their cars every couple of hours to circumvent time restrictions in free on-street parking areas.

Unbundled Parking

In many areas parking is bundled into tenant leases, hiding the true cost of housing or commercial rents. For example, the rent for an apartment with two parking spaces might be $1,000 per month. If parking were unbundled, however, the rent might be $800 per month, plus $100 per month for each parking space. Renters could be offered a discount for using fewer or no parking spaces.

Unbundling parking is essential in helping people understand the cost of parking, and in providing them the opportunity to opt out and make alternative travel choices. In the absence of unbundled parking, tenants often assume that parking is free. Unbundling changes parking from a required purchase to an optional amenity that people may choose to buy or decline.

Parking Cash-Out

Through parking cash-out programs, employers who offer free or reduced-price parking agree to offer a comparable transportation fringe benefit to employees who get to work by alternative modes -- and not by driving alone. Employees can apply their benefit toward their parking space or use a lower-cost alternative mode and keep the cash. A study by Donald Shoup on seven work sites offering cash-outs estimated a 26% reduction in parking demand. Within the past 10 years, employers in numerous downtowns have created effective cash-out programs that eliminate free or subsidized parking, coupling the cash-out with low-cost transit passes, bicycling incentives, and ridesharing options.

The cash-outs are especially valuable to low-income employees, who are less likely to drive to work alone. Local governments can encourage parking cash-out programs through education campaigns that inform employers about the benefits to companies and employees alike.

13. TRANSPORTATION DEMAND MANAGEMENT

Transportation Management Associations work best in limited geographic areas where there are similar businesses facing similar problems. When problems and their solutions resonate with all members of the TMA, it's much easier to work together towards accomplishing shared goals.

Transportation Demand Management (TDM) aims to maximize the efficiency of the urban transportation system by discouraging unnecessary private vehicle use and promoting more efficient, healthy, and environmentally-friendly transportation alternatives. TDM strategies are often more cost-effective than capital investments in new roads or parking lots.[w]

Parking management is a critically important TDM strategy. When coupled with other TDM measures, it can have an immediate and lasting impact on the on-street parking system, encourage employees to use alternative ways to get to work and free up parking for customers and visitors. When employees use on-street stalls, the stalls become nothing more than vehicle storage and undergo no turnover during the workday. Allowing employees to park on-street is a policy decision, but cities should understand that it will affect the economic health of the downtown. TDM strategies include:

♦ Priced parking
♦ Transit pass programs
♦ Free emergency rides home
♦ Alternative transportation commute planning

♦ Preferential rideshare parking
♦ Employee vanpools (may be subsidized by employer)
♦ Bicycle parking (short- and long-term)
♦ Financial incentives for transit, biking, walking, or carpooling
♦ Carsharing programs

Transportation Management Associations (TMAs) are an effective way to deliver TDM programs. TMAs are non-profit, member-based organizations that work in a specific neighborhood or business district to address common transportation concerns, including parking, traffic congestion, and active transportation. Frequently public-private partnerships, TMAs may leverage public parking meter revenue along with other sources of funding to provide a range of transportation services more cost-effectively than individual businesses could.

TDM programs may also be delivered through the municipality or in-house by large employers decrease drive-alone commuting by employees.

14. BICYCLE PARKING

When we talk about parking management, we're not just talking about cars. Communities throughout Oregon support bicycling as a key sustainable transportation strategy, and the Oregon Transportation Planning Rule requires it for new developments.

Regardless of requirements, bicycling is a healthy, low-cost, carbon-neutral transportation option and employees and visitors increasingly demand it. Providing adequate bicycle parking can expand the capacity of your overall parking supply and prevent bikes from being locked inappropriately to signs, trees, or street furniture. Like those arriving by car,

employees and visitors who bike should have a convenient and secure place to park their vehicle when they reach their destination.

Effective bicycle parking should include three elements: appropriate design and type, proper siting and layout, and security and maintenance. Recommended bicycle parking standards are outlined in the Oregon Model Code for Small Cities, 3rd Edition (Section 3.5.040, Bicycle Parking – at www.oregon.gov/LCD/TGM/pages/modelcode.aspx) but be sure to check your local development code as well.

Rack Design

Bike racks are available in many styles and colors. Some business owners have even installed creative "art racks" that, in addition to providing parking, convey the nature of the business and add visual interest to the streetscape.

The rack design should support the bike in at least two places to prevent it from falling down or being knocked over. It should also allow the frame and one or both wheels with to be locked with a U-lock.

"Wheel bender" racks should be avoided. Although popular, "wave" or "ribbon" racks do not properly support the bike frame. The design frequently tangles handlebars and bikes are often parked parallel to the rack, dramatically reducing its capacity.

