PORTLAND PARKING ANALYSIS AND TOOLKIT
FOR MIXED-USE CENTERS AND CORRIDORS

PARKING MANAGEMENT TOOLKIT

Portland, Oregon

March, 2016

Prepared for:

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TRANSPORTATION ENGINEERING/PLANNING

MOVING**FORWARD**THINKING™

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Section 1 Introduction

INTRODUCTION

This document serves as a desk reference for the city staff responsible for managing city parking facilities and addressing parking issues that arise in mixed-use centers and corridors. For the purposes of this document, *centers and corridors* are defined as areas with mixed use zoning (commercial, employment, and residential), generally well served by transit, that are surrounded by areas zoned exclusively for residential use. Business owners and operators and residents of neighborhoods within or near a mixed-use center or corridor may also find this document useful when working with city staff to understand and address local parking issues and/or public parking management practices.

DOCUMENT PURPOSE

Generally speaking, parking management defines the appropriate uses of parking facilities in a specific area and at a specific time. The level of management required in a specific area is most often dictated by how well the overall parking supply (public and private, on-street and off-street) accommodates demands for parking in that area. When demand for parking regularly approaches or exceeds the available supply, it often becomes necessary to more actively manage the supply.

This document provides parking management strategies for public and private parking supplies, in on-street and off-street locations within and near neighborhood centers and corridors. This is in recognition that the City has:

- ownership authority over the supply of parking within the city's rights-of-way and on city-owned land,
- a fiduciary responsibility to achieve the highest and best use of that asset, and
- regulatory authority over the provision of private, off-street parking facilities.

HOW TO USE THE TOOLKIT

When should I manage parking?

Parking management could be undertaken at almost any time, particularly to inform users on the proper use of the parking resource (Shelf 1 in the Toolkit). However, city staff time and financial resources are limited and, therefore, it is prudent to exert parking management efforts where they are needed most. Parking management should be considered:

- at the request of a neighborhood association or business association in or near a neighborhood center or corridor that is experiencing parking issues or deficiencies;
- as new development occurs that may meaningfully upset the balance of parking supply and demand;
- as new plans are developed (e.g. corridor plans, neighborhood plans, comprehensive plans); or,

- when parking demand regularly exceeds approximately 85% of the available on-street parking supply in the neighborhood center or corridor.

Overall, the City's approach to parking management should be with the intent to balance on and off-street supply in an area as well as to facilitate the use of walking, bicycling, and transit. This requires utilizing tools that integrate and complement the on- and off-street parking systems to the highest degree possible. Integration of parking systems should also be kept in mind as tools are employed in areas where residential neighborhoods and commercial or mixed-use corridors abut each other.

What information is needed to get started?

Some level of investigation is always worthwhile, particularly if a neighborhood association or business association has raised a concern or requested assistance. Much can be learned by simple observations during the timeframe that is of particular concern to those that request assistance. The goal of the observation should be to understand the relative scale of the issue and to determine whether or not fairly quick and low-cost parking management tools can be deployed to resolve the issue. Should the issues appear to be too complex to address in this manner, the following types of information may be necessary or valuable in developing an effective parking management strategy or plan.

- A basic understanding of current parking issues and who they affect (e.g. high parking demand, unbalanced parking demand, underutilized parking facilities).
- The composition of land uses within the area (e.g. residential, retail/commercial, institutional).
- The development or redevelopment potential of the area (e.g. vacant properties, underdeveloped properties, market trends).
- The relationship of commercial or mixed-use corridors to abutting residential neighborhoods.
- The location and type of existing parking facilities (e.g. on-street, off-street, public, private, residential, retail/commercial).
- Current parking management strategies (e.g. regulated time stays, user restrictions, parking permit programs).
- Current enforcement practices (e.g. frequent, random, non-existent).
- Alternative access opportunities (e.g. transit service, bike and ped infrastructure, car share).
- Other considerations:
    - demographics (e.g. population, age, income) and
    - proximity to the Central City (e.g. inner southeast, outer southeast, northeast, northwest).

What level of analysis is required?

Parking supply and demand studies can provide important information on how the current parking supply is being used, when peak parking demand occurs, and what, if any, impacts peak parking demand has on access to local businesses (e.g. low turnover), adjacent residential neighborhoods (e.g. spillover), and the transportation system (e.g. congestion). The level of analysis required depends on the issue that needs to be addressed, how well it is understood, and if there is agreement among stakeholders on what the issue is and how to address it.

If it is a minor issue that is well understood and there is general agreement among stakeholders on how it should be addressed, then it can likely be resolved quickly with minimal analysis and implementation of any number of low-cost strategies. However, if it is a major issue (or many issues) that is not well understood and there is disagreement among stakeholders on what the issue is or how to address it, data will be needed to fully understand the issue and to reach agreement on what it is and how to address it. The type of data needed to support a detailed analysis on parking conditions includes:

- **Parking supply** data typically includes the total number of parking stalls located within an area by location (on-street, off-street, etc.), type (public, private, vehicle, truck loading, handicapped, bike etc.) and restriction (time restricted, user restricted, etc.). Additional information related to the total number of no-parking locations within an area also can be helpful to improve the efficiency of the parking supply.
- **Parking demand** data typically includes the total number of motor vehicles and bicycles parked within an area over a period of time. In general, parking demand data should capture peak parking demand for all uses within an area. For example peak parking demand for residential use typically occurs between 6:00 p.m. and 6:00 a.m. Monday through Friday, while peak parking demand for retail/commercial use typically occurs between 8:00 a.m. and 10:00 p.m. Monday through Friday. Parking demand data is typically described in terms of occupancy, duration of stay, and turnover.
    - **Occupancy** refers to the total number of occupied parking stalls within an area and is most commonly shown as a percentage of the overall system. A parking system is generally considered to be full or at its effective capacity when occupancies reach or exceed 85% in the peak hour.
    - **Duration of stay** refers to the average length of time a vehicle remains in a parking stall. Duration of stay information can be used to determine the time stay needs of patron to local businesses within an area, to identify the total number of vehicles, or percent of vehicles, that violate the posted time stays, and to determine the rate of vehicle turnover within an area (see below).
    - **Turnover** reflects the total number of vehicles that can or will use a parking stall over the study periods. Turnover can be used to determine how efficient or inefficient the parking system is operating and serving its intended user groups.

- **Future parking demand** estimates can be used to determine if/when an area will require a higher level of parking management in the future.

What are some of the common parking issues addressed by the Toolkit?

Parking management is often issue-driven, generating the need for a timely, coordinated, and cost-effective response. The list of potential issues to be addressed could fill a small book, particularly due to the uniqueness of each center and corridor. However, it is possible to categorize issues to a manageable, yet representative range. The following provides a summary of common parking issues.

Parking demand

- **High parking demand** is the most common parking issue and can occur in any area and under any land use, transportation or parking context. In general, high parking demand refers to a lot of cars parked within an area. It can also refer to a general lack of available parking within an area or in a specific location. High parking demand can also be an indicator of a number of other issues, including a lack of information on where to park, a lack of alternative travel options (e.g. walk, bike, transit), a lack of parking management strategies or enforcement of parking management strategies, etc.
- **Unbalanced parking demand** is an issue in areas where there is high demand for parking in one corner of a center or at one end of a corridor, but not the other, or in one parking facility or along one block face, but not the next. Unbalanced parking demand can reflect demand for parking adjacent to specific land uses or imbalances in parking regulation or pricing strategies.
- **Underutilized parking facilities** is similar to unbalanced parking demand; however, it primarily refers to off-street parking facilities (e.g. surface parking lots, parking garage) that are not being effectively used or integrating with the on-street system.

Parking impacts

- **Spillover** is an issue in most residential areas located adjacent to a center or corridor that regulates parking, particularly centers and corridors that have parking meters.
- **Traffic circulation and congestion** is an issue in many centers and corridors and refers to vehicles circulating while attempting to locate a parking stall and causing congestion along the roadways and at intersections.
- **Safety** concerns exist in some centers and corridors and can impact how people choose to access an area, where they choose to park, and how safe they feel in the environment.

Provision of Parking

- **Lack of parking facilities** is identified as an issue in many centers and corridors and can refer to an actual lack of parking facilities (on-street or off-street) for specific land uses or a perceived lack of parking facilities due to high or unbalanced parking demand.

- **Effective use of the curb zone** is an issue in areas where the existing use of the curb zone no longer reflects the needs of the adjacent land use (e.g. unused curb cuts, loading zones, taxi zones, parking stalls with short time stays adjacent to retail/commercial businesses).
- **Supporting commercial activity** is an issue when commercial parking demands are greater than the supply that is readily available on the corridor or in the center, with employees and/or customers regularly relying on side streets and streets in the adjacent neighborhoods to satisfy the demand.
- **Accommodating new development** is an issue in many areas throughout the city, particularly in areas that do not require new development to provide off-street parking.
- **Accommodating special events** is an issue in any area that that has special events, such as neighborhood farmers markets, that draw in a lot of people from within and outside the center or corridor, who may not be familiar with whereto park.

Use of parking

- **Low turnover** is an issue in many centers and corridors that currently do not regulate time-stays or the existing time stays are not enforced or do not reflect the needs of the adjacent land uses.
- **Time stay violations** can be an issue in areas where the time stay needs of patrons exceeds the time stay regulation of the parking supply. This is most common in areas where 1-hour time stays are used and the needs of patrons are 90-minutes to 2-hours. They can also occur in areas where enforcement is low.
- **Lack of enforcement** is generally considered to be an issue in most areas, particularly centers and corridors with low turnover and high time stay violations. However, it can also be an issue along neighborhood streets where people store cars, boats, or other objects in the right-of-way for several days or weeks at a time.

Other

- **Limited transportation options** refers to a lack of adequate pedestrian, bicycle, or transit facilities and services, a lack of information on how to walk, bike, or take transit to access an area, or the proximity of origins and destinations that make walking, biking, or taking transit difficult.
- **Vehicle ownership** refers to the number of vehicles owned per household or business within or adjacent to the centers and corridors and the impact vehicle ownership has on parking conditions.
- **Policy and Code** issues refers to any existing or potential future policies and codes that determine how parking is supplied and how it is used.
- **Lack of information/education** refers to a lack of information on how and where to park and a lack of education on parking rights.

Developing a clear understanding of what the issues are and then gaining consensus on those issues is an important step toward parking management. Each section of the toolkit includes a table that summarizes the common issues. These issues serve as the gateway into the toolkit and the selection of various tools and strategies.

How do I select a tool from the Toolkit?

At this stage you should have (1) developed a clear understanding of the issues, (2) gained consensus among the stakeholders on what the issues are, and (3) determined the extent of parking management that is needed, whether through discussions with neighborhood or local business associations, through field observations and a basic investigation of parking conditions (See Section 3 of the toolkit for information on how to perform a Neighborhood Audit), or through a detailed analysis of parking conditions. The next step is to select one or more tools from the toolkit that are suited to the agreed upon issues to address.

Organization of the Toolkit

The tools and strategies identified in the toolkit have been screened for their applicability to mixed-use centers and corridors in Portland. The screening process considered the scale and mix of uses in these places, the type and range of parking demands that may occur, the quality of multimodal access, the growth and evolution potential of the area, and the city's Comprehensive Plan, code, and goals for sustainability.

The tools and strategies have been organized by "shelves" in the toolkit, ordered to generally reflect the logical progression from simple solutions to complete and, sometimes costly, parking management plans. Users should expect to frequently find effective strategies for many parking issues in the higher shelves of the toolkit, but delve more deeply as the issues grow in number and/or complexity. Therefore, the user is encouraged to scan the top shelves first, with each new circumstance that comes to light.

The shelves are labelled and organized as follows:

- **Shelf 1: User Information** – The tools and strategies included on this shelf are intended to improve the dissemination of user information. User information is vitally important to ensure an understanding of the local parking system and the appropriate ways to use it. Many parking issues can be improved or resolved with more effective communications about the location, purpose, and availability of parking, as well as about other methods of accessing a neighborhood center or corridor (e.g., walking, biking, transit).
- **Shelf 2: Transportation Demand Management** – The tools and strategies included on this shelf are intended to reduce parking demand by promoting active modes of transportation for commute and non-commute trips. These tools and strategies are particularly effective in reducing parking demand generated by employees of local businesses and supporting car-free lifestyles of local residents.

- **Shelf 3: Manage Existing Parking Supply** – The tools and strategies included on this shelf are intended to encourage more efficient use of the existing parking supply and improve the quality of service provided to parking users. When parking demand regularly exceeds the effective capacity of the parking supply (85%), these tools and strategies can be used to help manage parking.
- **Shelf 4: Enforcement** – The tools and strategies included on this shelf are intended to improve enforcement of parking management strategies. Almost all parking management strategies require regular enforcement to be effective. In general, parking enforcement should be frequent, fair, and friendly and designed to encourage proper parking behavior, not to discourage users from accessing an area.
- **Shelf 5: Implement and Manage an Area Parking Permit Program** – The tools and strategies included on this shelf are intended to help implement and manage an Area Parking Permit Program. Area parking permit programs help manage parking in residential areas where non-resident parking is impacting the ability of residents to park. Programs protect and improve the quality of life and character in the neighborhood by reducing overflow parking, discouraging cut-through traffic, and ensuring adequate parking spaces for citizens who live in the neighborhood.
- **Shelf 6: Implement and Manage Paid Parking** – The tools and strategies included on this shelf are intended to help implement and manage a paid parking program. Paid parking programs charge users for their use of parking facilities and services. They provide revenue and cost recovery for parking facilities, encourage more efficient use of parking facilities, reduce vehicle traffic, and encourage use of alternative travel modes.
- **Shelf 7: Create New Parking Supply** – The tools and strategies included on this shelf are intended to help create a new parking supply. Given the high cost (money, land, area character) associated with creating a new parking supply, these tools and strategies should generally be considered as a last resort.

