

FHWA Congestion Pricing Program

Parking Pricing Workshops

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Table of Contents

1	Introduction	1
2	Workshop Background.....	2
3	Recurring Workshop Presentations	3
3.1	<i>SFpark</i>	3
3.2	Right Size Parking.....	4
3.3	FHWA Parking Primer.....	4
4	Presentations from Out-of-Town Speakers.....	6
4.1	District of Columbia.....	6
4.2	New York City, New York.....	6
4.3	Philadelphia, Pennsylvania.....	7
4.4	Seattle, Washington.....	7
5	Case Studies	9
5.1	Atlanta, Georgia	9
5.2	Boston, Massachusetts	10
5.3	Denver, Colorado	12
5.4	Houston, TX.....	13
5.5	Minneapolis, Minnesota	15
5.6	Washington, District of Columbia	16
5.7	Fort Lauderdale, Florida	17
5.8	Durham, North Carolina	19
5.9	Chicago, Illinois	20
5.10	Portland, Oregon.....	21
5.11	San Diego, California	22
6	Generalized Outcomes and Lessons Learned	25

1 Introduction

The Federal Highway Administration (FHWA) is working to improve the performance of the country's transportation system, and has sponsored numerous innovative projects to do so through its Value Pricing Pilot Program (VPPP). The VPPP is intended to demonstrate whether and to what extent roadway congestion can be reduced through the application of congestion pricing strategies. A number of projects funded through the VPPP have focused on the implementation of parking policies and have resulted in positive outcomes. To share these outcomes and to encourage further innovation in parking pricing and management, FHWA sponsored a series of parking workshops throughout the United States.

Workshops were conducted in Atlanta, Georgia; Boston, Massachusetts; Chicago, Illinois; Denver, Colorado; Durham, North Carolina; Houston, Texas; Minneapolis, Minnesota; San Diego, California; and Washington, District of Columbia. Locations were selected based on a review of parking-related activities in cities throughout the United States. Cities were targeted based on whether they were actively working to implement innovative parking strategies or were open to and interested in learning more about performance-based parking policies. Background research was conducted by FHWA staff and their consultants. Representatives from the International Parking Institute were also consulted. Municipal employees from communities determined to be likely to benefit from the parking workshops were contacted to determine their level of interest and seek their support in conducting the workshops. Local representatives participated in securing meeting locations, identifying and recruiting local and national speakers, and advertising the workshops.

The first workshop was conducted in Washington, DC and served as a pilot. It offered an opportunity to test content, evaluate speakers, and obtain feedback from attendees. Outcomes were used to refine subsequent workshop agendas and speaker selection.

This document provides information on the workshops, summarizes information that was shared, and identifies steps that have been taken by workshop attendees subsequent to their participation to improve parking management in their communities.

2 Workshop Background

The workshops were conducted over a full day and followed a relatively standard format. The day's first session was always led by local speakers who helped set the day's tone by sharing information on current parking efforts and identifying barriers their communities were working to overcome. The local presentations were followed by speakers who presented information on *SFpark's* variable pricing program and King County's Right Size Parking effort. Information was presented on FHWA's *Contemporary Approaches to Parking Pricing: A Primer* and advancements that have occurred since the primer was published. Additionally, each workshop included a presentation by one to two out-of-town speakers who were invited to present based on their ability to provide information applicable to the needs of the community in which the workshop was occurring.

The workshop content is summarized below in two sections: (1) presentations that were conducted at each workshop and (2) presentations that were conducted by out-of-town speakers and varied by workshop location.

3 Recurring Workshop Presentations

Content for the recurring workshop presentations made by representatives from *SFpark*, King County's Right Size Parking effort, and FHWA is summarized below.

3.1 *SFpark*

Information about the *SFpark* performance-pricing project was presented at all of the parking workshops by either Lauren Mattern or Steph Nelson (depending upon the location), both of whom were involved in many elements of the *SFpark* program. They explained that as part of the U.S. Department of Transportation Urban Partnership Agreement, the San Francisco Municipal Transportation Agency (SFMTA) implemented a comprehensive smart parking system to help manage congestion and improve parking availability. This system, *SFpark*, is being used to better manage a significant portion (approximately 25 percent) of the city's on-street metered parking supply.

SFpark uses demand-responsive pricing and better information, including real-time information about where parking is available, to make parking easier to find. The primary strategies are demand-responsive pricing rates, special event pricing, extending pricing into evening hours, enhanced parking regulation enforcement, and new parking information systems. Some of the new parking information systems include variable messaging signs displaying space availability in off-street garages and wayfinding signs that show where major sites are in relation to parking facilities. These strategies are supported by new technologies including networked in-street parking sensors and parking meters that support various forms of payment, including coins, smart cards, and credit and debit cards.

SFpark began in 2011 in seven neighborhoods (downtown, South Embarcadero, Civic Center, the Mission, the Fillmore and Marina districts, and Fisherman's Wharf). The program gathered data to help manage parking and experimented with raising and lowering rates based on actual demand. The idea was to reduce the time drivers spend searching for parking by raising prices when and where demand was high, while reducing prices when and where demand was low.

Information on the outcomes of the program was shared. Analyses of the program have found that it reduced parking space search time and cruising related to parking search, increased parking availability, and increased payment compliance. Data also suggest an improvement in transit speeds, but this is not conclusive. The project did not negatively impact economic development and was widely accepted by the community.

Resources:

SFpark resources: <http://sfpark.org/resources-overview/>

SFpark evaluation data: <http://sfpark.org/about-the-project/pilot-evaluation/>

FHWA developed *SFpark* evaluation report:

http://ntl.bts.gov/lib/54000/54900/54928/032515_rev_san_fran_508_final_FHWA-JPO-14-128.pdf

3.2 Right Size Parking

Information on Seattle’s Right Size Parking project was presented by different individuals depending on the workshop location. The presenters were Daniel Rowe from King County Metro, Peter Haas from the Center for Neighborhood Technology (CNT), and Gregory Newmark also from CNT. Daniel Rowe was the King County Metro project manager and CNT was a consultant to the project.