Bicycle lockers are generally designed to house two bicycles per unit: one on each side, with a shared diagonal interior wall separating the spaces. Larger lockers are also available, but are more challenging

Figure 6: Bike Parking Options - Good vs. Bad

RECOMMENDED
A. Staple or U-racks
B. Wall-mounted vertical racks
C. Bike corral
D. Temporary event bike parking
E. Art bike corral
F. Art bike rack
G. Bike lockers

NOT RECOMMENDED
H. This rack is installed in remote location and too close to other objects.
I. Wheel-bender racks do not provide frame support nor do they allow cyclists to lock their bike frame.
J. Families often travel by bike together. Does your bike parking accommodate "family" bikes with child seats or trailers?
K. The rack should accommodate a variety of bike frames and handlebar styles including step-through frames and dropbars. This "wheel-bender" rack does neither.
L. This rack is installed too close to the wall making it difficult for a cyclist to lock both the frame and one wheel.
M. Ribbon or wave racks are very popular but have limited parking capacity for their size. They also invite cyclists to lock up their bikes parallel to the rack, further limiting parking capacity.
N. Bikes locked inappropriately? This may signal that there is not enough bike parking or that it is hard to find.

to relocate and can be expensive to maintain and replace. Like racks, lockers are available in a variety of colors and styles. Those with perforated walls are often preferred because they allow property managers and security staff to easily see inside.

Providing lockers requires rental management, including careful tracking of keys. Deposits and restrictions on key copying are recommended. In communities where parking is paid, the parking department already handles multiple small

transactions each day and managing the bicycle locker system makes sense. Some cities provide electronic lockers.

Bike cages and bike rooms often feature vertical or tiered bike parking that can efficiently park a large number of bicycles in a small space. Although these are typically located in access-controlled spaces, racks that allow users to secure their bike frame with a personal lock are recommended.

Short and Long-Term Parking

Short-term bike parking is intended for shoppers and visitors, and generally consists of simple racks, such as staple racks (see Figure 6). Security typically relies on installing the racks in high-traffic, high-visibility locations to deter theft. Don't forget bikes when planning for short-term events: temporary group bike parking—self-service or valet—can be brought directly to a site during an event to maximize parking capacity and commute options for attendees.

Long-term bicycle parking, like lockers, cages, or secure storage rooms, is intended for cyclists who demand a higher level of security and complete protection from weather, given their longer stays and frequent use. This includes employees, students, residents, and transit riders. Security is typically provided through limited access, as with a key, badge, or keycode. The parking area may also be actively monitored by staff or security camera.

Placement and Installation Guidelines

Short-term bicycle parking should be installed within 50 feet of main entrances and be easily visible. Racks may be installed within the sidewalk furnishing zone but should not block pedestrian traffic and

should be placed between marked on-street parking spaces to avoid conflicts with car doors. On-street bike corrals are another alternative and can provide

10-20 bicycle parking spots in the space of 1-2 motor vehicle parking stalls.

The location of long-term bike parking should be visible, well-signed, and communicated to building tenants and visitors. If bike parking is located indoors, consider how easily cyclists will be able to get to the parking area. Flights of stairs and narrow elevators are inconvenient and may invite property damage or injury.

The Oregon Bicycle and Pedestrian Design Guide and Association of Bicycle and Pedestrian Professionals[xy] (APBP) recommends the following design guidelines:

♦ Bicycle parking spaces should be at least six feet long and three feet wide, and overhead clearance in covered spaces should be at least seven feet.

♦ A minimum of six feet should be provided beside or between each row of parking for maneuvering bikes. Adjust the aisle width based on the volume of users accessing the facilities during peak hours.

♦ Families often travel by bike together. Do you expect users with trailers, perhaps with children in tow? What about bicyclists with long-tail or cargo bikes that require additional room? If so, provide additional space so that these may be secured without restricting circulation.

Security and Maintenance

Don't put bike parking in secluded or out-of-the-way locations. Not only does this send an unwelcome message to cyclists, it also invites theft.

The bike is only as secure as the rack, so purchase racks constructed with materials that resist cutting, rusting, or bending with standard tools, such as a pipe cutter. For racks accessible to the general public, anchoring them with expansion bolts and tamper-resistant security screws into a concrete surface is ideal. Embedding the rack footings in concrete is an alternative but limits relocation. Both installation strategies prevent thieves from simply unbolting the rack to steal bikes. Inspect lockers regularly to avoid storage of inappropriate items.

Number of Bike Stalls

There are numerous standards in city codes that specify the number of bike parking stalls to supply in new development. These include ranges of one space per four dwelling units to one space per 20

auto spaces to standards that relate to square footage (e.g., one bike stall per 5,000 square feet of retail). Unfortunately, there is no one standard for bike parking. It's best to: (a) set reasonable standards that ensure bike parking is provided; (b) distinguish between long and short-term bike parking; and (c) specify design, location, signage, and quality standards as described above. Overall, bicycling has experienced phenomenal growth over the past decade as both a recreational and commute choice. Bike parking is an essential component of access and should be treated as such in any parking management plan.

15. FACILITY DESIGN & SPECIAL CIRCUMSTANCES

Parking Facility Design

In his book *Rethinking the Lot,* MIT Urban Planning Professor Eran Ben-Joseph estimates that parking in the United States occupies approximately 3,590 square miles, an area larger than Rhode Island and Delaware combined[2]. Given that parking has become a prominent feature in so many communities, surface lots and parking structures are beginning to receive more scrutiny in terms of size, design, safety, and environmental friendliness.