Selection Process

Two matrices have been created to aid the selection of tools and strategies that address specific issues (Table 1) or achieve particular objectives (Table 2). A third matrix (Table 3) provides information about potential roles key stakeholders may play in implementing a particular parking management strategy, and identifies code-related challenges to implementation. The following provides a summary of each matrix and how they aid in the selection of an appropriate tool from the toolkit.

Table 1 summarizes common issues identified through parking usage and turnover inventories and neighborhood audits. As previously indicated, these issues serve as the gateway into the toolkit and the selection of tools and strategies.

Table 1: Issues Matrix

Strategies	High Parking Demand	Unbalanced Parking Demand	Underutilized Parking Facilities	Lack of Parking Facilities	Limited Transportation Options	Supporting Commercial Activity	Accommodating New Development	Accommodating Special Events	Spillover into Residential Areas	Low Turnover	Time Stay Violations	Effective Use of the Curb Zone	Lack of Enforcement	Vehicle Ownership	Traffic Circulation and Congestion	Safety Concerns	Parking Policy and Code issues	Lack of Information/Education
1. User Information	●	●	●	●		●	●	●	●		●	●	●	●	●	●		●
2. Transportation Demand Management (TDM)	●			●	●	●	●	●				●		●		●		
3. Manage Existing Parking Supply	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
4. Enforcement	●	●	●	●		●	●	●	●	●	●	●	●	●	●			
5. Implement and Manage a Parking Permit Program	●	●	●	●					●			●		●				
6. Implement and Manage Paid Parking	●	●	●	●	●	●	●	●	●	●	●	●		●	●			
7. Create New Parking Supply	●	●	●	●	●	●	●	●	●			●			●			

As shown in Table 1, all seven shelves include tools that will address high parking demand. Therefore, if ***high parking demand*** is the issue, consider tools from Shelf 1 (User Information) before proceeding to lower shelves and more difficult and/or costly tools to use. If, however, ***low turnover*** is the issue, then the first tool that specifically addresses this issue is found on Shelf 3 (Manage the Existing Parking Supply).

Use of Table 1 will be a common method of scanning the toolkit for potentially effective parking management strategies to address the issues associated with a specific neighborhood center or corridor. Most tools are additive in effect on an issue and many are complementary to the point of having a compounding effect.

Table 2 summarizes the evaluation matrix used throughout the development of the toolkit to ensure that the tools and strategies reflect the key objectives of the city

Table 2: Key Objectives to Accomplish

Strategies	Supports economic development by improving access to mixed use centers and corridors for one or more travel modes	Reduces negative impacts of parking spillover into surrounding neighborhoods	Supports the City's mode split and climate goals by encouraging non-auto trips	Supports use of the curb zone by the priority user	Has broad base of support among neighborhood stakeholders	Encourages lower rates of car ownership	Cost and feasibility of implementation	Impact on Housing and Commercial Affordability	Can be monitored and adjusted over time
1. User Information	1	1	1	0	1	1	-1	0	0
2. Transportation Demand Management (TDM)	1	0	1	0	0	1	-1	0	1
3. Manage Existing Parking Supply	1	1	1	1	1	1	-1	0	1
4. Enforcement	0	1	0	1	1	0	0	0	1
5. Implement and Manage a Parking Permit Program	0	1	1	1	-1	0	0	0	1
6. Implement and Manage Paid Parking	0	-1	1	0	-1	1	0	0	1
7. Create New Parking Supply	1	1	-1	0	0	-1	-1	-1	1

-1 - no/negative impact
0 - neutral/no impact
1 - yes/positive impact

Table 3 summarizes the stakeholder roles and code-related challenges associated with the tools and strategies included in the toolkit. The information provided in Table 3 can be used to determine what role different stakeholders play in the implementation process and what policy and code related barriers exist, if any, to the implementation of specific tools and strategies. Title 16 (Vehicles and Traffic), Title 17 (Public Improvements), and Title 33 (Zoning) of the Portland City code regulate parking within the City. In addition, there are Portland Policy Documents that address parking as well (PPDs include Binding City Policies and Administrative Rules). Tools identified as (Y) are Code Ready and will not require changes to City Code or PPDs, while tools identified as (P) or (N) will require changes prior to implementation.

Table 3: Stakeholder Roles and Code-related Challenges

Tools and Strategies	Implementation			Policy Readiness				
	NA/BA	LBO/O	City Agency	Code Ready	Title 16	Title 17	Title 33	PPD
1. User Information								
I. Consistent Parking Branding		L	S	Y				
II. Multi-family Branding: "Certified Car Free"		L	S	P				X
III. FAQ "How to Park" Resources	S	L		Y				
IV. Neighborhood Parking Maps	S	L		Y				
V. Wayfinding and Signage		S	L	Y				
VI. Coordination with Community Destinations	S	L		Y				
VII. Stakeholder Outreach and Education	S	L		Y				
VIII. Public Information Campaign	S		L	Y				
IX. Active Media Outreach	S		L	Y				
X. Web-Based Communication and Social Media	S			Y				
XI. Parking Ambassador	S	L		Y				
XII. Real-Time Availability Applications			L	Y				
XIII. Parking Guidance Systems			L	Y				
2. Transportation Demand Management								
I. Improve Bicycle and Pedestrian Facilities		S	L	P		X	X	
II. Improve Transit Facilities and Services[1]		S	S	Y				
III. Increase Transit-Supportive Programs and Services			L	P			X	X
IV. Improve Safety and Security	S		L	Y				
V. Provide Preferential Parking for Carpool Vehicles			L	Y				
VI. Support Car-Share Programs (e.g. Zipcar, car2go)			L	Y				
VII. Support Vanpooling Programs			L	Y				
VIII. Support Bicycle Share Programs			L	Y				
IX. Bicycle Parking (bike corrals, staples, other)			L	P			X	
X. Establish Neighborhood Rideshare Program	S			Y				
XI. Parking Cash-out Program		S		P			X	
XII. Unbundle parking			L	P			X	
XIII. Require Developers to Provide Off-street Space for Carshare			L	N			X	
XIV. Require Developer and/or Property Manager to Provide a Monthly Mobility Subsidy to Tenants			L	N		X	X	

1. TriMet would lead the implementation of this tool
NA/BA = Neighborhood Association/Business Association
LBO/O = Local Business Owner/Operator
PPD = Portland Policy Document

L = Lead
S = Support
Y = Yes
N = No
P = Possible

Table 3: Stakeholder Roles and Code-related Challenges (cont.)

	Implementation			Policy Readiness				
Tools and Strategies	**NA/BA**	**LBO/O**	**City Agency**	**Code Ready**	**Title 16**	**Title 17**	**Title 33**	**PPD**
3. Manage Existing Parking Supply Tools and Strategies								
I. Good Neighborhood Agreement		S		Y				
II. Shared Parking (Joint Use Parking)		S		P			X	
III. Public-Private Partnership/Parking Collaborative		S	L	P			X	
IV. Encourage Valet Operations		S	L	Y				
V. Implement Time Limit Restrictions			L	Y				
VI. Recalibrate Parking Entitlements			L	N			X	X
VII. Neighborhood Audit			S	Y				
VIII. Monitor, Measure, Evaluate Performance			S	Y				
4. Enforcement Tools and Strategies								
I. Implement Parking Enforcement			L	Y				
II. Focused Enforcement			L	Y				
III. Issue Warnings			L	Y				
IV. Ticket Forgiveness[1]			L	N				
V. Extend Grace Period			L	P	X			
VI. Extend Enforcement Hours			L	P	X			X
VII. Graduated Citation Structure[1]			L	N	X			
VIII. Booting and Towing			L	Y				
IX. License Plate Recognition Enforcement			L	Y				
5. Implement and Manage an Area Parking Permit Program Tools and Strategies								
I. Implement Area Parking Permit Program			L	P	X			
I.A. Exclude New Developments That Build With No Parking from Program Eligibility			L	N	X			X
I.B. Limit the Number of Permits per Residential Unit			L	N	X			X
I.C. Constrain the Number of Permits Available to Residents with Access to Off-Street Parking			L	N	X			X
I.D. Limit the Total Number of Permits Issued in an Area			L	N	X			X
I.E. Graduated Rates for Multiple Permits			L	N	X			X
I.F Demand-Based Pricing for Permits			L	N	X			X
I.G. Virtual Permitting			L	Y				

1. Multnomah County regulates parking citations within the City, and therefore would need to lead the implementation of this tool.

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Table 3: Stakeholder Roles and Code-related Challenges (cont.)

	Implementation			Policy Readiness				
Tools and Strategies	**NA/BA**	**LBO/O**	**City Agency**	**Code Ready**	**Title 16**	**Title 17**	**Title 33**	**PPD**
6. Implement and Manage Paid Parking Tools and Strategies								
I. Implement a Paid Parking Program			L	Y				
I.A. First Hour Free Program			L	Y				
I.B. Demand-Based Pricing			L	N				X
I.C. Progressive Parking Pricing			L	N				X
I.D. Balance On-and Off-Street Parking Rates			L	N				X
I.E. Extend Paid Hours			L	P				X
I.F. Validation Program			L	Y				
I.G. Establish Parking Meter District			L	Y				
I.H. Improve Payment Technology			L	Y				
7. Create a New Parking Supply Tools and Strategies								
I. Support a Driveway Share Program		S	L	N			X	
II. Convert No Parking Areas to Parking Areas		S	L	Y				
III. Convert Regular Parking to Carpool Parking		S	L	Y				
IV. Create Motorcycle or Compact Vehicle Parking			L	Y				
V. Reconfigure Existing Off-street Parking Facilities		L		P			X	
VI. Restripe Parallel Parking to Angled Parking			L	Y				
VII. Convert Travel Lanes to Parking Lanes			L	Y				
VIII. Stacked Parking		L		Y				
IX. Car Stackers		L		Y				
X. Establish Remote Parking Areas Served by Transit			L	P			X	
XI. Construct a New Parking Facility		L	L	Y				

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Section 2 Toolkit

TOOLKIT

1. USER INFORMATION

Providing information to the public regarding the planning and implementation of various parking management tools and strategies is often critical to the success of a program. Those who should be involved in the planning process may vary depending on who will be most impacted by the program; however, residents, local business owners, City representatives, and elected officials should be included at a minimum. Involving these people early on in the planning process is instrumental in garnering support and developing an understanding of the program. Once the program is in place, communicating changes to the public, such as parking locations, rates, and regulations helps to strengthen users understanding of the parking system.

Implementation

Implementation of the tools and strategies within this section should be considered in areas where there is a lack of information on where to park, where a new parking plan or program is being developed, or where changes to an existing parking plan or program will have an impact on parking conditions within an area. In general, these tools and strategies should be considered prior to or in conjunction with the tools and strategies within the remaining sections. This is due, in part, to the ability of these tools and strategies to address many of the common parking issues identified within the City's mixed-use centers and corridors. Table 4 identifies eighteen common parking issues along with what tools and strategies included within this section that can address each issue.

Table 4: User Information Tools and Strategies

User Information Tools and Strategies	High Parking Demand	Unbalanced Parking Demand	Underutilized Parking Facilities	Lack of Parking Facilities	Limited Transportation Options	Supporting Commercial Activity	Accommodating New Development	Accommodating Special Events	Spillover into Residential Areas	Low Turnover	Time Stay Violations	Effective Use of the Curb Zone	Lack of Enforcement	Vehicle Ownership	Traffic Circulation and Congestion	Safety Concerns	Parking Policy and Code Issues	Lack of Information/Education
I. Consistent Parking Branding		●	●	●		●									●			●
II. Multi-family Branding: "Certified Car Free"	●						●							●				
III. FAQ "How to Park" Resources		●	●	●		●		●	●			●			●	●		●
IV. Neighborhood Parking Maps		●	●	●		●	●		●						●			●
V. Wayfinding and Signage		●	●	●		●		●							●			
VI. Coordination with Community Destinations		●	●	●		●									●			●
VII. Stakeholder Outreach and Education						●	●											●
VIII. Public Information Campaign	●					●	●		●							●		●
IX. Active Media Outreach	●					●		●								●		●

X. Web-Based Communication and Social Media	•					•		•							•	•		•
XI. Parking Ambassador						•	•						•					•
XII. Real-Time Availability Applications	•	•	•	•		•					•				•			•
XIII. Parking Guidance Systems	•	•	•	•		•									•			

Tools and Strategies

The following presents the tools and strategies for providing user information.