This project began in 2011 and supports policies that build more livable communities by encouraging the construction of fewer parking spaces in multifamily housing developments. The project compiled local information on multifamily residential parking utilization and displayed it on a dynamic web site to serve as a resource in future parking supply and management decisions. Data on parking utilization was collected by conducting in-person surveillance of parking occupancy rates in the middle of the night on a weekday (where residential parking use is likely at its highest) at over 200 multifamily developments.

The web tool guides policymakers and developers by providing area and parcel parking utilization rates reflective of development and site characteristics, as well as transit/bicycle access and parking prices. The web tool is populated with average default values garnered from the area—such as for the number of market rate units of different sizes, the number of affordable units, unit rental costs, and parking price—that the user can change, which in turn changes the expected parking utilization per unit (the modeled output). For each parcel or area chosen the website also auto-generates a few scenarios to highlight their implications on parking utilization. These scenarios are that the development is either all affordable or all market rate, and also that parking is “unbundled” (charged separately) from rent and is priced for cost recovery (which is often high) or bundled within the rent, with unit occupants incurring no change in their rent cost regardless of whether they utilize parking.

King County Metro also developed a Multi-family Parking Strategies Toolkit, created for developers and property managers to provide guidance in improving their management of parking for multifamily properties and to support transit oriented development. The tools in this guide address pricing, transportation demand management, design, and parking management and can be applied to new developments or existing buildings.

Resource:

Right Size Parking Multi-family Residential Parking Calculator: <http://www.rightsizeparking.org/>

Multi-Family Parking Strategies Toolkit: <http://metro.kingcounty.gov/programs-projects/right-size-parking/pdf/multifamily-parking-toolkit.pdf>

3.3 FHWA Parking Primer

Information on FHWA’s document, *Contemporary Approaches to Parking Pricing: A Primer*, was presented by Allen Greenberg (FHWA) and Matthew Kaufman (UrbanTrans North America). The primer was developed by FHWA to educate parking professionals and policy makers about performance pricing and related policies.

The speakers provided an overview of the primer and its contents. The presentation was supplemented with new information that has become available since the primer's original publication date in 2012. The presenters very briefly discussed the benefits of performance pricing strategies (which was covered more extensively in the *SFpark* presentation), noting that they improve safety, decrease environmental harms, reduce congestion, and typically result in a better customer experience.

Strategies to reduce disabled placard abuse, which impacts cities' ability to manage curb space, were discussed with an emphasis on programs that require disabled placard holders to pay for on-street parking but seek to assure availability for disabled users. Provided examples included (1) programs that require placard holders to pay for parking and allow extended parking times, but do not set aside specific spaces; (2) programs that require payment, allow extended parking times, and set aside specific spaces; and (3) the creation of two-tiered placard programs in which only the small number of placard holders who cannot physically operate meters or must use wheelchairs are allowed to park at meters for free.

The presentation also included a discussion of policies that cities can use to reduce parking demand and encourage private property owners to charge for parking. Examples included transportation demand management programs and parking cash-out programs. Employers who implement parking cash-out programs offer employees the option of receiving a payment equal to the value of a parking space if they decline a free parking space.

The presenters ended by noting that performance pricing at metered spaces should happen everywhere, more cities should consider mandating cash-out policies for employers, and that many creative parking pricing strategies are being deployed but the results are not well known, which was an important reason for FHWA sponsorship of the workshops.

Resource:

Parking primer: <http://ops.fhwa.dot.gov/publications/fhwahop12026/index.htm>

4 Presentations from Out-of-Town Speakers

Presentations from out-of-town speakers varied by location based on the needs and interests of local governments and parking officials. Invited speakers included representatives from the District of Columbia Department of Transportation (DDOT), New York City Department of Transportation (NYC DOT), city of Philadelphia, and city of Seattle.

4.1 District of Columbia

The District of Columbia Department of Transportation (DDOT) program, represented by Soumya Dey, presented information on DDOT's efforts at the Atlanta, Georgia workshop (and earlier, of course, at the Washington, D.C. workshop). The presentation focused on the challenges DDOT faces managing its curb space and the solutions it has implemented and is pursuing.

Starting in 2010 DDOT implemented numerous pilots that included testing pay-by-cell and mobile application payment, pay-by-space multi-space meters with occupancy sensors, pay-by-license multi-space meters with occupancy sensors, and credit card accepting single-space meters. Since that time the city has migrated to a smart asset system, broadly implemented pay-by-phone technology, and began implementing a performance parking pilot.

DDOT's smart asset system allowed the agency to reduce its asset-to-space ratio from 1.0 in 2004 to 0.75 in 2013. It has had significant success encouraging the use of pay-by-phone technology, and as of early 2015 had 0.9 million pay-by-phone customers and was collecting 60 percent of its parking revenue through the technology. The city has also upgraded its meters and is using mobile cameras to measure curb occupancy rates.

The city's performance parking pilot, which was funded by the VPPP, is being launched in late 2015 in the Chinatown/Penn Quarter area where there is a significant mismatch between the high demand for on-street parking and the relatively low supply, with substantial double parking resulting, especially with delivery vehicles and tour buses. During the pilot effort the city will introduce variable parking rates and provide real-time parking availability information.

In addition to the above activities, DDOT is also conducting efforts to address disabled placard use and assure that adequate on-street parking is available to disabled drivers. The project involves the installation of red-top meters throughout the district. The meters are in locations that are accessible to individuals who use wheelchairs, and only vehicles with disabled placards may park at the spaces. Users of the meters must pay to park but are allowed to park for longer periods of time. Free on-street parking is no longer available to individuals with disabled placards.