Lot designed with good pedestrian access

Poor lot design

Once monotonous asphalt landscapes or hulking concrete monoliths, surface lots and parking structures are now being held to higher design standards. Parking lots can be a barrier to walking, particularly if they are poorly designed. Walkways through parking lots offer pedestrians –who typically prefer a direct route from their vehicle to their destination –preferred paths to store entrances, while reducing conflicts with moving cars. Landscaped barriers may inadvertently lead to "volunteer trails." Observing the paths that pedestrians actually travel when crossing lots (often referred to as "desire lines") can help preserve landscaping while improving safety and convenient access.

Many surface lots are now required to prepare written stormwater management plans and mitigate stormwater runoff to preserve water quality. Landscaping breaks up the asphalt, adding visual interest and perhaps offering shade, but also reducing the amount of impervious surface.

Design and landscaping can also improve safety. Crime Prevention Through Environmental Design (CPTED) uses lighting, landscaping, and hardscaping to deter criminal activity. For example, shrubbery may be trimmed back so that it cannot act as a hiding spot. Similarly, see-through fencing would be recommended over opaque. Adequate lighting reduces opportunities for crime and creates a more comfortable environment after dark.

When business owners ask their employees not to use close-in parking spots reserved for customers, they should consider the safety of employees who must return to their vehicles after dark. Along with CPTED principles, universities and shopping malls have implemented after-hours escorts and emergency call box programs that increase a sense of safety in parking facilities.

On-Street Parking Stall Sizing & Design

Dimensions for parallel on-street parking stalls vary, but average approximately 23 feet in length by 9 feet in width (with about 2 feet between every other marked stall to allow for maneuvering in and out of the space). This length provides enough space for vehicles to maneuver in and out, while being compact enough to accommodate a reasonable number of stalls on each block face. Stalls of this size may not easily accommodate some longer vehicles (e.g., long-bed pickup trucks), but all non-commercial passenger vehicles are less than 22 feet in length. Given a typical mix of vehicle lengths, 23-foot stalls will be quite comfortable for most users.

Other considerations may include accommodating specialty vehicle types such as large recreational vehicles, particulary if your community attracts a sea of recreational vehicles (RVs) in the summer months.
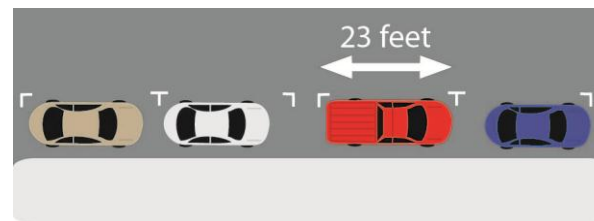

In this case you may want to create designated RV parking areas off-street that allow drivers to pull through the stall rather than having to back up.

On- Street Motor Vehicle Parking and Bicycles

For a number of reasons, bicyclists tend to hug the edge of the roadway. When on-street parking is present, this raises the risk of "dooring" and other conflicts with motor vehicles. Although motorists are responsible for making certain it's safe to open their doors or pull out of a parking spot without hitting a
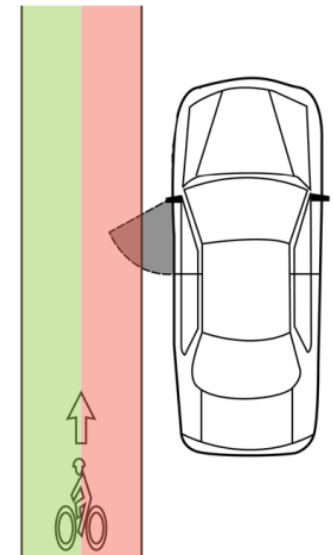
Painted buffer treatments in bike lanes
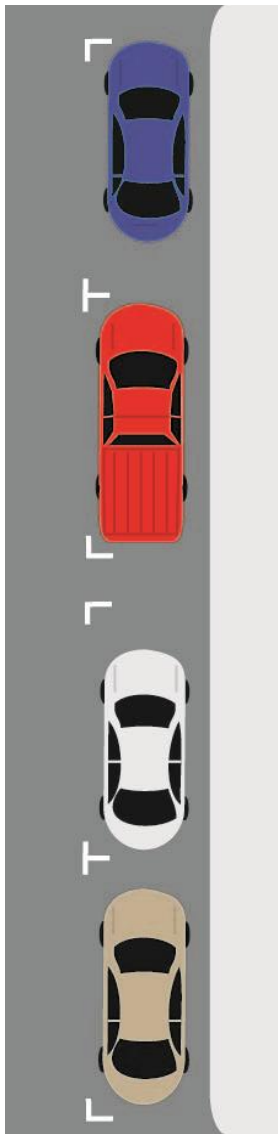
cyclist, certain design improvements can reduce the opportunity for conflict.

If bike lanes are present, they may be widened to allow cyclists to travel outside of the 2-3 feet closest to car doors (the "door zone") while remaining in the bike lane. Painted buffers may also be added to direct cyclists to travel outside the door zone. When there are no bike lanes, shared-lane markings

encourage cyclists to position themselves closer to the roadway centerline and outside the door zone.

Where diagonal parking is present, experts recommend back-in parking for increased safety. Back-in diagonal parking allows drivers to enjoy full view of the roadway before pulling out, but is a difficult maneuver for many. Drivers may overshoot the curb and sometimes damage meter pay stations or other street furniture, so curb stops are suggested.