I. Consistent Parking Branding

Off-street parking facilities should be branded to have a common appearance, simplifying the process of finding and accessing parking. Brands can be as simple as a common "P" or include program names, logos, or other marketing elements. Smart Park and City Center Parking currently use consistent parking branding to help identify public parking within the Central City.

- **Special Considerations for Implementation:** While no code or policy changes are required to implement this tool, the mix of City owned versus private facilities in a given area will influence the feasibility and effectiveness of this strategy. Common branding and marketing among and between separate owners of parking would require negotiation and shared-use agreements. This may be best led by the City and/or a neighborhood business association already in place in an affected area.
- **Benefits:** Customer convenience. Clear direction to available facilities. Less congestion due to recirculation. Integration of on- and off-street facilities to direct longer term stays into off-street stalls.

II. Multi-family Branding: "Certified Car Free"

A city-established "car free" certification process for owners and developers of multi-family housing could be used to provide relief to off-street parking requirements and opportunities for shared-use parking agreements. Branding multi-family housing as "Certified Car Free" would require owners/managers to provide facilities and services, such as bike lockers and carshare vehicles, necessary to attract tenants/owners who lead car free lifestyles.

- **Special Considerations for Implementation:** A certification program would need to be developed and pilot-tested. Once established, the program could be implemented by the City in coordination with the owners/operators of multi-family housing. While this could be implemented on an informal voluntary basis, the City may wish to develop Administrative Rules that describe the program criteria.
- **Benefits:** Reduces demand for parking (particularly long-term parking), increases the use of healthy transportation options, and reduces the likelihood of auto congestion.

III. FAQ "How to Park" Resources

A frequently asked questions (FAQ) resource provides the opportunity to answer typical customer questions before they are asked. Additionally, “how to park” documents can be developed to introduce the proper locations and opportunities for parking in a community. These resources can include the location, rate, and regulation of different parking facilities and a list of common mistakes that could lead to citations. These should be living documents, updated as interactions with customers occur.

- **Benefits:** Customer convenience. Proper and more efficient use of available parking resources.

IV. Neighborhood Parking Maps

Neighborhood parking maps can provide parking locations, rates, availability, nearby destinations, and other useful information to help motorists plan their trip. Neighborhood parking maps can also be linked to the City’s website, the neighborhood or business association website, or printed and posted in local businesses or in community centers to promote efficient use of the parking system.

- **Benefits:** Customer convenience. More coordinated and strategic management of available supply.

V. Wayfinding and Signage

Wayfinding and signage communicates parking locations, availability, rates, and other key considerations for motorists. Wayfinding and signage may be temporary to support special events or other temporary changes in parking conditions or they may be permanent, static, or dynamic. The use of dynamic signage provides more flexibility with provision of critical user information.

- **Benefits:** Customer convenience. More coordinated and strategic management of available supply. Reduced congestion and circling for parking.

VI. Coordination with Community Destinations

Parking programs can be coordinated with local businesses and destinations to help match available parking supply with parking demands. This may include providing a link on a business website to the parking program site as a means of defining parking availability or working/liaising directly with business needs.

- **Special Considerations for Implementation:** At a minimum this type of strategy will need to be supported with data identifying available parking resources and a lead entity capable of coordinating with and obtaining consent from property owners with available supply. This strategy is best implemented in areas, corridors or districts with an existing neighborhood business association already in place. The City could assist in identifying regulatory barriers that might be in place that would limit the provision of commercial parking in a specific area (defined by zoning).

- **Benefits:** Customer convenience. More coordinated and strategic management of available supply. More efficient use of parking resources.

VII. Stakeholder Outreach and Education

Stakeholder outreach and education can include soliciting input for new programs, surveying customer experiences, and communicating and educating the public on the implementation of new programs or strategies. Quality stakeholder outreach should be conducted often, especially when changes are made to the program.

- **Benefits:** Customer convenience. More coordinated and strategic management of available supply. Feedback mechanism for program evaluation, refinement, and adaptation.

VIII. Public Information Campaign

Public information campaigns can be used to inform motorists of changes to a parking program, such as the location of parking facilities, availability, rates, and other key considerations for motorists.

- **Benefits:** Customer convenience. Proper and more efficient use of available parking resources.

IX. Active Media Outreach

Media can be used to inform motorists of changes in a parking program, including the implementation of new technology or changes in policy. If media opportunities are not actively sought, media attention will be limited to reactionary pieces, which are often negative.

- **Benefits:** Customer convenience. More coordinated and strategic management of available supply.

X. Web-Based Communication and Social Media

Parking program websites are a one-stop-shop for extensive information on the parking and transportation system, including parking locations, rates, availability, regulations, online mapping, alternatives, and citation payment information. Social media sites provide another outlet for reaching customers, communicating elements of the parking program, and receiving feedback.

- **Benefits:** Customer convenience. More coordinated and strategic management of available supply.

XI. Parking Ambassador

Ambassadors can supplement parking enforcement efforts. The intent and purpose of an ambassador program is to provide information and guidance, thus improving the parking experience through education and customer service.

- **Special Considerations for Implementation:** This tool can be implemented at any time but would likely require additional resources, training and deployment. An example of an ambassador program is in place in downtown Portland, which provides Ambassador and on-street security services funded through an Enhanced Services District.
- **Benefits:** Educated users and improves compliance with parking regulations. More friendly than traditional enforcement.

XII. Real-time Availability Applications

Real-time availability applications can include signs, maps, smartphone applications, websites, and electronic devices that provide useful real-time information on parking conditions, availability, rates, and other key information for motorists.

- **Special Considerations for Implementation:** Real-time parking availability applications would require a significant investment in data collection technology, including loop detection or camera systems. However, interest by private app developers could lead to lower cost systems where parking availability information is user based or taps into open source systems that might be developed in the future.
- **Benefits:** Customer convenience. More coordinated and strategic management of available supply. Improved user and parking system efficiency. Reduced congestion and circling for parking.

XIII. Parking Guidance Systems

Parking guidance systems, similar to the one at the Portland Airport or at the west side Morrison Bridgehead for SmartPark, typically consist of dynamic wayfinding signage that navigates motorists to available spaces. The systems require a significant investment in data collection technology, including loop detection or camera systems.

- **Special Considerations for Implementation:** Parking-guidance system would require a significant investment in data collection technology, including loop detection or camera systems.
- **Benefits:** High customer convenience and satisfaction, particularly when coupled with real-time communications. More coordinated and strategic management of available supply. Reduced congestion and circling for parking.

2. TRANSPORTATION DEMAND MANAGEMENT

There are many Transportation Demand Management (TDM) tools and strategies that can be used to reduce parking demand by promoting active modes of transportation for commute and non-commute trips. Implementation of these strategies can not only reduce parking demand, but can lead to other benefits, such as a reduction in congestion. The TDM tools and strategies described below include

improvements to the non-vehicular networks as well as commuter-based incentives designed to reduce parking demand.

Many TDM investments have the effect of increasing non-auto access capacity. Bicycle parking is an excellent example. Such physical assets invite bicycle travel, provide a safe and secure place to store bicycles, and reduce vehicular activity and auto parking demand.

For the most part, TDM programs and strategies can be delivered at any time in an area and do not have to be tied directly to parking management. For instance, promoting transit, expanding bicycle networks and trip end facilities and improving the safety and connectivity of pedestrian ways all have community benefits and can actually reduce auto demand (and therefore parking need) in advance of parking constraints that growth could bring if TDM was not actively pursued. Nonetheless, TDM is a more effective tool in situations when parking is constrained and when coupled with programs/strategies that price parking, creating a more realistic choice option for people.

Implementation

Implementation of the tools and strategies within this section should be readily considered in areas where parking is constrained (i.e., 85%+). Bicycling and walking strategies are "first response" programs as some areas may not have high levels of transit service. In areas where transit is in place, pass incentives are more realistic, especially when coupled with parking time stays and pricing. Increasing transit service and frequencies is best pursued in areas where existing parking management is already aggressive and parking pricing is in place. Also, increasing service and frequencies can be successfully pursued in the context of larger area and corridor transit planning and investment efforts (usually led in partnership with TriMet). Table 5 identifies eighteen common parking issues along with the tools and strategies included within this section that can address each issue.

Table 5: Transportation Demand Management (TDM) Tools and Strategies

Transportation Demand Management (TDM) Tools and Strategies	High Parking Demand	Unbalanced Parking Demand	Underutilized Parking Facilities	Lack of Parking Facilities	Limited Transportation Options	Supporting Commercial Activity	Accommodating New Development	Accommodating Special Events	Spillover into Residential Areas	Low Turnover	Time Stay Violations	Effective Use of the Curb Zone	Lack of Enforcement	Vehicle Ownership	Traffic Circulation and Congestion	Safety Concerns	Parking Policy and Code Issues	Lack of Information/Education
I. Improve Bicycle and Pedestrian Facilities	●				●	●		●						●				
II. Improve Transit Facilities and Services	●				●	●		●						●				
III. Increase Transit-Supportive Programs and Services	●				●			●						●				
IV. Improve Safety and Security	●				●	●		●						●		●		
V. Provide Preferential Parking for Carpool Vehicles				●	●			●				●						
VI. Support Car-Share Programs	●				●		●							●				

VII. Support Vanpooling Programs	•				•		•							•				
VIII. Support Bicycle Share Programs	•				•		•							•				
IX. Bicycle Parking	•			•	•	•	•	•				•		•				
X. Establish Neighborhood Rideshare Program	•				•		•							•				
XI. Parking Cash-out Program	•				•									•				
XII. Unbundle parking					•		•							•				
XIII. Require Developers to Provide Off-street Space for Carshare	•			•	•		•					•		•				
XIV. Require Developer and/or Property Manager to Provide a Monthly Mobility Subsidy to Tenants	•				•		•							•				

Tools and Strategies

The following summarizes the tools and strategies for implementing TDM.

I. Improve Bicycle and Pedestrian Facilities

Providing enhanced bicycle and pedestrian facilities (e.g. bicycle lanes, bike parking, safe crossings, and sidewalks) along with wayfinding and signage and other infrastructure improvements will enhance the comfort and safety of bicyclists and pedestrians and encourage biking and walking as daily forms of transportation for a variety of trip purposes.

- **Special Considerations for Implementation:** Improvements need to be consistent with the Transportation System Plan. May require changing SDC ordinance and ability to require off-site improvements in lieu of or in addition to frontage improvements.
- **Benefits:** Reduces reliance on automobile trips, increases health, and increases transportation options that can be pursued routinely or as weather and other factors support.

II. Improve Transit Facilities and Services

Improving transit facilities and services can encourage drivers to choose transit over vehicular travel. Strategies include improved transit stops amenities, frequency of service, hours of service, accessibility, and marketing.

- **Special Considerations for Implementation:** This tool can be implemented at any time or when concentration of population and employment warrant additional services. However, efforts to bring such facilities and services to a specific area are not likely to be led by the City, but through TriMet. The City and district/area based associations could recommend agreements with TriMet to enhance service on key corridors based on development and or implementation of more “transit friendly” programs in affected areas (e.g., parking pricing, pass subsidies/incentives, etc.).
- **Benefits:** Increases non-auto accessibility, reduces reliance on automobile trips, increases healthy transportation choices, and may improve property values.

III. Increase Transit-Supportive Programs and Services (free transit passes, pass sales, trip planning, etc.)

Areas experiencing consistently high and sustained parking demands are likely to benefit from improved transit service and transit-supportive programs. Possibilities for car free lifestyle choices are increased, employees can find viable alternatives to driving and parking in the neighborhood, and customers/visitors can use transit as a reliable form of access. Work with TriMet to increase transit-supportive programs and services that encourage use of public transit as an alternative to private automobiles.

- **Special Considerations for Implementation:** This tool can be implemented at any time though research indicates that transit programs are increasingly effective when provided in coordination with paid parking. The City is currently working on changing code requirements (Title 33 and Title 17) related to TDM and parking management for new development. These changes are intended to augment and synergize area-based efforts to implement TDM and parking management strategies.
- **Benefits:** Reduce congestion, demand for parking, reliance on automobiles, and vehicle ownership.

IV. Improve Safety and Security

Real or perceived safety and security concerns can discourage walking, cycling, and transit use. These problems can be addressed through various programs and strategies that increase security, including neighborhood watch and community policing programs, special police patrols (including police on foot and bicycles), improved lighting, pedestrian escorts, and monitoring of pedestrian, bicycle, transit and park & ride facilities.

- **Benefits:** Improves community vitality and increases non-auto travel.

V. Provide Preferential Parking for Carpool Vehicles

Parking spaces can be reserved on- or off-street for vehicles with more than one passenger (particular spaces associated with commuter demand). Placing the stalls in highly desired parking areas (e.g., closest to building entries or elevators) serve to encourage users to “pool” passengers rather than driving alone. Carpool parking is currently required for office, industrial and institutional uses when there are more than 20 parking spaces on the site (subsection 33.266.110.C). The City’s carpool program is addressed in the Transportation Policies and Administrative Rules (Binding City Policy BCP-TRN-6.05).