4.2 New York City, New York

Information regarding New York City's Parking Management program was presented by David Stein at the Boston and Durham workshops. He offered an overview of how NYCDOT is managing competing uses at the curb and developing new and innovative approaches to improve parking and curb management in New York City.

Mr. Stein advised that in order to be successful with parking management it is important to understand your curb as a complete habitat and take into account all the competing interests and demands the community has. From there, one can strategize and build consensus based on the needs of that area.

Some of the strategies discussed included improved customer experience through the use of smart meters, pay-by-cell payment systems, improved signage, and web based live parking availability information. Another strategy that was discussed was the VPPP funded PARK Smart program. PARK Smart aims to increase on-street parking availability and thus make parking easier by raising meter prices where needed to encourage motorists to park no longer than necessary. Related goals were reducing congestion and improving safety. The program implemented six-month pilots in neighborhoods across the city. Different pricing and time structures were utilized depending on each neighborhood's issues. While the program did not have a significant impact on availability it did improve turnover. Based on the success of the pilots, PARK Smart areas have been made permanent in several neighborhoods across New York City, and many stakeholders have requested PARK Smart "treatments" for their neighborhoods as part of PARK Smart 2.0.

Information on NYC was also presented by Manzell Blakeley at the DC workshop. In addition to discussing the neighborhood PARK Smart project, Mr. Blakeley also discussed how New York has successfully used escalating rates in commercial loading zones to increase turnover and availability. He also discussed an effort by the city to use meter data to estimate occupancy and subsequently share real-time availability data with parkers.

4.3 Philadelphia, Pennsylvania

A presentation on Philadelphia's parking policies was provided by Rina Cutler, the city's Deputy Mayor of Transportation, at the Boston workshop. Ms. Cutler discussed general trends in the parking industry and in Philadelphia. She noted that parking used to be only about enforcement, but today parking managers are right-of-way managers, and parking policy decisions need to consider four P's: people, policy, planning, and politics. She also suggested that parking policy needs to be considered as part of an integrated transportation system that provides travelers with good choices.

Expanding on the idea of an integrated transportation system, information was provided on Philadelphia's pending bike-share program, which will be the first such program to launch that does not require a credit card to use. The city is planning to link transit, bike share, and parking payment on a single card that can be used interchangeably. The city is also working to better integrate intercity bus service, such as MegaBus and BoltBus, into the transportation system. Intercity bus stop locations have been moved based on curb demand, and the city is working to identify a long-term solution for passenger loading and unloading.

Ms. Cutler also spoke about the importance of community involvement and high-quality customer service. She suggested that it is important to empower advocacy groups and that doing so can change the dynamic of parking conversations and outcomes. She noted the importance of maintaining clear lines of communication and discussed some of the tools Philadelphia uses to track and respond to comments received from the community.

4.4 Seattle, Washington

The city of Seattle has implemented a performance-based pricing program and information on that program was presented at the Minneapolis and San Diego workshops by Mary Catherine Snyder from the Seattle Department of Transportation's Parking Management Team.

The goal of the Seattle pricing effort is similar to that of *SFpark*: price parking to assure that approximately one to two parking spaces are generally available along each block face at all times in areas of the city where curbside parking is priced (and extending priced parking to previously uncovered areas if needed to bring about such parking availability). The Seattle effort is much less dependent on technology than the *SFpark* effort and, as such, does not vary prices by block face. Rather, prices vary by districts which were established based on existing neighborhood boundaries. In addition to varying by district, prices can also vary by time of day.

To implement the pricing effort the city utilizes multi-space parking meters for payment processing and relies on annual occupancy counts that are conducted manually, with the results used to determine prices. In 2014 the city made 20 rate adjustments across all of its parking districts. In addition to adjusting prices to affect occupancy, the city also adjusts time limits. In areas with low parking demand and already low prices, limits are increased to encourage utilization.

Prior to implementing the new program the city conducted significant public outreach. Efforts included a campaign called "Play Like a Parking Pro" that educated drivers about the new program and explained that it was designed to charge the lowest price possible to achieve the city's occupancy goals. The public has accepted the program and expressed very few concerns. Data indicate that parking availability has increased and some parking has been shifted to areas that were previously underutilized.

5 Case Studies of Workshop Locations

At each parking workshop host cities conducted presentations in which they shared information on the parking issues they are facing and the solutions they are pursuing. The following sections summarize the information shared. In addition, attendees were contacted subsequent to the workshops to determine how they used the workshop information and professional contacts they may have made to advance parking policies in their cities. Results from that data collection effort are also shared below.

5.1 Atlanta, Georgia

In Atlanta information was shared on parking issues affecting downtown Atlanta and also transit stations throughout the region. Information on downtown parking issues was shared by the Midtown Alliance, which represents Central Atlanta Progress and the Atlanta Downtown Improvement District. Information on transit parking was shared by MARTA, one of the region's transit providers.

Atlanta's largest parking problems include the perception of not enough parking or that parking is too expensive and hard to find. With most of the parking privately owned, the city has little control. There are also no signage standards and sometimes public parking can be difficult to identify. There is a great deal of unused supply with on-street spaces only 50-60 percent occupied during peaks and off-street spaces only 60-70 percent occupied. Demand is also unevenly spread and there is a low tolerance for walking. There is also little accommodation or enforcement for commercial curbside use, which is growing in demand due to more retail. Last, numerous sporting events impact residential parking.

Atlanta's parking program is outsourced and branded Park Atlanta. Park Atlanta primarily manages the on-street parking as most off-street is privately held and managed. Park Atlanta has fixed pricing according to zones: business, entertainment, hospital, and mixed use.

The downtown and midtown Atlanta Community Improvement Districts (CIDs) are addressing parking matters through the creation of parking management plans. Solutions include addressing residential needs during special events and encouraging the use of alternative transportation for sporting and special events. Atlanta is also increasing its on-street parking supply so all ground floor retail will have parking. The CIDs are strongly encouraging the city to promote shared parking and unbundled leasing and to improve the management of curbside lanes.