Signs, Striping, and Wayfinding

Drivers searching for a parking spot should be able to quickly discern where, when, and how long parking is allowed. Accordingly, communication is an essential element in your parking plan.

There is some debate over whether cities should paint curbs to indicate parking restrictions and/or stripe parking stalls to guide parkers. Restrictions indicated by curb paint colors are not always well-understood, particularly by out-of-state visitors. In Oregon, parking at curbs painted yellow is prohibited, whereas in most other states, a yellow curb indicates loading and unloading is permitted. Painting curbs also makes it more difficult to change restrictions and requires regular maintenance, and the paint may be obscured by snow. If curbs are painted, supplementary signs explaining the restriction and enforcement hours are recommended. Avoid sign

clutter and watch out for confusing or contradictory parking signs.

Do your visitors a favor and clearly mark your on-street parking stalls. Marked stalls are easier for drivers to identify and help them avoid parking in restricted areas. They also make parking inventory, survey, and enforcement more efficient. It's been claimed that marking stalls can reduce capacity, but this assumes that motorists

Avoid confusing signage

Clear, delineated parking stall striping

Eye-catching, clean, easy to read signage

park in an organized fashion beginning at the end of the block and work their way back. In reality, when stalls are not marked, a single car parked in the middle of the block can throw everything off. Avoid this problem and mark your stalls.

If public parking is available in off-street garages, signs visible from the roadway should note the parking entrance, hours of operation, and the cost to users. In some communities, particularly those where parking may be difficult to locate, the city or visitor association will map parking information so visitors may plan in advance.

Special Circumstances

This subsection is intended to provide a brief overview of special circumstances for how parking management is applied in large campus-style environments (e.g., hospitals, universities, government centers, large business parks, etc.) and to present a variety of specialty stall types that may exist in the public right-of-way.

Insitutional Parking

Major institutions such as hospitals, corporate campuses, and universities are characteristically large in scale and can generate an enormous number of trips, which consequently present significant circulation and parking challenges. In most instances, these institutional parking issues are addressed in master plans rather than regulated by a city's development code or parking management plan. Master plans are negotiated between the institution and the city.

While an institution can have a substantial impact on its neighborhood, the fact that nearly all people making trips to this destination are associated with a single entity presents a unique opportunity for communicating, encouraging, and applying transportation demand management (TDM) programs that can greatly diminish impacts on the surrounding area. More information on demand management can be found in the TDM section (page 56).

One example of a hospital that has significantly reduced solo driving through parking management and other TDM strategies is Seattle Children's Hospital. Located in a fairly dense residential neighborhood, the hospital recognizes that the traffic it generates affects the nearby community. To minimize negative impacts, Children's has implemented an aggressive and comprehensive TDM program to achieve mode split goals and reduce

employee drive-alone trips to the hospital campus. The percentage of employees driving alone to work has fallen from 73% in 1995 to 38% today. Elements of Children's program include:

- Elimination of free parking generally and monthly parking fees for employees. The fees are to be reviewed annually to establish rates that encourage alternatives to solo driving.

- Shuttle transit system linking the hospital to the regional transit network

- Access to a shared electric-assist bike program for travel to distant administrative offices and a free new bike for employees who commit to bike commuting at least two days per week.

- Financial incentives for employees who choose biking, walking, carpooling, or transit.

- Free transit passes and vanpools

- Guaranteed-ride-home emergency programs.

Disabled Parking

The Americans with Disabilities Act (ADA) requires a development to provide a set number accessible (off-street) parking spaces based upon the total number of parking spaces provided. Signs and pavement markings are used to designate the spaces as restricted for use by vehicles displaying a valid disabled parking permit. As required by the the ADA

Standards for Accessible Design, accessible parking spaces must be located on level ground and have at least a 60-inch wide access aisle adjacent to the designated parking spaces to facilitate a person in a wheelchair entering or exiting a vehicle. Van-accessible parking spaces have additional aisle width and other clearance requirements.

Municipalities are not required to designate on-street parking spaces for disabled parking. It is lawful, however, for vehicles displaying a valid disabled parking permit to park on-street in excess of signed time limits (except for spaces of 30-minute or less or where no vehicle parking is allowed) and at metered spaces without payment. For more information on parking at ADA requirements, call 1-888-446-4511 or emaiL FTA.ADAassistance@dot.gov.

Electric Vehicle Charging Stations

Providing electric vehicle (EV) charging stations supports efforts to promote a more sustainable transportation system and mitigate climate change. According to the Argonne National Laboratory, EVs substantially reduce all emissions that cause adverse health conditions in urban settings. Compared to gasoline-powered vehicles, EVs reduce greenhouse gas emissions by 19% over the course of the vehicle's lifespan. EVs nearly eliminate petroleum use and can reduce fossil fuel use by 28%.

In evaluating potential locations for placement of EV charging stations, consider likely users and vehicle charging time.

Defining the User

Users include at least three groups:

♦ Customers visiting businesses for stays of two hours or less.

♦ Employees who generally park their vehicles all day.

♦ Visitors with overnight or multiple-day stays.

The traditional retail/restaurant customer will most likely want a charging station on-street and close to his or her destination, while an employee would prefer an off-street location where duration of stay is not a factor, and hotel visitors would benefit from a charger at their place of lodging.