- **Special Considerations for Implementation:** This tool can be implemented at any time, though research indicates that carpool programs are increasingly effective when provided as a contrast to parking costs for drive alone trips (e.g., carpool parking is provided at a cost less than single occupant vehicles). Such programs also need to be supported with at least a basic level of compliance monitoring. Thus, areas and associations would need to work with

the City of Portland through its existing carpool program for on-street parking. Preferential carpool programs on private property would need to be coordinated individually with parking owners, which might require participation of a neighborhood/business association. Once established communication of program availability needs to be sustained.

- **Benefits:** Increases auto occupancy, reduces travel and parking demand, and reduces congestion.

VI. Support Car-Share Programs (e.g. Zipcar, car2go)

- Carshare services, such as Zipcar and car2go are a substitute for private vehicle ownership. They make the occasional use of a vehicle more affordable. Also, by allowing households to reduce their vehicle ownership they provide an incentive to reduce driving and rely more on alternative modes. Lastly, such services can reduce parking demand. The use of on street parking by car-share vehicles is addressed in the Transportation Policies and Administrative Rules (Binding City Policy BCP-TRN-6.04 and Administrative Rule ARB-TRN-3.309).
- **Benefits**: Encourages/supports lower rates of individual vehicle ownership and the resulting parking demand.

VII. Support Vanpooling Programs

Vanpools offer ridershare services for larger groups of people commuting to a common destination. Support for vanpooling can be accomplished by providing priority parking spaces for vanpools at common destinations, ride matching services, and a vanpool subsidy.

- **Special Considerations for Implementation:** This tool can be implemented at any time though research indicates that vanpool programs are increasingly effective when provided as a contrast to parking costs for drive alone trips (e.g., vanpool parking is provided at a cost less than single occupant vehicles). Metro provides vanpool information and entry level assistance for setting up such programs (http://www.oregonmetro.gov/tools-living/getting-around/share-ride/vanpool) and CTRAN provides assistance as well (http://www.c-tran.com/c-tran-services/vanpool).
- **Benefits:** Increases auto occupancy, reduces travel and parking demand, and reduces congestion.

VIII. Support Bicycle Share Programs

Bicycle share programs, such as Portland Bike Share, provide bicycle rental for short (less than 3 miles), urban trips. A typical bike share program consists of a fleet of bicycles, a network of automated stations where bikes are stored, and bike redistribution and maintenance programs. Bikes may be rented at one station and returned to another. Bike share programs can be used for a variety of purposes. Residents can ride for recreation or to nearby commercial services, employees can ride to meet daily needs while at work, and visitors can “park once” and extend their trip distance.

- **Special Considerations for Implementation:** This tool can be implemented at any time but generally requires significant investment in planning, infrastructure and management. This strategy tool is likely not readily available to most corridors and centers and is best pursued through long-term planning with the City of Portland on future efforts to expand Bike Share outside the core area.
- **Benefits:** Encourages/supports non-auto trips and lower rates of individual vehicle ownership. Reduces auto parking demand vehicle miles traveled.

IX. Bicycle Parking (bike corrals, staples, other)

Providing enhanced bicycle parking facilities, including on-street (e.g. bike corrals) and off-street (e.g. staples), as well as near business entrances and in any parking structure or lot, will encourage bicycle use as a daily form of transportation.

- **Special Considerations for Implementation:** This tool can be implemented at any time, particularly in areas where existing bicycle parking is inadequate. Efforts to do this can be made through the City's existing program for placing bicycle parking in the public right-of-way. Off-street bicycle parking for new development is required by section 33.266.220. However, in some cases, the current code requirements for bicycle parking may be inadequate and should be reevaluated. Consideration should also be given to requiring minimum bicycle parking standards for remodels/redevelopment, not only for new construction.
- **Benefits:** Increases non-auto accessibility, reduces reliance on automobile trips, increases healthy transportation choices and increases "parking capacity" as the number of bike stalls that fit within a single vehicle space is at least 4 bikes to 1 car.

X. Establish Neighborhood Rideshare Program

Neighborhood rideshare programs can be used to connect residents from the same neighborhoods who want to ride to work. These programs serve as a low-cost, low-risk invitation to try riding for commute purposes with neighbors that can "lead the way."

- **Special Considerations for Implementation:** This tool can be implemented at any time and rideshare matching programs are already in place through Metro's Drive Less Connect network (www.drivelessconnect.com).
- **Benefits:** Encourages/supports non-auto trips and lower rates of individual vehicle ownership.

XI. Parking Cash-out Program

Employers provide a cash-equivalent to employees in lieu of a subsidized parking space. Such a program exposes employees to the cost of parking and more fully informs the decision of which mode to use for commuting. Employers can go further by using the cash-equivalent value of the parking as a financial

incentive for employees to walk, bike, carpool, or take transit. This type of program is dependent on employer action, although the City may require such action as a part of a TDM program conditioned with the development. Alternatively, the City may seek a partnership role with one or many businesses in an area as a means of "freeing up" private off-street parking for use by customers and visitors, because the employees are generating lower parking demands.

- **Special Considerations for Implementation:** This tool can be implemented at any time. However, it depends on employer action that is either required by the City through some official action or undertaken voluntarily. If it is to be required in more circumstances, code changes to Title 33 would be needed to expand where TDM plans are required and Administrative Rules regulating TDM Plans should be adopted.
- **Benefits:** Provides a market incentive for employees to consider alternative modes.

XII. Unbundle Parking

Unbundled parking separates parking spaces from the lease or purchase price of a residence or commercial space and monetizes that space allowing tenants to only pay for the parking they need. The City may require such action through development approval; however, controls must be in place (parking permit zones) that preclude tenants from simply relying on curbside parking for the long-term storage of their vehicles.

- **Special Considerations for Implementation:** This tool can be implemented at any time as a voluntary step by property managers, and is often the case when there are fewer parking spaces than dwelling units or commercial tenant spaces. Requiring this of *new* development would involve changes to Title 33 to expand where TDM plans are required. Administrative Rules regulating TDM Plans should be adopted as well. If the City did initiate code changes, it could not retroactively impose this kind of requirement on existing development (necessitating voluntary initiation by property managers). Again, curbside controls and/or pricing should be in place to prevent the misuse of on-street public parking.
- **Benefits:** Promotes car free living, reduces parking demand, reduces vehicle miles traveled, and increases healthy travel choices.

XIII. Require Developers to Provide Off-street Space for Carshare

For developments that require parking, require developers to provide an off-street space for carshare vehicles on the property. This requirement could be part of a "Certified Car Free" program the City creates for residential developments or implemented through a TDM Plan for new development.

- **Special Considerations for Implementation:** This tool can be implemented voluntarily at any time and is encouraged by subsection 33.266.110.E.6 which allows a reduction of two parking spaces for every one car sharing space up to a maximum of 25%. In order to make this a requirement for new development, changes to Title 33 would be needed to require TDM Plans in more circumstances and/or require participation in the "Car Free

Certification" program. The potential need to modify code may initially limit this to "encouraging" the provision.

- **Benefits:** Supports a car free lifestyle, reduces lease or rent costs for those who choose not to park or own a vehicle, reduces parking demand, and may reduce per capita vehicle miles traveled.

XIV. Require Developer and/or Property Manager to Provide a Monthly Mobility Subsidy to Tenants

Requiring property managers to fully or partially subsidize carshare program entry fees for tenants can ensure that a carshare service located within close proximity to the property will be viable for the carshare company and used by tenants.

- **Special Considerations for Implementation:** This tool can be implemented at any time or in conjunction with new development if done voluntarily by developers/property owners. If the City did initiate code changes to Title 33 to make this a requirement of new development (potentially as a part of a TDM Plan), they could not retroactively impose this kind of requirement on existing development. Also, if it is made a requirement, the City would need to be cognizant of areas where, even if required, carshare service providers may not, because of volume, find providing the service viable.
- **Benefits:** Supports a car free lifestyle, reduces lease or rent costs for those who choose not to park or own a vehicle, reduces parking demand, and may reduce per capita vehicle miles traveled.

3. MANAGE EXISTING PARKING SUPPLY

Parking management includes a variety of strategies that encourage more efficient use of the existing parking supply, improve the quality of service provided to parking facility users, and improve parking facility design. Parking management can help address a wide range of transportation problems and help achieve a variety of transportation, economic, environmental, and land use development objectives. The City is the implementing party for any management program focused on the public parking system, while individual businesses or those businesses and/or residents that form an alliance, improvement district can be the instigators or implementers of private parking management programs. Parking management is far more effective when there is coordination between public and private supplies. Concerns raised by residents and/or businesses over chronic parking issues will often result in parking studies that define and quantify the problem and then develop a parking management plan that is best suited to address the issues under the given set of circumstances.

Implementation

Table 6 identifies eighteen common parking issues along with the tools and strategies included within this section that can address each issue. Parking management is most effective when efforts are made to control the on-street system (through time limits, pricing (as appropriate) and enforcement). Of course, the decision to implement more aggressive on-street parking management should be demand

driven, thus underscoring the importance of a demand threshold like the 85% Occupancy Standard. Without effective on-street management, the success and (at times) feasibility of strategies to address off-street supply and alternative modes is adversely impacted. In other words, it is difficult to compete with unregulated or free on-street parking when efforts are being initiated to influence users' choice of where to park or to use alternative modes.

Table 6: Parking Management Tools and Strategies

Parking Management Tools and Strategies	High Parking Demand	Unbalanced Parking Demand	Underutilized Parking Facilities	Lack of Parking Facilities	Limited Transportation Options	Supporting Commercial Activity	Accommodating New Development	Accommodating Special Events	Spillover into Residential Areas	Low Turnover	Time Stay Violations	Effective Use of the Curb Zone	Lack of Enforcement	Vehicle Ownership	Traffic Circulation and Congestion	Safety Concerns	Parking Policy and Code Issues	Lack of Information/Education
I. Good Neighborhood Agreement	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
II. Shared Parking (Joint Use Parking)	●	●	●	●		●	●	●	●	●		●						
III. Public-Private Partnership/Parking Collaborative	●	●	●	●		●	●	●	●	●		●						
IV. Encourage Valet Operations	●		●	●	●	●	●	●							●			
V. Implement Time Limit Restrictions	●	●	●	●		●				●		●			●			
VI. Recalibrate Parking Entitlements			●				●							●				
VII. Neighborhood Audit																		●
VIII. Monitor, Measure, Evaluate Performance																		●

Tools and Strategies

The following summarizes the tools and strategies to better manage the existing parking supply.

I. Good Neighborhood Agreement

A Good Neighbor Agreement (GNA) is a written document that contains terms agreed upon by two or more parties, for example a neighborhood association and a business, and defines how to resolve problems that may arise. Neighbors and other stakeholders may pursue this process to express their concerns about how a residential, business, or other facility might impact the livability and safety of their neighborhood or to establish a relationship with a new or existing enterprise. Because a GNA is typically a preventative measure, an enterprise with significant problems may not be a good fit for this kind of agreement. The City can serve in an advisory role to help the two or more parties understand the benefits of a Good Neighbor Agreement.

- **Special Considerations for Implementation:** This tool should be considered for implementation in areas where large businesses, enterprises, or commercial/residential centers have the potential to impact neighborhood livability. City code currently allows for Good Neighborhood Agreements. Additional information is provided on the City's Office of

Neighborhood Involvement website at https://www.portlandoregon.gov/oni/article/413126.

- **Benefits:** Allows the parties most directly involved to take responsibility for addressing issues before they become problems that the City or others must resolve.

II. Shared Parking (Joint Use Parking)

Shared parking allows for multiple proximate land uses to share a common parking supply because the peak demand for the uses occurs at differing times of day (e.g. office and residential uses). Care must be taken to monitor changes in land uses that may minimize or eliminate the ability to share a common parking resource.

- **Special Considerations for Implementation:** This tool should be considered for implementation in areas with mixed-use development, centralized parking facilities, and private parking facilities with predictable periods of low utilization. The sharing of **required** parking (parking needed to meet minimum parking amounts required by the code) is regulated by Title 33. Subsection 33.266.100.D states that required parking may not be assigned in any way to a use on another site, except for joint parking situations. The City Code provisions for Joint Use Parking (subsection33.266.110.B.2) state that joint use of required parking spaces may occur where two or more uses on the same or separate sites are able to share the same parking spaces because their parking demands occur at different times. However, there are limits on the joint use of required parking spaces -- it is allowed only if the uses and housing types to which the parking is accessory are allowed in the zone where the parking is located. It is further limited by subsection 33.266.100.E which states that required parking spaces for residential uses be located on the site of the use or commonly owned tract and that required parking for all other uses must be within 500 feet. Amending these code sections to allow more flexibility could increase opportunities for joint use parking.
- **Benefits:** Promotes a well utilized parking system, allows for denser level of development, reduces the amount of land required for parking.

III. Public-Private Partnership/Parking Collaborative

Public-private partnerships can open access to existing private parking facilities or construct new parking (for instance, through co-financing) to serve both site specific users and the general public. This improves parking and land use efficiency as well as user satisfaction.

Parking Collaboratives align public agencies with private operators to promote the perceptions of public supply through rebranding, marketing, wayfinding, and customer service. In this model the private operators maintain control of the parking facilities, but the public agency provides guidelines for signage, branding, marketing, and customer service/education. The public entity also provides assistance with promotion of the collaborative.