While parking is underutilized as a whole, areas of high demand do exist. The city and CIDs are working to address this issue through additional and more efficient use of parking signs alerting drivers to where there are garages or lots. Wayfinding signs may be complemented with real-time availability information collected via occupancy sensors to further ease the effort of finding parking. Also, it is hoped that increased lighting and bike lanes for pedestrians and cyclists will make individuals more willing to park farther from their destinations.

Another solution being explored is shared parking, which would have a legal binding contract between two or more land owners so that one's surplus of parking could be used to meet the minimum parking requirement of another. This would assist with the low occupancy of many garages and lots by allowing residents, for example, to park overnight. The city plans on addressing the abuse of curbside lanes through better curbside management policies. They plan on conducting a pilot study, modifying zoning, and increasing enforcement.

Helping to move commuters and other travelers to the downtown area, is the MARTA rail system. As part of that system MARTA offers over 24,000 free parking spaces at rail stations. Daily parking is available for free at 23 of the MARTA locations, while at six of their stations it is only \$5 a day, and at four stations it is \$8 a day. Due to these rates (or lack thereof), many non-MARTA customers are parking at MARTA facilities. MARTA is working to address this challenge and identify ways to move parkers to underutilized parking facilities. As part of that effort the agency is considering introducing variable parking rates in the hope that such rates will reduce the number of non-MARTA customers parking in their lots.

When following up with workshop attendees many indicated that the case studies provided were of value to them in their subsequent planning efforts. One participant from the city of Newnan said that the city is currently working to address parking issues its downtown and used examples from workshop presentations to help facilitate discussion of available technology. Information from the workshop is also being used to help develop strategies to distribute parking demand from areas of high utilization to areas of low utilization.

Several attendees also reported that the networking experience and connections they made at the workshop were extremely valuable and will assist them when implementing parking plans in the future.

5.2 Boston, Massachusetts

The Boston workshop included presentations from representatives of Boston, Massachusetts Bay Transportation Authority (MBTA), Massachusetts Institute of Technology (MIT), and Northeastern University.

The city of Boston is working to implement smarter parking policies that will help create better communities by increasing economic activity and tax revenue, make room for more public space, enable complete streets, revitalize neighborhood shopping districts, and make housing more affordable.

Though Boston's population has increased, the number of registered vehicles has fallen. In Boston's South End, car ownership in the neighborhood averages 0.53 cars per household, while the lowest allowed parking minimum is at 0.7 per unit. Since parking is built into the cost of each unit, this is directly raising the cost of housing, as typically one parking space per unit increases cost by 12.5 percent and two spaces increases costs by about 25 percent. By better managing parking requirements for new developments, the city could bring down the cost of housing thus making it more affordable.

On the technology front Boston deployed license plate reader technology, tablets, and sensors in 2013 to help manage parking. The city is working to provide more data about parking availability and regulations to the public through the use of open source tools, map data, sensors, and GPS data. One goal is to be able to provide parking availability information through mobile applications. Police officers will also become more efficient through the use of new technologies and planned weekly meetings to discuss route structure and deployment strategies and productivity reports. Officers will also have more detailed reports that will identify gaps, provide "GPS Bread-Crumbling", route reports, and better reporting. The officer management reports provide a searchable query by shift or officers and a group listing providing a high level review of the officer's day. The city has also developed a virtual city hall

website where visitors can pay fees online, submit a dispute form (with image upload capabilities), request or renew resident parking permits.

John Attanucci, from MIT, discussed a transit pass program that was implemented by the university and is being expanded to nearby employers as part of a VPPP grant. MIT introduced a Universal Pass that employees could use to ride transit, and the university paid the cost of the fare. The goal of the program was to encourage employees who regularly drive to campus to take transit, thereby reducing vehicle travel and parking demand. The program was found to increase the rate at which employees use transit and reduced parking demand by approximately 4 percent. As a result of the pilot project's success the program is being expanded to other area employers using a VPPP grant. The expansion will test the following:

- Employer-paid transit pass for all parkers
- Partial or full "parking cash out" options
- Conversion of annual/monthly parking pricing to daily charge for employees
- New parking pricing and preferred spaces for part-time or casual ridesharing
- New lottery or frequent rider-style employer incentives for use of alternative modes (project includes some Federal funding for innovative incentives)
- Earn more vacation time by using alternative modes
- Better "employer-endorsed" real-time mobile apps for transit and dynamic ridesharing

Ronald Ross shared information on activities being undertaken by MBTA to better manage its parking facilities and increase parking revenue. Payment options are being increased by providing lot attendants with wireless handheld devices that accept credit cards. The agency is also considering installing multi-space meters and implementing pay by phone.

MBTA is also working to improve parking enforcement and collection. Steps include outsourcing collections activities to a third party, working with the Massachusetts Registry of Motor Vehicles to deter non-payment, and using license plate recognition tolls to speed up enforcement. The steps have improved enforcement activities and increased violations revenue.

The agency is also experimenting with different pricing programs. Lot users can purchase reserved parking spaces at some locations for \$200 per month. A pilot effort also aimed to move parkers from high-demand lots to nearby facilities with excess capacity by reducing parking rates at the less utilized lots. Unfortunately, the program yielded minimal benefits and reduced parking revenue. MBTA is also working to provide real-time parking availability information to better manage demand at lots.

Stephanie Pollack from Northeastern University provided a presentation that considered parking policy from a more academic approach than the other speakers. She noted that parking policy strongly affects mobility:

- Parking policy about on- and off-street residential parking affects residents' decisions about whether or not to own a car
- Parking policy about off-street employee parking affects employees' decisions about whether to use a car for a commuting trip
- Parking policy about on-street parking affects travelers' decisions about whether to use a car for non-commuting trips

- Parking policy at/near MBTA transit stations affects travelers' decisions about whether to use transit

Ms. Pollack also discussed the high cost of providing parking and the impact that its provision has on the cost of commercial and residential space. She also provided examples of how space that is currently allocated to parking could be better utilized to increase density levels to make transit more efficient and provide quality public spaces.