Vehicle Charging Time

Electric vehicle "refueling" at an on-street charging station

Currently, charging stations have full recharge times that range from 30 minutes to eight hours .[aa] As such, some chargers, if placed on-street, could tie up parking stalls that are intended to turn over for customers. This will not be an issue if the charging stations are located off-street in lots that serve both customers needing a short-term stay and employees parking all day.

If charging stations are located on-street, it will be important to adopt *consistent signage and parking enforcement standards.* Clearly identifying charging stations and enforcing parking rules will help smooth the transition to EVs and educate the public on how they work. Similarly, enforcing posted hours for spaces in the right-of-way, rather than allowing all day parking, will ensure that EV charging stations experience turnover and are available to potential users throughout the day.

Locating Charging Stations

On-street locations are difficult to recommend because EV charging generally takes a significant amount of time and results in tying up otherwise valuable parking spaces. Instead, EV charging stations should be placed in parking structures or off-street parking lots. Good signage should direct drivers to the EV stations.

Carsharing

Carsharing programs, which allow members access to fleet vehicles for reserved periods of time, can widen your range of transportation options. Several carsharing companies currently operate in Oregon, each with a slightly different business model.

Some programs require drivers to return the vehicle to a signed parking spot reserved exclusively for carshare vehicles, which may be located in a private lot or on the street. When reserved spots are on-street, enforcement staff may ticket unauthorized vehicles parked in the carsharing space. Another model allows users to park vehicles anywhere within an operating zone or "home area," even at metered parking spots.

When parking carsharing vehicles is allowed in the public right-of-way, the number of metered and non-metered spaces available for their use and their location is typically negotiated with the city. Cities also establish fees for use of the public right-of-way, including the cost of installing, relocating, removing, and maintaining spaces, as well as lost meter revenue, if applicable. Cities should regularly review use of on-street carshare vehicles and retain the option to eliminate the space, if necessary.

Car2Go - Portland

16. PARKING TECHNOLOGY

Multi-space smart meter

For cities considering installing or upgrading pay-to-park systems, the industry is fast developing new technologies, including smart meters, pay-by-cell programs, wireless stall sensors, and parking apps. These can be expensive, however, and their successful use is contingent upon a willingness and ability to support them and to educate the parking public. Before jumping on the "latest and greatest" technology bandwagon, consider the upfront and long-term costs.

New parking payment technologies may be explored through a demonstration process that allows for an objective cost-benefit analysis, a comparison of vendors and equipment types, and an evaluation of customer acceptance and impact on city operations.

Call the parking managers at peer communities to find out what they're using and what their experience has been. Many Pacific Northwest cities use smart technologies, so their use in the unique climate and geography of this region can be evaluated and discussed using real-world input.

Above all, make sure that you cover the basics of parking management first, and that the technology you use helps you achieve your goals.

Smart Meters

Traditional meters accept only coins and are generally placed one meter to a single stall. The coin-only function of these meters can be annoying for customers, particularly as rates increase and there never seems to be enough change. As parking operations have become more complex, the transition to smart meter systems has increased. Key features of these systems include credit card and smart card payment capability, validation systems, wireless communications, reporting and data collection functions, variable pricing, pay-by-cell, and more.

Formats include multi-space meter (MSM), in which one meter or pay station serves multiple stalls, and single-space meter (SSM), which replicates traditional systems that have a meter for every stall. SSMs are typically compatible with existing maintenance equipment and collection carts, and allow existing meter poles to be retrofitted.

Advantages of smart meter systems include:

- ✓ Local and remote reporting capabilities
- ✓ Multiple payment methods (cash, credit/debit cards, smart cards, loyalty cards, etc.)
- ✓ Real-time reporting and card processing

- ✓ For MSMs, more room for streetscape and pedestrian pathway improvements
- ✓ Improved design versus traditional meters
- ✓ Reduced downtime and fewer malfunctions
- ✓ Reduced time spent on collection and auditing
- ✓ Increased revenue potential
- ✓ Pay-by-space or pay-and-display options
- ✓ Local and centralized management of rate structures
- ✓ Some models are solar powered but stations may also be hard-wired

Single-space smart meter

Pay-By-Cell

With pay-by-cell, parkers simply call a number on the meter or a nearby sign and enter their space or license plate number. After an initial set-up call to

link a credit card with the phone number, the system uses caller ID to match the user with the account.

Wireless Sensors

Wireless sensor applications use sensors embedded in the street (or less frequently, at the curbside) that link to MSM or SSM meters. Sensors can gather information from pay-by-space meters and pay-by-cell applications to provide real-time data and analysis.

They also have "directed enforcement" applications that allow enforcement personnel to "see" violations occurring. This improves the system's efficiency, as personnel aredirected to violations rather than having to walk/drive along a fixed enforcement route.

Pay-by-cell info sign

This technology is still evolving and has not been proven in large-scale urban environments. Issues still being addressed include sensor accuracy, delays in transmission, interference from other electrical sources, and the ability to handle all types of spaces and vehicles. Currently the greatest obstacle to wide adoption of sensors is costs, both upfront and ongoing, which can be substantial.

Parking Apps

Made possible by the tremendous increase in the use of smartphones, parking applications can gather information about a driver's whereabouts and help direct drivers to available parking spots.