Overall, coordinated management of private facilities (by the City or private enterprise) can prove effective if the public agency is allowed to manage available supply to optimize the overall parking system for an area without jeopardizing the private business.

- **Special Considerations for Implementation:** This tool should be considered for implementation in areas where existing private parking facilities have large supplies with predictable periods of low utilization or where the City believes a joint partnership in a new development can bring increased value and efficiency for an area through joint "ownership." The use of this tool to provide required parking is limited somewhat by subsection 33.266.100.E which states that required parking spaces for residential uses be located on the site of the use or commonly owned tract and that required parking for all other uses must be within 500 feet. Amending this code section to allow more flexibility could increase opportunities for using this tool to provide required parking.
- **Benefits:** Improves the efficiency of parking resources, synchronizes public and private management practices and investments, and allows for denser level of development. Improves the efficiency of communicating to parking users, simplifies the user decision-making process, promotes a more efficient parking system, reduces parking impacts on surrounding areas and the amount of land required for parking.

IV. Encourage Valet Operations

Valet services are especially successful in business districts with high demand and a constrained parking system. Patrons can exit their vehicle at or near their destinations and valet staff can move vehicles to available supply in a district and/or double load parking facilities to maximize available parking space. Valet parking can be subsidized by businesses or provided to drivers for a fee. Special curbside zones may be necessary or beneficial to improve the effectiveness of a valet system. Monitoring also may be necessary to ensure double-parking and other inappropriate activities do not develop.

- **Special Considerations for Implementation:** This tool should be considered for implementation in areas with congested parking conditions and where demand generated by one or more local businesses could support its use. Also, there should be an available supply of underutilized parking in off-street facilities nearby.
- **Benefits:** Supports high demand businesses by effectively increasing parking supply, improves customer service, reduces traffic circulation and congestion, and maximizes efficiency of parking facilities.

V. Implement Time Limit Restrictions

Time limit restrictions effectively limit the amount of time a vehicle can remain in a parking space (e.g. 15-minute, 30-minute, 1-hour, 2-hours, etc.). Time limit restrictions require signage and enforcement to ensure that regulations are met. The shorter time limits (15-minute, 30-minute, and 1-hour) should be used sparingly and only in areas where adjacent land uses require higher levels turnover; otherwise, these time limits do not provide sufficient time for visitors and patrons of local businesses.

***V.A. Reduce Time Limits**. Parking time limits can be reduced as a means of increasing the effective capacity of the parking system. This should only be done when monitoring has shown that average durations of stay are less than the existing time limits OR there is access (public or private) to other parking facilities that accommodate longer stays.*

***V.B. Extend Time Limits**. Parking time limits are extended to reflect actual demand and serve priority parkers. This works well in areas with restaurants, shopping, and nightlife activities that promote longer parking stays to enhance the community experience. Monitoring durations of stay and the type and attractiveness of adjacent land uses are important factors in this decision.*

***V.C. Varied Time Limits**. Varied time limits allow a program to adapt to the changing needs of adjacent land uses throughout the day and night. This requires simple signage and a clear communication strategy by program management.*

- **Special Considerations for Implementation:** These tools should be considered for implementation in areas where average durations of stay are non-compliant or atypical, or vary across land uses such that differing time limits would be beneficial to the area. Supporting occupancy, turnover and duration of stay data may need to be collected to support the best time limit format for a given area, by location and time of day. City code currently allows for time limit restrictions, including reducing, extending, and varying time limits to better meet parking demand.
- **Benefits:** Tailors parking access to user needs, promotes balanced demand by moving long-term parkers to designated facilities, improve access to local businesses.

VI. Recalibrate Parking Entitlements

There are circumstances in specific areas where the City would relook at parking entitlements in its development code. Parking entitlements are parking minimums (where they are in place) and parking maximums. In cases where parking minimums are in place, the City wants to ensure that they are not set at a level that would require more parking to be developed than actual demand would allow. Parking maximums should be "calibrated" to ensure that the amount of parking fully allowed is consistent with mode split goals established for all forms of access (i.e., driving, transit, bike/walk and rideshare) and land use goals that support more compact urban forms (where desired).[1]

***VI.A. Eliminate or Reduce Parking Minimums.** The City has an extensive set of minimum parking requirements and methods of reducing the minimums further. Nonetheless, circumstances may arise where eliminating parking minimums would allow an area to "right size" the parking system, based on zoning, prevalent land uses, and market demand. When coupled with parking maximums, these*

[1] For instance, the Central City's current maximum parking entitlements are set for each Central City district as a relationship to 2035 mode split targets. Other areas of the City are governed by maximum standards developed by Metro that, in many cases, are excessively high when viewed against alternative mode goals.

tools can effectively control the amount of private, inaccessible parking within an area. Options include:

- *Reducing Parking Requirements in Special Areas, such as transit oriented developments and specific plan areas. Too much parking within these areas can incentivize car ownership and single occupancy vehicle trips.*
- *Reducing Parking Requirements for Developments that Participate in TDM Programs. Developments that participate in TDM programs tend to have lower parking demands; therefore, reducing parking requirements for these types of development will ensure that the parking system is not overbuilt.*
- *Reducing or Eliminate Parking Requirements for Specific Developments or Uses, such as smaller developments where the provision of parking might require more land and cost more money than the development itself. This can be used as a means for economic development, but should be monitored to ensure that the reduction or elimination of parking requirements does not have a substantially adverse effect on parking in the center or corridor and adjacent neighborhoods.*
- **Special Considerations for Implementation:** This tool should be considered for implementation in areas with excess parking capacity, where new development tends to oversupply parking (based on occupancy data), within close proximity to the city center, and where existing pedestrian, bicycle, and transit facilities and service offer a variety of alternative modes of transportation. Supporting occupancy and demand data may need to be collected to support the recalibration or "right sizing" of minimum parking standards for a given area. Title 33 already addresses this to some degree. For example, for sites located less than 1,500 feet from a transit station or less than 500 feet from a transit street with 20-minute peak hour service, no parking is required for non-residential uses or for residential uses with up to 30 units on the site (subsection 33.266.110.D). In addition, where parking is required, subsection 33.266.110.E provides opportunities to reduce it by up to 50% through a range of exceptions -- including the provision of additional bicycle parking and bike sharing facilities, transit supportive plazas, motorcycle parking and car sharing spaces. Allowing further reductions to required parking minimums through the use of a TDM Plan would require changes to subsection 33.266.110.E to extend the list of exceptions to the minimum number of parking spaces. Administrative Rules regulating TDM Plans should be adopted as well.
- **Benefits:** Promotes the tailoring (or right sizing) of parking capacity to better fit an area and prevailing land uses.

VI.B. Recalibrate Parking Maximums. *Parking maximums place a ceiling on the number of parking spaces a developer is entitled to build in relation to the land use intensity on-site and the availability of transportation alternatives. Such maximums discourage parking from being over-built and underutilized as a result of restricted access to private parking supplies. Portland currently uses parking maximums and should continue to monitor and adapt code to achieve appropriate levels of*

parking access. In some cases, current maximums (as established by Metro) may be too high to achieve the land use and mode split goals established by the City of Portland for emerging centers and corridors.

- **Special Considerations for Implementation:** This tool should be considered for implementation in areas that have low to moderate parking occupancies, within close proximity to the city center and where existing pedestrian, bicycle, and transit facilities and service offer a variety of alternative mode of transportation. This tool should also be considered in areas where significant improvements/investments in alternative modes have been made, which might cause existing maximums to be too high. The City is currently engaging such a "recalibration" in the Central City and could look to that process as a template/model for other areas that have benefitted from alternative mode infrastructure improvements.
- **Benefits:** Avoids the potential to over-building parking (particularly private parking) and all of the negative effects that can arise from that circumstance.

VII. Neighborhood Audit

A neighborhood audit would provide a majority of the information necessary to understand existing parking conditions within a given area. The audit could include a full inventory of the existing parking supply, a survey of hourly parking demand, a survey of neighborhood businesses and local residents on current parking perceptions, and more. The information could be used to support the implementation of a new parking program or make changes to and existing program that no longer serves the needs of the area.

- **Benefits:** Ensure the current parking system or program meets the needs of local residents and business owners, and supports the development of or changes to existing parking programs.

VIII. Monitor, Measure, Evaluate Performance

Monitoring, measuring, and evaluating the performance of a parking program can ensure that appropriate adjustments are being made in a timely manner to continue meeting the needs of local residents and businesses owners. Good parking management requires a baseline of useful information that tracks performance metrics (e.g., inventory, occupancy, duration of stay, rate of violation, etc.) and a schedule for routinely updating the data base.

The system does not need to be elaborate, but it should be consistent and routine and structured to answer relevant questions about occupancy, seasonality, turnover, duration of stay, patterns of use and enforcement. Parking information can be collected in samples and other measures of success (once developed and approved) can be gathered through either third party data collection and/or volunteer processes. An outline methodology for how to conduct parking inventory and data analyses is provided in *Parking Made Easy: A Guide to Managing Parking in Your Community*. The guide can be found at

www.oregon.gov/LCD/TGM/docs/parkingprimerfinal71213.pdf. Data derived from these efforts can be used by the City and area interests to inform decisions, track use and assess success measures. Nonetheless, resources will need to be identified to support such efforts; both to initiate and to sustain.

VIII.A. Require Private Properties to Allow Access to Parking Facilities for Monitoring. *This tool would ensure that public agencies have access to private parking facilities to in order to monitor utilization and turnover.*

- **Special Considerations for Implementation:** This tool should be considered for implementation in any area that is considering managing parking or is considering changes to an existing parking program. Objective and up-to-date data will help the City and local stakeholders make better informed decisions as unique areas grow and redevelop.
- **Benefits:** Ensure the current parking system or program meets the needs of local residents and business owners, supports the development of or changes to existing parking programs.

4. ENFORCEMENT

Effective enforcement of parking regulations is essential to reaching compliance and efficiency in a parking system. Enforcement often carries a negative connotation, but when performed properly it can be a component of a program that improves turnover, manages demand, deters habitual or repeat offenders, and improves the efficiency of an entire parking system. ***Proper enforcement should be focused on education and promoting a change in behavior, rather than the generation of additional revenues for the parking program.***

Implementation

Table 7 identifies eighteen common parking issues along with what tools and strategies identified within this section that can address each issue. It is important to note that parking enforcement as a parking management tool will not address issues related to high parking demand, unbalanced parking demand, underutilized facilities, etc. unless it is coupled with other parking management tools and strategies that require enforcement to be effective. The following table assumes other parking management strategies are in place to be enforced.

Table 7: Enforcement Tools and Strategies

Enforcement Tools and Strategies	High Parking Demand	Unbalanced Parking Demand	Underutilized Parking Facilities	Lack of Parking Facilities	Limited Transportation Options	Supporting Commercial Activity	Accommodating New Development	Accommodating Special Events	Spillover into Residential Areas	Low Turnover	Time Stay Violations	Effective Use of the Curb Zone	Lack of Enforcement	Vehicle Ownership	Traffic Circulation and Congestion	Safety Concerns	Parking Policy and Code issues	Lack of Information/Education
I. Implement Parking Enforcement	●	●	●	●		●	●	●	●	●	●	●	●	●	●			
II. Focused Enforcement	●	●	●	●		●	●	●	●	●	●	●	●	●	●			
III. Issue Warnings						●	●			●	●	●	●					
IV. Ticket Forgiveness						●	●						●					
V. Extend Grace Period						●	●						●					
VI. Extend Enforcement Hours	●	●	●	●		●	●	●	●	●	●	●	●	●	●			
VII. Graduated Citation Structure	●	●	●	●		●	●	●	●	●	●	●	●	●	●			
VIII. Booting and Towing	●	●	●	●		●	●	●	●	●	●	●	●	●	●			
IX. License Plate Recognition Enforcement	●	●	●	●		●	●	●	●	●	●	●	●	●	●			

Tools and Strategies

The following summarizes the tools and strategies to enforce and ensure compliance of the other tools and strategies within this toolkit. Any time active parking management is required, so too is parking enforcement. How to determine the amount of enforcement necessary can be established using occupancy ranges. For instance, any supply that is consistently over the 85% Occupancy Standard would require a high level of enforcement; coupled with strategies that limit time stays and/or engage the need to pursue permit programs. Areas with routine occupancies that range between 66% and 85% would require moderate levels of enforcement, as occupancies within this range likely ensure that parking is generally available to area users. Occupancies at 65% or less would require low levels of enforcement. Strategies dealing with citations (e.g., rates, varying ticketing structures) would be best pursued if it is determined that those violating area "rules" comprise a significant percentage of an affected supply, rather than first pursuing strategies that would better manage time stays. Other strategies can be implemented at any time as indicated below.

I. Implement Parking Enforcement

Implementing parking enforcement is typically in response to parking behaviors that are adversely impacting residents or businesses. Consistently high demands, low turnover, and misuse of curbside parking for long-term storage are several reasons for implementing parking enforcement.