Since the September 2014 workshop, Mr. Ross reports that MBTA has transitioned its payment system from the "honor box" to PayByPhone and monthly invoicing. The agency will be adding multi-space meters at some locations in the future. Mr. Ross said that by presenting at the workshop he was able to meet new contacts that have offered insight on managing parking payments and enforcement. He also noted that the workshop presented different parking management ideas that his agency plans to consider in the future.

The workshop has also impacted work done by the Massachusetts Parking Group, which is comprised of public officials, transportation and parking commissioners, parking directors/clerks, adjudication managers, senior police officers, and others from municipalities and related public organizations. Information from the workshop including accounting for all parking related on-street assets and on-street parking technology have been agenda topics at meetings. Members of the group have also had follow-up discussions with Lauren Mattern from SFMTA and others to discuss how to identify and account for parking regulations as part of a comprehensive parking management effort.

5.3 Denver, Colorado

The Denver workshop included presentations from representatives of the City and County of Denver, Boulder, and Aspen.

Denver has been experiencing significant growth in recent years. Between 2000 and 2010 the population increased 8 percent, and between 2010 and 2012 it increased an additional 4.9 percent. With that growth, concerns about parking availability have increased. The city conducted an analysis of parking availability in 11 of its most vibrant neighborhoods and found that in all of the neighborhoods at least 25 percent of parking spaces were available during peak hours, leading the city to determine that it does not need more parking but does need to use it better. This led to the development of the Strategic Parking Plan, which sets the vision and framework for parking management and provides a toolbox of strategies.

The city's toolbox calls for actions to occur in the following order: (1) mitigate or reduce the demand for parking; (2) direct demand to underutilized areas; (3) establish time limits to increase parking turnover; (4) introduce a value component to increase turnover and aid enforcement; and (5) maximize existing supply to maximize best use of public and private assets. In recent years Denver has installed smart meters throughout the city, implemented an overnight parking program in its core, adjusted parking permit rules and regulations, and implemented car share parking rules and regulations. In coming years the city is working to make meter rate adjustments that are informed by demand, implement variable meter rates, and expand its use of sensor technology and smart phone occupancy applications.

The city of Boulder discussed some of its numerous parking management innovations and the planning efforts it was undertaking to improve mobility. The city's parking management is driven by sustainability goals, providing access, and its SUMP principles, which encourage shared, unbundled, managed, and paid parking. The city has three districts, including its downtown core, in which parking is unbundled and shared. The districts have taxing and bonding authority for parking construction and TDM program efforts. In the city's downtown area parking revenues are used to purchase transit passes for all employees. Transportation policies have resulted in only 43 percent of downtown workers driving alone to work.

Boulder was working to advance its parking policies through the development of its Access Management and Parking Strategy (AMPS), which will help identify tools and strategies to "evolve Boulder's access and parking management to a state of the art citywide system reflecting the city's sustainability goals." The focus of AMPS is district management, on- and off-street parking, transportation demand management, technology and innovation, code requirements, enforcement, and parking pricing. Early pilots and actions included pay by cell, solar powered electric vehicle charging stations, variable messaging, parklets, and better management of car share.

Aspen is a well-known and popular Colorado tourist destination that has experimented with numerous parking policies to meet the demand created by its approximately 25,000 hotel rooms and daily inflow of 13,000 workers. In its downtown, Aspen's meters have escalating rates that allow people to park longer, but pay more for additional hours. The city also manages its residential parking zones in an innovative way. Residential demand for parking near the downtown does not exceed available capacity. To assure that capacity is efficiently utilized, the city sells day passes to workers and other visitors that allow them to park all day in residential areas. Daily parking passes are priced to assure demand does not exceed capacity.

We did not receive feedback from Denver workshop attendees after our first round of outreach. We have subsequently followed up directly with representatives from the cities of Denver and Boulder. Boulder has responded and reported that they attempted to start a regular meeting of area parking professionals but have not been successful to date.

5.4 Houston, TX

The Houston workshop included presentations from representatives of the city, the Houston Airport System, and the Houston First Corporation. Though Houston is known for its many highways and many suburban communities, some of the struggles the city is facing involve urban growth and managing parking for the future. Better management of parking policies would help alleviate traffic congestion during peak hours, make room for more public space, and help accommodate new residences and businesses. There are over 65,000 paid parking spaces in Houston that are managed by three governmental entities: the Houston Airport System, the Houston First Corporation, and Houston Parking Management.

The Houston Airport System is the fourth largest in the U.S. Of the three airports that make up the Houston Airport System, both George Bush Intercontinental Airport and William P. Hobby provide public parking facilities to accommodate their commercial airline activity. At the George Bush Intercontinental Airport (IAH) there are over 24,000 spaces available within the three public parking garages. As of late 2015 an additional economy lot opened that provides an additional 2,300 parking spaces. The William P.

Hobby Airport (HOU) has a 3,250 space garage as well as 1,100 surface spaces that serve the general public and airport employees. A new international terminal opened in the third quarter of 2015 and includes a new parking garage with 3,000 spaces.

Some of the Houston Airport System's goals include providing premier facilities that offer superior customer service, the ability to fund for the future, restore facilities to "opening day fresh", and build a high performance organization. They intend to do this through rebranding of the parking and transportation products that they provide, enhanced internal and external marketing campaigns, and generally improved services, which includes more parking lighting as well as covered parking ideal for inclement weather.