A key question going forward is the extent to which data provided by smart meters and sensors will be made available to parking application vendors. Vendors currently profit by selling their apps at nominal rates and/or from advertising. Some, such as Parking In Motion, are being paid fees when users reserve parking at off-street lots. It's in the interest of both cities and vendors to have as much information publicly available as possible, but it's unclear to what extent cities (especially those implementing enhanced technology without major Federal support) will seek to recoup capital costs by selling such information, and whether customers will pay higher fees for applications that offer real-time data.

In addition, the use of apps to find parking raises safety issues, as phone use while operating a vehicle is a proven distraction to drivers and illegal in Oregon unless used with a hands-free headset.
Apps should only be used by passengers or by drivers who have pulled over.

Parking Apps are getting more popular among users and more are being developed daily

17. EMPLOYEE PARKING

Managing your parking supply to prioritize parking for customers and visitors and discourage employees from competing for prime on-street spots can be challenging. A good parking management plan should provide reasonable options for employees. The most successful strategies for minimizing employee parking issues are enforced time limits, metered on-street parking, convenient and affordable off-street options, and incentives to use other transportation modes.

Even within off-street lots, many employers discourage their employees from parking in the spaces closest to store entrances as these are also prioritized for customers. However, if employees are directed to less convenient parking areas, consider the employees' safety when they must return to their vehicles after dark.

Examples of ways some cities handle employee parking follow.

Springfield, Oregon

Springfield has implemented standardized time stays on-street, with two-hour stays in the "core zone" and three-hour stays in the downtown periphery. Parking is free (given low occupancy) and employees are directed to park in off-street lots. Employee parking is allowed on-street in designated areas of the periphery with an authorized permit. These locations are signed as "3-hour parking or by permit only."

Tacoma, Washington

In 2010, Tacoma transitioned from free on-street parking to metered parking in its central business district, an area with approximately 1,600 stalls, in response to continuing issues with employees monopolizing on-street parking. Tacoma also owns and operates five public garages and offers a monthly employee permit program.

The city and stakeholders are in the process of re-evaluating short-term rates in the garages, as they are higher than on-street rates and should be lower. The city is also considering allowing paid employee permit parking in on-street areas with low occupancy, generally located at the edge of the Central Business District.

Central Eastside Industrial District (Portland, Oregon)

In 2012, the City of Portland and district stakeholders formally adopted the Central Eastside Industrial District Parking Management Plan, which will transition up to 6,000 on-street spaces from free and unrestricted status to a combination of paid and time-limited free parking. All parking will be standardized to two-hour time stays.

The plan allows for employee permits in lower occupancy/non-retail areas of the district, which will be signed "2 hours or by permit." Enforcement will be from 8:00 AM – 6:00 PM, Monday through Saturday. The district's business association is allowed to add a surcharge to permits, with revenues supporting transportation options for employees and visitors.

Ventura, California

In 2009-10, Ventura transitioned from free on-street parking to multi-space pay stations in its downtown. The removal of free parking moves employees off-street where a permit program is provided. Permit rates vary by facilty, with centrally located lots and garages charging a higher rate than less-used facilities on the periphery. Free off-street visitor parking is provided in several publicly owned off-street facilities as well.

18.   INNOVATIVE STRATEGIES IN PARKING MANAGEMENT

One of the great things about creating a parking management plan for your city is that there are many invovative strategies and programs in place is cities around the Pacific Northwest and United States. It is always useful to stay abreast of what others are doing to manage parking and, in doing so, improve their communities. A few examples are summarized below.

Parking Time Limits Calibrated to the Typical Duration of Stay

Visitors to your downtown do not want to be confronted with a myriad of parking time limits, particularly when they are indiscriminately placed from one block to the next. It is vitally important to minimize confusion in your parking system, especially for the first-time user. Standardizing parking time limits will reduce anxiety and offer greater certainty to your parking customer.

The City of Springfield, Oregon, had seven different parking time limits for users to sort out. The recommendation was to convert all on-street stalls in the central core to two hours—with longer term stays accommodated off-street—and stalls beyond the central core to two hours or by permit. The "or by permit" allows the City the flexibilty of offering employee permits in a peripheral area of downtown with an abundance of available supply in the peak hour.

Oregon City had a similar smorgasbord of time limits trying to serve the needs of everyone within the on-street system. Here too the recommendation was to create standard two-hour stalls in the historic downtown and establish exception criteria and a process for businesses to request a shorter-term parking space in front of their store.

Brand of off-street parking system

Branding of Off-Street Parking Systems

The idea behind branding a product with a name, logo, and marketing is to make it immediately recognizable to the customer. If the customer is satified with the product, ultimately, brand loyalty is established. Branding public off-street parking lots with a familiar name and logo is another way to reduce customer anxiety and confusion.
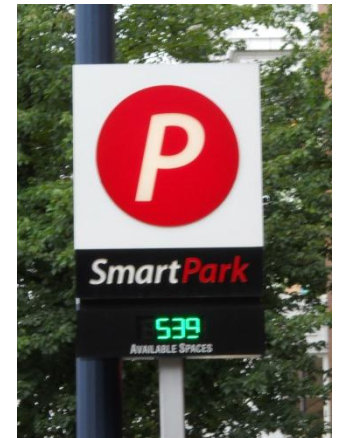
Chances are good that the average Portlander has seen or used the SmartPark system of off-street garages. Part of SmartPark's success is its ubiquitous logo, easily visible signage, and most importantly, consistent pricing from one facility to the next. In other words, customers know what to expect when they park in a SmartPark garage.