- **Special Considerations for Implementation:** This tool should be considered for implementation when parking demand is at or near the effective capacity of the parking

supply (85%) or when parking behaviors are inconsistent with parking regulations and adversely impacting the area.

- **Benefits:** Reinforces appropriate parking behaviors, educates users and abusers.

II. Focused Enforcement

In situations where illegally parked vehicles are regularly impacting an area's operations, growth, residents or businesses, focused enforcement can reinforce the parking regulations. Focused enforcement is not particularly suited to areas where parking demand is consistently high. Focused enforcement should only be conducted for a short period of time and (ideally) based on objective data that identifies unique areas of illegal parking activity within an enforcement area. Routine data collection efforts, new revenue control or sensor technology can help provide locations of violators for improving focused enforcement.

- **Special Considerations for Implementation:** This tool should be considered when excessive parking demand is not the primary issue and specific parking behaviors can be targeted for enforcement.
- **Benefits:** Focused effort to resolve parking issue without more extensive efforts to develop and implement a parking program.

III. Issue Warnings

Warnings are offered to first time or infrequent parking violators. Introductory warnings should educate parking users on appropriate ways to access the parking system and on alternative ways of accessing the area. Repeat violators would not be eligible for a warning.

- **Special Considerations for Implementation:** This tool can be implemented at any time but is best initiated at the request of area stakeholders and validated by supportive data.
- **Benefits:** Educated users and improved compliance with parking regulations.

IV. Ticket Forgiveness

A periodic ticket forgiveness program can be used to improve the perception of enforcement also clearing a backlog of unpaid tickets. Forgiveness program effectiveness can be enhanced when the ticket is “traded or redeemed” for evidence of appropriate behavior. This practice should not be implemented regularly as it creates the expectation of forgiveness. Also, such programs that might target a specific “area,” versus a program that would be implemented system wide, may be difficult or unfeasible for reasons of manageability and legality.

- **Special Considerations for Implementation:** Currently, once a citation is issued its processing and “collection” falls under the jurisdiction of Multnomah County. As such, any forgiveness program that might be pursued would require working with the County for program development.

- **Benefits:** Enforcement reinforced as equal parts education and penalization.

V. Extend Grace Period

Most programs and parking revenue control equipment components provide a minor grace period (e.g. additional minutes on top of an expired meter). The enforcement program could choose to increase or decrease this value to ensure that turnover is being generated and parking demands are being met.

- **Special Considerations for Implementation:** This tool can be implemented at any time. Also, such programs that might target a specific "area" (versus a program that would be implemented system wide) may be difficult or unfeasible for reasons of manageability and legality. Currently, 16.20.430 Meter Time (on City of Portland Right-of-Way) states that a citation may be issued upon expiration of the designated time limit indicated by the parking meter. Parking meter rates and times are addressed in the Portland Policy Document (see Transportation, Parking Operations, Meter Districts). Currently these rules and policies do not specify a grace period, but could potentially be amended to identify a grace period which is system wide.
- **Benefits:** Balanced perception of enforcement as an appropriate tool that is not excessively applied.

VI. Extend Enforcement Hours

Monitoring of parking utilization may reveal that peak demands occur after typical enforcement hours end. Extending enforcement hours can help provide better management of parking assets by supporting turnover and ensuring that spaces are used as designed during more hours of the day. Initial enforcement of "new hours" should take on an educational component for a period of time and then transition to standard enforcement practices.

- **Special Considerations for Implementation:** This tool should be considered for implementation when parking demand is at or near the effective capacity of the parking supply (85%) outside current enforcement hours. As such, the decision to pursue this strategy would need to be informed by objective supporting data. Parking meter rates and times are addressed in the Portland Policy Documents (see Transportation, Parking Operations, Meter Districts). Individual policies and/or rules may have to be amended to extend enforcement hours.
- **Benefits:** Enforcement is aligned with peak periods of demand to ensure appropriate time stays and related parking behaviors.

VII. Graduated Citation Structure

A graduated fee structure is designed to be more lenient on infrequent or first time violators and more punitive on repeat offenders. The structure deters repeat offenders while allowing for a more gradual learning curve with new users.

- **Special Considerations for Implementation:** This tool can be implemented at any time but would require changes to rates established by ordinance (TRN 3.450) or by the District Court, depending on the violation.
- **Benefits:** Balanced perception of enforcement as an appropriate tool that is not excessively applied.

VIII. Booting and Towing

Booting and/or towing can be used with habitual or repeat offenders or those who have not paid overdue citations. This practice should not be abused, as it promotes a negative perception of parking enforcement. However, in certain instances, the practice of booting and/or towing can correct and deter poor parking behaviors. Towing is addressed in Chapter 16.30 (Towing & Disposition of Vehicles).

- **Benefits:** Reinforces the importance of compliance with parking regulations.

IX. License Plate Recognition Enforcement

Vehicle-mounted license plate recognition (LPR) cameras are used to record license plate information from a moving enforcement vehicle. In locations with pay-by-license plate configurations, these can be used for payment verification and enforcement, removing the need for "stop and go" enforcement. LPR cameras can also be installed in parking structures to aid enforcement practices in off-street parking facilities.

- **Special Considerations for Implementation:** This tool can be implemented at any time but would require new technologies that are not now in place in Portland.
- **Benefits:** Reduces long-term labor costs by automating certain aspects of enforcement. Reduces “visibility” of enforcement, which can be a drawback in high violation areas.

5. IMPLEMENT AND MANAGE AN AREA PARKING PERMIT PROGRAM

Area parking permit programs work to balance or distribute parking resources across a variety of users, primarily residential occupants and commercial visitors and employees. These types of programs allow “authorized users” to park on-street and limits non-authorized users to a specific time stay during hours of enforcement.

Residential areas near centers and corridors sometimes experience sustained peak demands that exceed the on-street parking supply generally targeted to support the mixed use center or corridor. Surrounding parking areas, generally used by residential occupants, can see increased demands and spill over from the adjacent multi-family uses and commercial activities, resulting in competing demands that occupy or exceed supply within the immediate vicinity. The temporal nature of the peak demand serves as an indicator that a permit program would be an appropriate tool to consider.

The programs generally contain standard elements and are “hunting licenses” that aid, but do not guarantee, finding street parking for residents. In other words, residential permits do not guarantee an

on-street space in front of a specific residential address, but the entitlement to park within the permit district boundary. The hours of enforcement necessary to address the "peak hour" constraint need to be calibrated to the actual demand. In some cases, the hours of constraint may occur beyond what are current enforcement hours. This may require reformatting existing enforcement protocols. This is important as the key to the success of area parking permit programs is meaningful enforcement.

Implementation

The City currently has an approved structure and format for area parking permit programs that are, and can be, established in districts throughout the City. As such, the availability of the current program to interested and impacted areas can be considered in areas where parking constraints are creating adverse community impacts. The tools and strategies outlined below will, if implemented, require changes to the code and additional public processes for input and development. Table 8 identifies eighteen common parking issues along with what tools and strategies included within this section that can address each issue.

Table 8: Implement and Manage an Area Parking Permit Program Tools and Strategies

Implement and Manage an Area Parking Permit Program Tools and Strategies	High Parking Demand	Unbalanced Parking Demand	Underutilized Parking Facilities	Lack of Parking Facilities	Limited Transportation Options	Supporting Commercial Activity	Accommodating New Development	Accommodating Special Events	Spillover into Residential Areas	Low Turnover	Time Stay Violations	Effective Use of the Curb Zone	Lack of Enforcement	Vehicle Ownership	Traffic Circulation and Congestion	Safety Concerns	Parking Policy and Code Issues	Lack of Information/Education
I. Implement Area Parking Permit Program	●	●	●	●					●			●		●				
I.A. Exclude New Developments That Build With No Parking from Program Eligibility	●	●	●	●					●			●		●				
I.B. Limit the Number of Permits per Residential Unit	●	●	●	●					●			●		●				
I.C. Constrain the Number of Permits Available to Residents with Access to Off-Street Parking	●	●	●	●					●			●		●				
I.D. Limit the total number of permits issued in an area	●	●	●	●					●			●		●				
I.E. Graduated Rates for Multiple Permits	●	●	●	●					●			●		●				
I.F Demand-Based Pricing for Permits	●	●	●	●					●			●		●				
I.G. Virtual Permitting	●	●	●	●					●			●		●				

Tools and Strategies

The following summarizes the tools and strategies to implement and manage an area parking permit program.

I. Implement Area Parking Permit Program

Implementation of an area parking permit program can help allocate parking resources between users. Area parking permit programs are intended to ensure that on-street parking spaces remain available for priority users, e.g. residents within a specific "permit district boundary" and may restrict parking for visitors, employees or "non-residents" during certain or all hours of the day and night.

- **Special Considerations for Implementation:** The City currently allows Area Parking Permit Programs within mixed-use centers and corridors and defines the process for implementation within its existing code; however, there are many elements that would require code changes as indicated below. Rules for establishing rates for an Area Parking Permit Program are currently established in City code and require rates to be no more than cost recovery (Area Parking Permit Program Fee Schedule and Cost-of-Service Analysis Binding City Policy BCP-TRN-3.215). The City could consider changes in policy/code to allow rates to be increased based on a minimum of cost recovery with additional increments associated with demand over 85%. Additionally, the City could consider allocating/investing all or portions of surplus revenue generated through permit rates back into neighborhood transportation improvements or programs.
- **Benefits:** Results in more efficient use of parking facilities by priority users, addresses specific parking problems, such as neighborhood spillover, and ensures that parking is available for intended users.

I.A. Exclude or Limit New Developments that Build with No Parking from Program Eligibility

The cost for area parking permits is relatively low, which may entice new development to under-build parking supply based on an assumption that new demand can be accommodated in the adjacent on-street parking supply. This element would require new developments that choose not to build a specified level of parking to waive the ability for their future tenants/residents to participate in an area permit program that is in place or might be established in the future in their "parking district."

- **Special Considerations for Implementation:** This tool should be considered for implementation in areas where new developments are building with no off-street parking. This element is not currently a part of Portland's current Area Parking Permit Program format and, therefore, would require changes to Section 16.20.850 (Program Administration). Consideration would also need to be given to its applicability to existing developments that have already been approved by the City.
- **Benefits:** Controls number of permits allowed in a parking district and serves as an incentive for development to "right size" parking.

I.B. Limit the Number of Permits per Residential Unit

Limit permit allocations as a means to control the number of permits sold tied to available supply and to support car-free or lower rates of automobile ownership. Portland's existing Area Parking Permit Program does not limit the number of permits that can be allocated to a single residential address.

- **Special Considerations for Implementation:** This tool should be considered in areas where the potential demand for parking permits could far exceed the on-street parking supply. This element is not currently a part of Portland's current Area Parking Permit Program format and, therefore, would require changes to the code (section 16.20.850, Program Administration) to enable a limit on the number of permits issued per residential unit. Area-specific limits could be set in individual permit parking area plans, which are included in the Portland Policy Documents.
- **Benefits:** Controls the number of permits allocated and promotes lower rates of automobile ownership.

I.C. Constrain the Number of Permits Available to Residents with Access to Off-Street Parking

This element would constrain the number of permits available to residents that have either curb cuts to a driveway or garage serving their property. The purpose being to ensure that the permit program is not an incentive to move vehicles to the street in lieu of using available parking at a specific single family or multifamily site. The code (subsection 33.266.100.D) currently states that required parking spaces must be available for the use of residents, customers, or employees of the use and may not be used for the parking of equipment or storage of goods or inoperable vehicles.

- **Special Considerations for Implementation:** This tool should be considered for implementation in all areas. This element is not currently a part of Portland's current Area Parking Permit Program format and, therefore, would require changes to the code (16.20.850 Program Administration) to enable such a limitation. Specific limitations could be set in individual permit parking area plans, which are included in the Portland Policy Documents. If implemented, it would further require development of data bases that catalogue curb cuts and parking facilities necessary to support and validate current access into properties on and area by area basis.
- **Benefits:** Better manages on-street capacity for residents without access to parking and encourages residents to use off-street supplies first for vehicle parking.

I.D. Limit the Total Number of Permits Issued in an Area

This element would create a limit on the total number of permits issued within a specific permit area. As an example, if an area had 400 on-street parking stalls the City might "cap" the number at 340; which is 85% of the total supply. Once capped (at whatever initial number) the total amount of permits issued would be calibrated to the 85% occupancy standard. A waiting list would be created when the total number of permits has been issued.

- **Special Considerations for Implementation:** This tools should be evaluated within the context of other strategies (e.g., I.A – I.C, above) to ensure that the any parking cap (and future adjustments based on demand) still provide residents with reasonable access to the on-street system and equity issues related to allocation is honored. This element is not currently a part of Portland's current Area Parking Permit Program format and, therefore, would require changes to the code (16.20.850 Program Administration) to enable a cap on the total number of permits issued. Area-specific caps could be set in individual permit parking area plans, which are included in the Portland Policy Documents.
- **Benefits:** Ensures that on-street parking occupancy stays within prescribed standards (e.g., 85% peak occupancy).

I.E. Graduated Rates for Multiple Permits

This element assesses a higher fee for each additional permit sold to a single resident (often times up to a cap per residential unit).