The Houston First Corporation was created in 2011 to manage and operate conventions, art, off-street parking and entertainment venues. The organization has 10 major venues and 11,641 parking spaces. Some of their facilities include the 1,200 room Hilton Americas-Hotel, George R. Brown Convention Center, and Wortham Theater Center, which is home to the Houston Grand opera and Houston Ballet.

Next to New York City, Houston has the most theatre seating in the United States. Event attendance can cause significant congestion and delays outside of parking garages during peak traffic hours. Houston First plans to address these issues through updated equipment, enhanced audit control, and increased directional signage. The organization plans to build upon its current parking guidance systems and install better way finding signage in existing facilities and future facilities so that drivers using the facility will be able to better navigate. Houston First also plans to install and implement new parking technology that will allow for a seamless parking experience in every facility. New technology includes the integration of handheld units to process credit cards and accept vouchers and prepaid parking issued and sold online and through the art groups that Houston First is associated with. The organization would also like to integrate valet services, parking access, and fees with the room bill for hotel guests at the Hilton Americas and future Marriott Marquis. Also planned is the creation of a data warehouse to share patron parking information and to create a prepaid parking portal, so that when patrons purchase their theater tickets they purchase parking as well.

Houston Parking Management is responsible for over 9,000 metered parking spaces in Houston. It enforces parking safety and manages the residential permit parking programs and various other parking permits. Some of the challenges that the agency is facing involve downtown growth and utilizing parking revenues to reinvest in parking or other transportation solutions.

The City of Houston Master Parking Plan Program was created as part of an effort to enhance the parking experience for Houston's customers and stakeholders. The document's parking and transportation policies and programs will effectively support the community's strategic and economic development goals and objectives. Houston planners believe that parking is not the destination, but rather the means to the destination, and that the best customer experience is when the customer doesn't have to think about parking at all.

Since the workshop many participants have collaborated to advance parking policy and programs within the Houston area. Staff at the city of Houston and METRO Transit Authority are working to offer alternative commute solutions to city employees and other workers in parts of the city where parking supply is in high demand.

Staff at METRO reported that they have shared information from the Right Size Parking presentation with developers and property owners in the region as part of the agency's efforts to encourage travel by alternative modes. Staff at the agency have also shared information about parking sensors and pricing models with individuals who did not attend the workshop.

Staff at the city of Houston collaborated with METRO, Rice University, and the Kinder Institute, which had a representative at the workshop, to create a parking study for Rice Village, which has very serious parking issues.

Maria Irshad from Houston Parking Management said, "The FHWA workshop drew attendees from a variety of agencies, which allowed us to connect and form relationships so that we can collaborate to improve not only parking situations, but reduce SOVs [single occupancy vehicles], improve air quality, mitigate traffic, etc."

5.5 Minneapolis, Minnesota

The workshop for the city of Minneapolis included speakers who were representatives of the city, those from traffic and parking services, and the University of Minnesota's Humphrey School of Public Affairs. They discussed some of the challenges the city is facing right now in regards to parking, which included issues with outdated technology, enforcement, and payment systems; accommodating autonomous and electric vehicles, as well as other alternative fuels; and dealing with the growing population and urbanization associated with the development taking place in Minneapolis.

The city has updated its on-street technology from single head manual meters, which accepted only coins, to multi-space meters that accept credit cards. The increase in payment options offered by the multi-space meters allowed the city to make parking easier and has improved payment compliance. As part of its technology upgrades the city also moved from hand written citations to hand-held ticket writers.

The city of Minneapolis controls a significant quantity of structured parking, or what the city calls "ramps." The ramps are located on the fringes of the downtown core and offer easy access to the freeway. The city has worked with private developers to construct a skyway system that is over 8 miles long and connects various downtown destinations to the ramps. Currently, the city is struggling with what to do with the ramps as they age; some will soon be more than 50 years old. Options include repairing, repurposing, or replacing.

The Humphrey School of Public Affairs presented on a VPPP funded project in which they attempted to affect demand for parking in the city's ramps. The study used four different parking and transit pricing models to encourage commuters to use alternative forms of transportation. In two of the models monthly transit passes were offered at either a highly discounted price or for free. In the other two models parkers could earn a rebate when they rode transit or used another non-auto form of transportation to commute to work. All four models reduced parking demand and the models that allowed parkers to earn rebates were the most effective. The researchers reported that it could be more cost effective to reduce parking demand using incentive programs than to meet demand by building new parking facilities.

Follow up with workshop attendees revealed that staff at Metro Transit have used workshop information to develop a TDM plan for the agency. Metro does not charge employees for parking but is proposing to do so as part of the TDM plan. The new policy was developed using information from the Humphrey School of Public Affairs study, the FHWA parking pricing primer, and the *SFpark* project summary documents. The TDM plan and associated changes in parking policy will allow Metro Transit to meet employee parking demand while losing a considerable amount of parking to construction.

An attendee from the Minnesota Department of Transportation reported working toward a similar goal as Metro Transit. He has used information from the workshop to influence Minnesota DOT leadership to think about the links between employer paid parking and employee use of alternative travel modes and the subsequent relationship between agency parking policies and highway congestion management.

Another attendee reported that the workshop discussion has allowed him to better inform stakeholder discussions regarding urban mobility, has helped his agency optimize its tools and products, and connected him with local collaborators working on other transportation issues.

5.6 Washington, District of Columbia

As the first workshop to be conducted in the series, the local presentations at the Washington, D.C. workshop were limited to the District Department of Transportation (DDOT). Some content was similar to that presented at the Atlanta workshop and summarized in Section 4.2. Information that was unique to the Washington workshop is summarized below.

Sam Zimbabwe discussed the city's Curbside Management Study, which was designed to identify parking priorities and preferences within the city. The study found, unsurprisingly, that rates of automobile ownership are lower in areas that are closer to the central business district, have higher levels of transit service, and where incomes are lower. As part of the study the city also looked at its residential parking permit (RPP) program. Most neighborhoods with RPP programs are located near Metrorail stations and in many neighborhoods demand exceeds supply to such a level that increased RPP restrictions would be unlikely to result in a balance between parking demand and supply.