Seasonal Employee Parking Passes and Designated Employee Parking Areas

Bob Francis, City Manager for the City of Hood River, notes that his community experiences an influx of visitors during the summer months, dramatically increasing demand on an already constrained parking inventory. To better accommodate summer visitor parking, the city has implemented seasonal changes: during the off season, certain lots are permitted for employee use. However, during the high season of May-October, these lots are exclusively for visitor parking. Displaced employees are given the option to buy a reduced-price pass for a location a little farther away.

Similarly, several communities have designated special employee parking areas outside of the core downtown area to eliminate competition between shoppers and employees, and ensure adequate parking turnover throughout the day.

Main Street Programming

Annual main street event
McMinnville, Oregon

The City of McMinnville understands that people aren't coming downtown just to park. The City actively promotes its downtown with multiple events that draw residents and visitors. During events such as Turkeyrama and the UFO Festival, people may have to walk three to four blocks, but, as Downtown Association President Roy Pomeroy says, "That's OK. People expect it. They don't mind it. And the short walk doesn't hurt anybody." Rather than over-build its parking supply, which would be largely vacant except for a few major event days, the city accommodates the periodic influx of visitors with shuttle-serviced event lots outside the main street corridor. Some communities work with local transit services and event promoters to arrange shuttles.

Prohibition on Surface Lots as First Phase of Development

Previously, we discussed the City of Spokane and the replacement of historic buildings with surface parking. If allowed, this practice threatens older buildings and prolongs the existence of less desirable surface lots because of the low operational costs and the high rate of return for paid monthly parking. Even with minimum design standards in place, surface lots erode the visual interest that storefronts provide for pedestrians and exacerbate poor urban design. No one goes window shopping or strolling with a loved one in front of surface parking lots.

Prohibiting surface parking as the first phase of development right-sizes the value of the property and provides an incentive for the owner or developer to build in keeping with your city's zoning and design code.

Third Party Review of Parking Program

Even a well-managed parking system should be reviewed and evaluated periodically by a third party professional, such as a parking consultant or planning firm. An unbiased eye can measure and assess the operational dynamics of the parking system without the burden of political pressures, and bring a fresh perspective to problems or issues.

Assessments can be as simple as recalibrating time stays based on duration-of-stay data, or a more detailed look at siting a future parking structure. Assistance in developing revenue and expense projections and funding scenarios can also be useful. Regardless of degree of detail needed, a periodic review of your parking system using a third party is a smart and practical excercise.

Alternative Use Of The Right-Of-Way

Dan Bower, Division Manager for the City of Portland's Active Transportation department, notes that the city is rethinking the value of its road space, and that using the right-of-way for parking of motor vehicles is no longer a given. The city has introduced programs such as "street seats," which convert one or two on-street parking spaces into outdoor seating for adjacent restaurants.

Like the city's bike corrals, street seats are implemented at the request of businesses and are permitted by the city. This is a relatively new program, and while the street seats have been well-received, the city continues to refine the program to ensure that the conversion of parking isn't a financial gain for one business and a loss for another down the street.

"Street seats" Portland, Oregon

Positive Enforcement

In positive enforcement, enforcement personnel randomly issue friendly warnings instead of a ticket to drivers in violation of a parking time limit or parking without a valid pass. The warning can provide information on off-street parking locations and may even include discounts to merchants in the parking district. Talk about turning a negative into a positive!

19. PARKING MANAGEMENT CHECKLIST

☑ Gather input on the parking situation from affected stakeholders through interviews, surveys, and/or stakeholder advisory committees.

☑ Collect data on your parking inventory (the amount of parking available), occupancy (how many of those parking spaces are occupied at a given time), and turnover (how long vehicles remain in a parking spot).

☑ Identify goals for parking outcomes with the help of affected businesses and citizens.

☑ Develop strategies to achieve identified goals. These may include modifying parking policies and codes, adjusting parking time limits, enforcement, or pricing parking.

☑ Implement the parking management plan using a timeline-based approach that focuses on the highest priority strategy elements first and then progresses to lower priorities, as conditions warrant.

☑ Regularly collect data and gather input from local stakeholders on your parking supply to observe trends and impacts of your strategies.

☑ Monitor the parking situation to observe the results of your parking policies. Adjust your strategies, as needed, based on data.

☑ Recognize that parking strategies are key to the success of a Transportation Demand Management (TGM) program.

20. WORKS CITED

[a] Jeff Speck, *Walkable City: How Downtown Can Save America, One Step at a Time* (Farar, Straus & Giroux, 2012), 121.

[b] Donald Shoup, *The High Cost of Free Parking* (Planners Press, 2005), 81-82.

[c] Carl Walker, "Parking Structure Cost Outlook for 2009," in *Industry Insights, First Quarter 2009* (1-2). Available online at < http://www.carlwalker.com/wp-content/uploads/2012/09/2009_Q1.pdf >.