- **Special Considerations for Implementation:** This tool should be considered for implementation in all areas, particularly those with high proportions of residences that have access to off-street parking. This element is not currently a part of Portland's current Area Parking Permit Program format and, therefore, would require changes to the code. Area Parking Permit Program rates are established in City code and required to be no more than cost recovery (Area Parking Permit Program Fee Schedule and Cost-of-Service Analysis Binding City Policy BCP-TRN-3.215). The City could consider changes in policy/code to allow rates to be increased based on the number of permits issued per unit.
- **Benefits:** Encourages reductions in vehicle ownership and use of any available off-street options as a first choice to park.

I.F Demand-Based Pricing for Permits

Pricing of permits is directly correlated to the demand for parking within a defined residential parking district. As such, pricing is incrementally increased until the desired occupancy levels (e.g., 85% peak hour) are achieved in a district.

- **Special Considerations for Implementation:** This tool should be considered for implementation in all areas. Adjustments to pricing to calibrate demand may lead to permits that only last one to three months, rather than the typical 12-month period. Similarly, such a program would need to be supported by a fairly robust schedule of routine occupancy data. This element is not currently a part of Portland's current Area Parking Permit Program format and, therefore, would require changes to the code (Area Parking Permit Program Fee Schedule and Cost-of-Service Analysis Binding City Policy BCP-TRN-3.215).

- **Benefits:** Directly "values" the demand for parking to the market price necessary to manage parking availability. Balances on- and off-street parking. Encourages consideration of alternative modes as well as lower vehicle ownership.

I.G. Virtual Permitting

Virtual permitting systems use license plates as the key component in identifying a valid parking transaction. The system requires online registration of license plates and the use of license plate recognition enforcement to virtually check license plates against a database of registered users.

- **Special Considerations for Implementation:** This tool should be considered for implementation in all areas. Establishing license plate recognition enforcement would require investments in infrastructure and technology that is not currently in place in Portland.
- **Benefits:** Reduces administrative costs/effort and increases efficiency of enforcement.

6. IMPLEMENT AND MANAGE PAID PARKING

Implementing and managing paid parking is often the most difficult parking management strategy, because it is perceived negatively by most users. However, when high demands, low turnover, and generally poor parking conditions exist, it is often the best option to change behaviors, manage the available parking supply and support alternative modes. ***Paid parking should only be considered when all other parking management tools and strategies are active and enforced and when parking demand within the area is at or above the effective capacity of the parking supply (85%).*** The City of Portland currently manages paid parking in several "meter districts", including the Downtown District, the Lloyd District, the Northwest District, the Oregon Health Science University District, the Marquam Hill District, and the Central Eastside Industrial District.

Implementation

Implementation of paid parking will have a significant impact on parking conditions within a given area. In all current meter districts, the decision to move to paid parking was made within the context of exhausting other non-priced based toolkit strategies, demonstrated parking constraints and district planning/visioning for alternative mode growth. Rates and on-street time limit formatting vary within each unique meter district and is based on actual stall occupancy and unique land uses and zoning, which defines priority users (e.g., retail, office, institutional and industrial density).

Table 9 identifies eighteen common parking issues along with the tools and strategies included within this section that can address each issue.

Table 9: Implement and Manage Paid Parking Tools and Strategies

Implement and Manage Paid Parking Tools and Strategies	High Parking Demand	Unbalanced Parking Demand	Underutilized Parking Facilities	Lack of Parking Facilities	Limited Transportation Options	Supporting Commercial Activity	Accommodating New Development	Accommodating Special Events	Spillover into Residential Areas	Low Turnover	Time Stay Violations	Effective Use of the Curb Zone	Lack of Enforcement	Vehicle Ownership	Traffic Circulation and Congestion	Safety Concerns	Parking Policy and Code issues	Lack of Information/Education
I. Implement a Paid Parking Program	●	●	●			●	●	●		●		●		●	●			
I.A. First Hour Free Program			●			●			●	●		●			●			
I.B. Demand-Based Pricing	●	●	●	●		●	●	●		●		●			●			
I.C. Progressive Parking Pricing	●	●		●		●	●			●		●			●			
I.D. Balance On-and Off-Street Parking Rates		●	●	●		●	●			●		●			●			
I.E. Extend Paid Hours	●			●			●	●		●		●		●	●			
I.F. Validation Program			●		●	●	●			●		●			●			
I.G. Establish Parking Meter District	●	●				●	●	●	●	●								
I.H. Improve Payment Technology	●	●	●	●		●	●	●		●	●	●			●			

Tools and Strategies

Paid parking is the primary tool in this category. Several supporting tools (or strategies) also are listed that may be implemented to increase the influence or effectiveness of paid parking. Finally, there also are a few complementary tools that are particularly effective in a paid parking environment.

I. Implement a Paid Parking Program

A paid parking program can be implemented as a means of managing parking demand and impacting parking behaviors. Paid parking can be used to influence turnover, allocate short-term parking, ensure space availability and support TDM as a reasonable "price point" for consideration by users. Parking rates within the City's current meter districts are established by City code and only adjusted periodically by City Council based on recommendations from City staff. The rates are determined based on a review of land use and parking demand. Sharing revenue in commercial meter districts is something the City provides for in the Lloyd District, the Central Eastside Industrial District and the NW Parking District.

- **Special Considerations for Implementation:** This tool should be considered for implementation when parking demand regularly exceed the effective capacity of the parking supply (85%) and time limits are either not practical to implement or have been exhausted as a means of optimizing the effective capacity.
- **Benefits:** This is the most effective means of achieving the multiple objectives of (1) optimizing curb space utilization, (2) targeting spaces to intended users, (3) supporting TDM, and (4) monetizing the cost of providing access to an area. A paid parking program can

improve turnover and (depending on the technology deployed) the efficiency of enforcement.

I.A. First Hour Free Program (Off-street)

First-hour-free programs in off-street parking facilities can incentivize long-term parkers to use the off-street parking supply, opening more on-street spaces to short-term users. Fears of losing revenue to these types of programs have not been realized. Before and after studies have shown the overall average duration of stay tends to increase by approximately one hour, off-setting lost revenue while leading to more money spent in the community.

- **Special Considerations for Implementation:** This tool can only be implemented in conjunction with a paid parking system. If no public supply of off-street parking is available, then partnerships with private owners will be needed. In some cases, existing on-site revenue collection technology may need to be modified to account for this type of rate structure.
- **Benefits:** Mitigates negative perception of moving to or expanding the paid parking environment and guides users to the appropriate parking supply by trip purpose.

I.B. Demand-Based Pricing

Demand-based pricing programs adjust the price of on-street and off-street parking based on demand (time of day, location, or occupancy). Parking that is in greater demand is priced higher to achieve a desired occupancy rate (e.g., 85-90%). Demand-based pricing principles seek to achieve a balance in the parking and vehicular transportation systems, which results in less congestion, easier location of available parking, and reduction in overall demand.

- **Special Considerations for Implementation:** This tool should be considered when parking demand varies significantly throughout the day or when parking demand is significantly higher in one area than another. Areas of high demand must be defined with boundaries to determine where rates will be higher and lower. To date, systems to monitor demand in real time (e.g., sensors) have proven expensive and require administrative systems that are not currently in place in Portland (e.g., SF Park). Programs in Seattle, WA and Redwood City, CA have moved toward systems that are more “analogue,” which tie performance pricing to annual data collection efforts as a means to reduce costs associated with “real time” systems. In order to implement this City Council action is required to change meter rates. The relevant policy is TRN-3.102, Parking Meter District Policy, which establishes the process by which the City evaluates and adjusts meter rates, and TRN 3.450, Transportation Fee Schedule. Those policies would need to be changed for any sort of dynamic pricing system to be implemented.
- **Benefits:** Proven tool to manage demand. Encourages high demand to find lower priced stall availability (i.e., “spreading the peak”), reduced congestion and consideration of alternative modes.

I.C. Progressive Parking Pricing

Progressive pricing programs remove time restrictions and use a graduated rate structure to incentivize shorter parking transactions, while allowing those that wish to park longer to do so at a higher rate. As an example, a rate structure could be $1 per hour for the first two hours, $2 per hour for the next two hours, and $3 per hour after that.

- **Special Considerations for Implementation:** This tool should be considered for implementation in areas where adjacent land uses would like to encourage high turnover, while nearby land uses may create parking users with longer time-stay desires. This tool may be more feasible at this time than demand based pricing (I.B.) as existing multi-space pay station technology is already in place in existing meter districts (which could be expanded to new areas). Nonetheless, on-going occupancy information will be needed to assist the City and area stakeholder in calibrating rates to ensure that long-term parking is not overly incented and targeted turnover rates are achieved. In order to implement this City Council action is required to change meter rates. The relevant policy is TRN-3.102, Parking Meter District Policy, which establishes the process by which the City evaluates and adjusts meter rates, and TRN 3.450, Transportation Fee Schedule. Those policies would need to be changed for any sort of dynamic pricing system to be implemented.
- **Benefits:** Proven tool to manage demand. Encourages longer duration stays to find lower priced stall availability (i.e., "spreading the peak"), reduced congestion and consideration of alternative modes.

I.D. Balance On-and Off-Street Parking Rates

Paid parking programs should strive to balance on-street and off-street parking rates so that short-term demands are accommodated on-street, while long-term demands are accommodated off-street. Pricing off-street lower than on-street is the traditional approach. In Portland's downtown, this rate philosophy has been in place in the public SmartPark garages since the 1990's. The City is currently in the process of reevaluating on-street/off-street operations of public supply to ensure that this rate balance is still being achieved.

Reduce Parking Rates: *On-street parking rates should be reduced if demand declines for an extended period of time or when there is a lasting loss in parking transactions. Off-street rates should be similarly calibrated.*

Increase Parking Rates: *On-street parking rates should be increased when parking is difficult to find and occupancy routinely exceeds 85-90% of capacity. Off-street rates should ensure a rate incentive to attract on-street users (lower than on-street).*

- **Special Considerations for Implementation:** This tool should be considered for implementation in areas where off-street parking utilization is low compared to on-street parking utilization. Implementation is much easier when publicly owned off-street facilities are available in a district. The ability to influence or negotiate rate balance with private off-

street facilities could prove more difficult, possibly requiring partnerships (through joint use agreements) to be established between area stakeholders (through a business association) and the City.

- **Benefits:** Integrates the on-street and off-street supply to operate more as a system than separate and/or competing resources. Preserves on-street parking for priority users.

I.E. Extend Paid Hours

Extending the hours of a paid parking program can help provide better management of the parking system by supporting turnover and ensuring that spaces are used as designed during more hours of the day.

- **Special Considerations for Implementation:** This tool should be considered for implementation in areas where peak parking demand occurs late in the evening. Timing of the final maximum paid period should be favorable to surrounding residential uses, when present. Such programs should also be integrated into area parking permit programs that might be in place. Parking meter rates and times are addressed in the Portland Policy Documents (see Transportation, Parking Operations, Meter Districts). Individual policies and/or rules may have to be amended to extend meter hours.
- **Benefits**: Extends capacity management to meet peak demands, managing access as demand indicates.

I.F. Validation Program

Parking validation programs allow businesses to pre-purchase all or a portion of their customers' parking fees thereby incentivizing the business transaction by offering free off-street parking. Validations can be offered at full price or discounted prices and the requirements for receiving validation can vary depending on the program needs. Parking validation programs are currently in place within the Central City. However, participation varies among business owners and parking operators.

- **Special Considerations for Implementation:** This tool should be considered for implementation in areas where local business owners are willing and able to participate in the program. Limited to off-street areas with smart meter technology or payments processed by an attendant.
- **Benefits**: Creates a partnership between businesses and the City (or off-street lot owners) to both manage parking and encourage visitor use of an area.

I.G. Establish Parking Meter District

Meter districts are generally established in commercial/industrial areas that currently have time stay limits (free) and still experience high and/or constrained parking peaks. Paid parking allows for greater control of supply, manages peaks, and uses pricing to influence parking and/or alternative mode choices. Areas currently with meter districts include the Downtown District, the Lloyd District, the NW

Parking District, the Oregon Health Science University District, the Marquam Hill District, and the Central Eastside Industrial District.

- **Special Considerations for Implementation:** This tool should be considered for implementation when parking demands regularly exceed 85-90% of available capacity. Additional information on establishing a parking meter district is provided in section 16.20.400 of the Portland City Code.
- **Benefits:** Most effective means to manage capacity. Efficiently controls parking supply by type user (i.e., time stays) to prioritize supply for desired users. Improves turnover and improves efficiency of enforcement. Pricing supports user consideration of alternative modes.

I.H. Improve Payment Technology

Motorists generally prefer payment technology that is easy to understand, convenient and quick to use, accepts a variety of denominations (coins, bills, credit cards and prepaid vouchers), and allows them to pay for just the amount of parking they use. There are a number of ways to improve payment technology, including pay-by-phone, e-fare readers, and smart parking meters.