The study also looked at issues in the city's retail districts. A sample of distributors was asked where and how their drivers park when making deliveries. Almost 80 percent said that drivers will double park, and almost 100 percent said that the drivers will occupy a space within a loading zone in order to make the delivery. The lack of adequate loading space results in inefficient goods delivery and increased costs to suppliers (time, fuel, and fees). The costs are then passed from suppliers to retailers and from retailers to customers. The failure to provide adequate and efficient delivery systems results in an unnecessarily inflated cost of living.

As part of the study the city identified four parking management approaches. Options ranged from a user neutral scenario in which demand is controlled through pricing and all users pay to park to a residential priority model in which parking for low to mid-density residential uses is prioritized over commercial and high-density residential uses. DDOT subsequently identified common neighborhood land use scenarios and applied one of the four parking management approaches to each land use scenario. DDOT staff believe that implementation of successful parking management approaches will require more data on priced and non-priced parking, user buy-in and trust of parking data, and political buy-in for more responsive policies.

Eulois Cleckley presented information on the District Freight Plan Update. Freight traffic in the District will grow by 75 percent between 2011 and 2040 in terms of tons. To meet the parking needs associated with that growth the city will need to better manage curbside space. That is being done, in part, through passage of a new commercial parking regulation (Chapter 24 of Title 18) that requires commercial motor vehicles that use loading zones to display an annual pass or day pass. Carriers purchase the passes at a cost of \$323 per vehicle per year or \$25 per vehicle per day. The permits allow vehicle to park for up to two hours in loading zones. The program will allow DDOT to collect more accurate data regarding loading zone utilization. The data will aid DDOT with the “right-sizing” of loading zones throughout the district. The program is also expected to increase compliance and decrease parking-related congestion.

Recent follow up with workshop participants and DDOT staff revealed that many actions have been taken since the workshop. DDOT’s Curbside Management Study was officially released in 2014 and the department is now collecting a significant amount of parking-related data, in part through the utilization of time lapse photography using a process developed by NYDOT. DDOT has also deployed its ParkDC program, which is a multimodal value pricing project. The city also implemented its own Right Size Parking study, which was very similar to King County’s effort. DDOT staff collaborated with Dan Rowe from King County throughout the process. The study data helped to lead to an adjustment to the city’s zoning code that lowered parking minimums.

At the time of the workshop Alexandria, Virginia was conducting a study similar to the King County Right Size Parking effort, but on a smaller scale. The workshop offered Alexandria staff an opportunity to obtain more information on King County’s work. Data from Alexandria’s study helped to lead to a revision of parking standards in the city’s zoning ordinance. Residential parking minimums were reduced and the city developed a set of credits that developers can apply for to reduce parking requirements further.

Faye Dastgheib, who was with Alexandria at the time of the workshop, said the workshop offered a “valuable opportunity to brainstorm and speak with other parking managers who were working on similar projects.” Stephanie Dock with DDOT said the workshop helped “reinforce” efforts the city was pursuing and helped staff build connections with parking peers.

5.7 Fort Lauderdale, Florida

Diana Alacron of the City of Fort Lauderdale and Alejandra Argudin of the Miami Parking Authority provided an overview of parking-related activities their agencies are undertaking and considering. The presentations included information on specific policies, technology, and programs the cities are pursuing to ensure that parking is well managed and serves residents, businesses, and visitors.

One of the biggest challenges in South Florida is parking. Areas experiencing high levels of development, such as Coconut Grove, have parking shortages due to an influx of demand from new residents, employees, visitors and construction workers. As a result, many residents have trouble finding parking. The city is reviewing residential parking permit programs, car sharing, and shared-use projects to fix this issue.

Ms. Alarcon discussed “Connecting the Block,” which is a multimodal connectivity program that lays out how pedestrians, bicycles, cars, buses, and other users share space on the street. As part of its mobility efforts, Fort Lauderdale is striving to encourage residents to use mass transportation. To help achieve

that goal the city is installing the electric Wave Streetcar. The first phase of the “Wave” is a planned 2.8 mile streetcar system designed to move people in and around downtown Fort Lauderdale. The system will span the New River to connect the hospital and courthouse districts on the south side with the downtown business core and government, education, shopping, recreation and entertainment centers on the north side. It will serve as a circulator/distributor system, with connections to regional bus and rail systems.

The All Aboard Florida “Brightline” passenger rail service is also being installed across Florida and is expected to start service in 2017. Brightline will offer an express train service that will provide safe, relaxing, intercity travel in one of the most populous and visited regions. The new service will use the existing Florida East Coast Railway corridor between Miami and Cocoa, as well as a new track along State Road 528 between Cocoa and Orlando.

The “Smart City” and “Smart Park” programs are part of Ft. Lauderdale’s ambitious 2035 Vision. Smart City is the vision for the entire community to be connected through the creation of “complete streets” which would allow transportation system elements to interconnect, making it possible for users to move seamlessly throughout the city. The Smart Park Program began in August 2012 when Streetline began a partnership with the city to provide its Smart Parking System. Ms. Alarcon said that the only negative was the cost of installation of the sensors and meters. Feedback from the public indicates that they strongly support the program and the city is very happy with the results. The new technology allows individuals who have smart phones to use them to find and pay for parking, thus reducing traffic.

The city of Miami is also implementing new technology to manage parking. The city has pushed pay-by-phone technology for approximately one year and was one of the first cities in the region to implement the technology. The technology has allowed Miami to eliminate parking assets from the street, which has resulted in reduced equipment maintenance costs, helping the city absorb the convenience fee that is equivalent to approximately 24 percent of transaction costs. Pay-by-phone usage is now at 65 percent and climbing. Pay-by-plate is another technology being used on street and is a complement to pay-by-phone.