[d] Donald Shoup, *The High Cost of Free Parking* (Planners Press, 2005), 211.

[e] Richard J. Kuzmyak, "Chapter 18 – Parking Management and Supply," in TCRP Report 95: (Washington, D.C.: Transportation Research Board, 2004), 18-22. Available online at < http://www.trb.org/Publications/Blurbs/153345.aspx >

[f] David Nieman, et al, "Immune Response to a 30-Minute Walk," in Medicine and Science in Sports and Exercise (Indianapolis: ACSM, 2005), 57-62.

[g] Lilah Besser et al, "Walking to Public Transit: Steps to Help Meet Physical Activity Recommendations," in American Journal of Preventive Medicine, (Philadelphia: Elsevier, 2005), 273-280.

[h] Barney & Worth and Rick Williams Consulting, "City of Everett, Washington CBD Parking Management Study," December, 2007.

[i] Rick Williams Consulting, "City of Tigard, Oregon Parking Plan Strategy Recommendations: Downtown Parking Study Final Report," August 2011.

[j] Donald Shoup, *The High Cost of Free Parking*, Chapter 12.

[k] Ingenieurgruppe IVV GmbH & Co. KG, "Parking Guidance System for Downtown Seattle, Conceptual Framework," (Seattle, WA: Seattle Department of Transportation, October 2006), 5. Available online at < http://www.seattle.gov/transportation/docs/parkFinalCCPPTechnicalReport.pdf >

[l] Puget Sound Regional Council, "2010 Parking Summaries (Dataset)," (Seattle, WA: Puget Sound Regional Council, 2010). Available online at < http://www.psrc.org/data/transportation/parking-inventory/ >

[m] Rick Williams Consulting, "City of Bellevue, Washington Downtown Commuter Parking Assessment Report," (Bellevue: City of Bellevue, December 2012).

[n] City of Milwaukie, Oregon, "2007 Transportation System Plan - Chapter 12, Parking," (Milwaukie: City of Milwaukie, 2007). Available online at < http://www.ci.milwaukie.or.us/engineering/transportation-system-plan>

[o] Donald Shoup, "The Trouble with Minimum Parking Requirements," in Transportation Research Part A: Policy and Practice, Volume 33, (Washington, D.C.: Transportation Research Board, 1999), 549-574. Available online at http://shoup.bol.ucla.edu/Trouble.pdf

[p] Rachel Weinberger, et al, "U.S. Parking Policies: An Overview of Management Strategies," (New York: Institute for Transportation and Development Policy, 2010), 15. Available online at http://www.itdp.org/documents/ITDP_US_Parking_Report.pdf

[q] Benjamin Davis, et al, "Transportation and the New Generation: Why Young People are Driving Less and What It Means for Transportation Policy," (Santa Barbara: Frontier Group and U.S. PIRG, 2012). Available online at <http://www.frontiergroup.org/reports/fg/transportation-and-new-generation>

[r] Robert Cervero, et al, "Are TODs Over-Parked?" in UCTC Research Paper No. 882 (Berkeley:University of California Transportation Center, 2009). Available online at < http://www.uctc.net/papers/882.pdf>

[s] Erin Vaca and J. Richard Kuzmyak, "Parking Pricing and Fees." In Chapter 13, TCRP Report 95 – Chapter 13, (Washington DC: Transportation Research Board, 2005). Available online at<www.trb.org/publications/tcrp/tcrp_rpt_95c13.pdf>

[t] Deborah Salon, "Neighborhoods, Cars and Commuting in New York City: A Discrete Choice Model," (Davis: UC Davis Institute of Transportation Studies, 2009). Available online at<http://pubs.its.ucdavis.edu/download_pdf.php?id=1262>

[u] See, for instance, Central City Transportation Management Plan: Plan and Policy, City of Portland Office of Transportation, Bureau of Planning, Policy 3: Mode Split, pp 37 – 39.

[v] Nelson/Nygaard, "Downtown Ventura Specific Plan: Best Practices of Parking Management," (Ventura: City of Ventura, California, 2005). Available online at < http://www.cityofventura.net/files/file/comm-develop/Downtown/DTSP%20Book%202012.pdf>

[w] Jeffrey Tumlin, *Sustainable Transportation Planning: Tools for Creating Vibrant, Healthy, and Resilient Communities* (John Wylie & Sons, 2012), 241-261

[x] Association of Pedestrian and Bicycle Professionals, *Bike Parking Guidebook, 2nd Edition*, (Cedarburg: Association of Pedestrian and Bicycle Professionals, 2010). Available online at <http://www.apbp.org/?page=publications>

[y] Oregon Department of Transportation, "Bicycle and Pedestrian Design Guide - Chapter 3: Bicycle Parking," Salem: ODOT, 2011) . Available online at:

ftp://ftp.odot.state.or.us/techserv/roadway/web_drawings/HDM/Appendix_N_BikePedDesignGuide_Web.pdf

[z] Michael Kimmelman, "Paved, but Still Alive," *New York Times*. January 6, 2012.

[aa] Jim Motavalli, "Fast Electric Car Charging Station May Help EVs Spread Across America," Huffington Post. October 23, 2012. Available at <http://www.huffingtonpost.com/2012/10/23/electric-car-charging-stations_n_2002448.html>

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