Pay-by-phone: *these applications minimize transaction time and allow greater payment flexibility for motorists to call, text, or use smartphone applications to pay/extend reservations. This application is currently in place within the Washington Park meter area that serves the Oregon Zoo, World Forestry Center, Hoyt Arboretum and Portland Children's Museum.*

E-fare Card Readers: *TriMet is in the process of installing new e-fare card readers so riders won't have to rely on paper fares. The e-fare card readers also won't require passengers to swipe or insert anything. All they have to do is tap an e-fare card or cell phone on the reader as they board the bus or train. They will be able to reuse the e-fare card and load money on it by phone, web or at local participating businesses. TriMet is also looking into having potential daily or monthly pricing caps providing free rides and savings to frequent riders. A similar system could be considered to pay for parking.*

Smart parking meters: *these meters accept cash and credit cards and come in the form of either single-space or multi-space payment systems.*

- **Special Considerations for Implementation:** This tool should be considered for implementation in conjunction with a paid parking system. Such systems will likely require additional cost, investment and administrative systems that are not currently in place in Portland.
- **Benefits:** Customer/user convenience, more efficient management of supply, and real-time information systems for users.

7. CREATE NEW PARKING SUPPLY

The tools and strategies to create a new parking supply range from reconfiguring existing parking facilities to constructing new parking garages. Generally speaking, constructing relatively large amounts of new parking should be a last resort, as it is can be a major investment that has a long life and can significantly alter the character and landscape of an area.

Implementation

Implementation of a majority of these tools and strategies should only be considered when all other tools and strategies (User Information, TDM, etc.) have been implemented and parking demand is at or above the effective capacity of the parking supply (85%) for sustained periods of time. Table 10 identifies eighteen common parking issues along with the tools and strategies included within this section that can address each issue.

Table 10: Create a New Parking Supply Tools and Strategies

Create New Parking Supply Tools and Strategies	High Parking Demand	Unbalanced Parking Demand	Underutilized Parking Facilities	Lack of Parking Facilities	Limited Transportation Options	Supporting Commercial Activity	Accommodating New Development	Accommodating Special Events	Spillover into Residential Areas	Low Turnover	Time Stay Violations	Effective Use of the Curb Zone	Lack of Enforcement	Vehicle Ownership	Traffic Circulation and Congestion	Safety Concerns	Parking Policy and Code Issues	Lack of Information/Education
I. Support a Driveway Share Program	●		●	●		●	●	●	●									
II. Convert No Parking Areas to Parking Areas	●		●	●		●	●					●			●			
III. Convert Regular Parking to Carpool Parking				●	●	●		●				●						
IV. Create Motorcycle or Compact Vehicle Parking	●		●	●	●	●	●	●				●						
V. Reconfigure Existing Off-street Parking Facilities	●	●	●	●		●	●	●	●						●			
VI. Restripe Parallel Parking to Angled Parking	●	●	●	●		●	●	●	●			●			●			
VII. Convert Travel Lanes to Parking Lanes	●	●	●	●		●	●	●	●			●			●			
VIII. Stacked Parking	●	●	●	●		●	●	●										
IX. Car Stackers	●			●		●	●	●										
X. Establish Remote Parking Areas Served by Transit	●	●	●	●	●	●	●	●							●			
XI. Construct a New Parking Facility	●			●		●	●	●	●									

Tools and Strategies

The following summarizes the tools and strategies to create a new parking supply.

I. Support a Driveway Share Program

Driveway share programs, such as JustPark, Citifyd, and Parkzilla, connect drivers with individuals and businesses that have a parking space or spaces for rent. A driveway share program would allow residents to rent their driveways to others.

- **Special Considerations for Implementation:** Current City code does not allow commercial parking, including the renting a parking stall that is located on private property, in a residential area. As such, this tool cannot be implemented until such time as Title 33 is amended to allow this. Possible code solutions include amending Chapter 33.203 (Accessory Home Occupations) to add the renting of a single parking space as a permissible home occupation or creating a new code section similar to the regulations for accessory short-term rentals in Chapter 33.207.
- **Benefits:** Increases the available parking supply for non-residents (employers, employees), reduces negative impacts of spillover, has support from local community members.

II. Convert No Parking Areas to Parking Areas

There are a significant number of no parking areas located throughout the City. These areas include curb cuts to driveways and alleys that are no longer in use as well as bus zones, loading zones, and other zones that could be converted to parking areas.

- **Special Considerations for Implementation:** This tool can be implemented at any time and in any area where a significant number of no parking areas limit the parking supply. Section 17.28.110 (Driveways - Permits and Conditions) states that driveway permits are revocable if the driveway does not access legal parking and maneuvering space on abutting property. Implementation of this tool should include an assessment of the alternative uses of the curb zone to ensure the best use of the space and safety for all travel modes (e.g., circulation and sight distance).
- **Benefits:** Increases the available parking supply for all area users, improves the efficiency of the curb zone, has support from local community members.

III. Convert Regular Parking to Carpool Parking

Established demand for carpool spaces essentially increases the effective parking (access) capacity of the system, particularly for employees of a commercial center or corridor. When properly located to not interfere with customer access or significantly impact neighborhood access, conveniently located carpool spaces (at discounted rates, when controlled with pricing through meters or permits) can increase rates of employee carpooling and reduce employee demand for on-street parking.

- **Special Considerations for Implementation:** This tool can be implemented at any time and in any area where local employers are able to successfully promote carpooling by employees (and cannot provide off-street parking to the employees).

- **Benefits:** Improves the efficiency/productivity of the curb zone and reduces employee demand for curb zone parking.

IV. Create Motorcycle or Compact Vehicle Parking

Spaces located within a surface parking lot, parking garage, or on-street that cannot accommodate a full size vehicle are opportune locations to provide parking for motorcycles or compact vehicles. Signing and striping these spaces can provide a quick and inexpensive solution to motorcycle and compact vehicle parking management.

- **Special Considerations for Implementation:** This tool can be implemented at any time and in any area where there is demand for motorcycle or compact vehicle parking, or where space does not allow for a full vehicle parking stall.
- **Benefits:** Increases the available parking supply for residents and business owners and improves the efficiency of the parking facility.

V. Reconfigure Existing Off-street Parking Facilities

Reconfiguring existing off-street parking facilities can provide incremental improvements to parking capacity. Many times, a designer can find inefficiencies in parking layouts, either in aisle width, turning radii, or landscaping, that can be minimized to create additional supply. Similarly, "stacking" parking using valets can maximize the capacity of existing self-park facilities (see VIII below).

Public-private partnerships, particularly with established groups (Neighborhood associations, business associations, Improvement Districts, etc.), provide opportunities for the City to offer the "designer" services as the public contribution to the partnership. Commitments to manage the revised off-street supply for customer-visitor access and in coordination with other public parking management practices could be the private contribution.

- **Special Considerations for Implementation:** This tool can be implemented at any time and in any area where off-street parking facilities have not been designed to their maximum potential; however, it would likely not be implemented unless parking demand within the lot or area is at or above 85-90 percent. City code currently allows for the reconfiguration of existing off-street parking facilities; however, where parking has been built to the maximum allowed, an adjustment may be required to allow the increase. In addition, the parking lot location and design standards of Chapter 33.266 would also apply.
- **Benefits:** Increases the available off-street parking supply for and improves the efficiency of off-street parking facilities.

VI. Restripe Parallel Parking to Angled Parking

Reconfiguring existing on-street parking spaces from parallel to angled parking can help generate additional parking supply. Depending upon the configuration and available right-of-way, restriping could nearly double the curbside parking supply.

- **Special Considerations for Implementation:** This tool should be considered for implementation in areas where space allows, where it is consistent with public policy for the public right-of-way, where there is support from adjacent residents and business owners, and where current parking demand (on-street and off-street) is balanced and at or above 85-90 percent.
- **Benefits:** Increases the available parking supply for users and relieves parking congestion.

VII. Convert Travel Lanes to Parking Lanes

Converting travel lanes to on-street parking lanes during off-peak time periods or on a permanent basis can significantly increase the parking supply. Similarly, converting travel lanes to on-street parking lanes by implementing circulation changes (i.e. converting a street system to one-way) creates an opportunity to provide additional on-street parking.

- **Special Considerations for Implementation:** This tool should be considered for implementation in areas where City policy would support the action, where there also is support from adjacent residents and business owners, where existing and projected future traffic volumes support a reduction in the number of travel lanes, where the parking and driving peak hours do not coincide, and where current parking demand (on-street and off-street) is balanced and at or above 85-90 percent.
- **Benefits:** Increases the available parking supply for users and creates a buffer between the sidewalk and adjacent street traffic.

VIII. Stacked Parking

Stacked parking refers to maximizing the available space within a parking facility to accommodate as many cars as possible. This is most commonly accomplished through a valet or parking attendant who holds all the keys and can park the cars two or more deep, as she/he can move cars out of the way to free a blocked-in car.

- **Special Considerations for Implementation:** This tool should be considered for implementation in areas where there is a significant demand for short-term parking. City code currently allows for stacked parking in off-street parking facilities; however, where parking has been built to the maximum allowed, an adjustment may be needed to exceed the maximum amount of parking permitted on a site.
- **Benefits:** Supports economic activity/development, reduces negative impacts of spillover into surrounding neighborhoods, has broad-based support among neighborhood stakeholders.

IX. Car Stackers

While not common in the US, car stackers significantly increase the supply of an existing parking facility. Many are now robotically operated and have car queuing and clearing times of 30 seconds to two

minutes. Car stackers work very well for residential parking needs, as residents' parking demands are typically spread across a large time frame. Car stackers do not work as well in employment or event settings, as the peak ingress and egress can pose challenges related to the clearing times. This strategy is most likely to be implemented by the private sector, with approval by or in partnership with the City.

- Special Considerations for Implementation: This tool can be implemented at any time. Practical application would be where peak demands are routinely sustained at or above 85% of capacity and there is a paid parking environment that is at market rates. Although costs can be lower than new structured parking, they are higher than surface spaces. Private enterprise may be willing to make the investment, with evidence of sufficient parking revenues. The City will need to ensure that parking capacity expansion is allowed for the given set of circumstances. This may lead to a public/private partnership.
- **Benefits:** Supports economic development by improving access to mixed use centers and corridors, relieves parking congestion and related negative impacts, has broad-based support among neighborhood stakeholders.

X. Establish Remote Off-site Parking Areas Served by Transit/shuttle, Pedestrian, and/or Bicycle Facilities and Services

Establishing a remote parking area that is linked by other modes can shift parking demand to the fringe area of a community and still provide essential support. Such parking is more likely to serve employees and residents of an area, rather than customers and visitors. Allowing shared parking of this asset could result in greater parking system efficiency. Management of such a facility must align with management practices within the area, which may lead to a public/private partnership.

- **Special Considerations for Implementation:** This tool should be considered for implementation in areas where parking conditions (supply and demand) are constrained by development and there is adequate transit/shuttle service and/or infrastructure for walking and biking to serve the area. Implementation would also be best supported with enhanced wayfinding signage and lighting. City code currently allows for remote parking facilities; however, a specific code interpretation is likely needed, based on circumstances in the area. The use of this tool to provide required parking is also limited somewhat by subsection 33.266.100.E which states that required parking spaces for residential uses must be located on the site of the use or commonly owned tract and that required parking for all other uses must be within 500 feet. Amending this code section to allow more flexibility could increase opportunities for using this tool to provide required parking.
- **Benefits:** Promotes a reduction in vehicle trips within the area, reduces traffic circulation and congestion and related impacts, supports economic development by improving access to mixed use centers and corridors.

XI. Construct a New Parking Facility

If all other parking management tools and strategies have been implemented and parking demand continues to exceed the effective capacity of the parking supply, it may be necessary to construct a new parking facility. Ownership and management of the new parking facility is important to consider. Management, regardless of ownership, must be consistent with practices already in existence, as well as supportive of related plans and goals for the area (e.g., sustainability, mode split, livability). If the need for new parking is driven primarily by customer/visitor demand, then a public/private partnership may prove worthwhile. The average hard cost of a new parking facility (not including land costs, which vary by location), include:[2]

Surface Lot: $3,000 to $6,000 per space, depending on aesthetic requirements

Above-grade Parking Structure: $15,000 to $25,000 per space, depending on façade requirements

Below-grade Parking Structure: $30,000 to $45,000 per space, depending on geology

- **Special Considerations for Implementation:** Implementation of this tool should generally be considered as a last resort, when demands in excess of supply are frequent and over sustained periods most days of the week, and the ability to significantly increase access to the area by other modes has been exhausted or is not likely to occur. No code changes are anticipated with implementation of this tool; however, interpretation of code will likely be needed to ensure appropriate circumstances exist that allow the capacity expansion. Additionally, the width of the commercial zoning along the corridors may be a concern as well. Where commercial zoning is too narrow it may be challenging to construct a parking structure in a cost-effective manner.
- **Benefits:** Supports economic development by improving access to mixed use centers and corridors, reduces circulation and congestion issues and their related negative impacts, has broad base of support among neighborhood stakeholders.

[2] Hard costs are direct costs incurred in relation to a specific construction project. Hard (or direct) costs are directly related to construction and include the "bricks and mortar" of building. Soft (or indirect) costs would be in addition and include costs for design fees, legal fees, permits, engineering, licensing fees, toxic report fees, and plan check fees.

Attachment A Parking Management Plan Templates