Since the workshop, the city of Fort Lauderdale has embarked on a multi-step approach to modernize its utilization of public parking by implementing a parking demand management system and has started the process of procuring parking management technology. This effort is aimed at:

- Enhancing the efficiency of enforcement by identifying street and space location of violations, types of violation, and efficient routes. The system would be able to integrate with the city’s current software, equipment, and payment options; provide the ability to take credit card payments via citation device; be Bluetooth and cellular technology compatible; provide the capability to capture pictures and videos; and include thermal printers with high-performance batteries.
- Implementing a dynamic pricing system to improve parking utilization and customer awareness of parking availability. The system would be able to identify the City’s parking utilization through web-based software, perform technology assessments and identify specifications that will be used to determine both utilization as well as utilization accuracy, and communicate with current city software and equipment. This effort would also involve developing a dynamic pricing policy and mobile application for external customers to help them identify available parking.

5.8 Durham, North Carolina

Vivian Coleman from the Charlotte Department of Transportation presented information on parking-related efforts in Charlotte. As part of the city's effort to develop the Center City Transportation Plan, it conducted outreach within the community to better understand parking-related concerns and goals. This outreach found that the city had inadequate signage for parking, limited information for visitors, and no common theme or branding. Stakeholders also reported that parking supply ownership and management was fragmented.

To address these concerns, the Center City Transportation Plan recommended the creation of a "Parking Collaborative" to encourage greater levels of collaboration between private owners of parking facilities and the city. The goal for establishing the Collaborative was to bring about a more unified and coordinated parking system. Through the Parking Collaborative, the city installed a wayfinding system with dynamic signage in 2013. The system initially received several complaints, particularly regarding inconsistent messaging on parking availability. In response, the city gathered feedback through on-street and on-line surveys and focus groups. Using this feedback, the city implemented new, clearer signage along with curb space reallocation and removed peak parking restrictions.

Thomas Leathers with the City of Durham Transportation Department presented information on developments in Durham. The city's Division of Parking System Management is working to make parking convenient and user friendly throughout the city. The Division manages on- and off-street parking to balance the needs of residents, businesses, and visitors to the city while promoting compliance with all city parking ordinances. This includes parking enforcement, special event parking, commercial vehicle loading zones, controlled residential parking area permits, and contractor vehicle and dumpster parking zones and permits.

One of the challenges that Durham is facing is fast growth in a short period of time. The number of businesses in the city's downtown has more than doubled since 1995, and the number of employees commuting in to these businesses has gone from roughly 3,000 to about 16,000.

Some of the things Durham is currently implementing to accommodate growth include the Paid On-Street Parking Program and the replacement of off-street parking access and revenue control equipment. The Paid On-Street Parking Program accommodates short-term parking needs while discouraging the use of on-street spaces for long-term parking. As a result, convenient spaces will be available for short-term visitors.

The city is constructing new mixed-use parking garages on existing surface lots to accommodate residents and commuters alike. Durham has expanded the geographic boundaries of its Park+ modeling system, which allows it to better understand the impacts that changes in land use and parking policies will have on parking demand. In the future, Durham is looking to explore and evaluate the implementation of parking rate increases to see how they may affect traffic. The city is considering dynamic pricing for both on- and off-street parking facilities. Durham would like to follow Charlotte in adapting a new wayfinding and parking guidance system. The city has also increased its collaboration with the county government on parking-related matters.

Since the workshop, the City of Durham has implemented several incentives:

- Taking into consideration the feedback obtained from the outreach conducted as part of the city's Comprehensive Parking Study combined with its assessment of available on-street parking technology and best practices, the city launched "Pay-By-Plate," a metered, on-street parking system that uses the PassportParking Pay-by-Phone app in the downtown area and charges a rate of \$1.50 per hour.
- The city increased rates for parking garages and surface lots from \$1.00 to \$1.25 per hour, and the special event parking rate rose from \$3.00 to \$5.00 per vehicle.
- The city is in the final evaluation stages for a new Parking Access Revenue Control (PARCS) system for off-street parking garages and surface parking lots. They are currently in the process of evaluating proposals to replace those PARCS systems in the parking garages. The new PARCS will accept a diversity of payment options, including cash, credit cards, and digital payments, which should enable the collection of additional revenue during weekend and after-hours periods.
- To meet future demand in the downtown area, the city has embarked on building a new mixed-use parking garage on an existing surface parking lot.
- The city is replacing the paystations in its surface parking lots with the Parkeon StradaPAL BNA system (multi-space meters). The city will also transition these lots from a pay-by-space format to a pay-by-plate environment.

5.9 Chicago, Illinois

The workshop for the City of Chicago included presentations regarding parking challenges and innovations in the city and was delivered by speakers representing the Metropolitan Planning Council (MPC) and the Chicago Metropolitan Agency for Planning (CMAP).

Peter Skosey of MPC presented his agency's evaluation of the Chicago parking meter concession renegotiation. The city had suffered losses under the agreement and the renegotiation was seen as an opportunity to minimize those losses. The 75-year Chicago Parking Meter Concession Agreement was renegotiated in 2013. The \$1.156 billion agreement assumed a specific parking rate schedule but allowed the city to retain "reserved powers" to control rates, where rates deviating from the schedule trigger mandatory payment requirements, depending upon their revenue implications, from the city to the concessionaire, or vice versa. The renegotiation will yield a savings of approximately a billion dollars to the taxpayers. Other actions to improve parking management include reactivating charging for parking at meters on weekends, adding meters in commercial corridors, and promoting pay-by-cell. In Chicago there is a 35 percent surcharge to use pay-by-cell. After the vendor receives \$2 million in profit, the rest of the profit from pay-by-cell is given to the city.

The city is still suffering from fraudulent use of disabled placards, which is costing it millions of dollars. MPC is studying multiple solutions that include: (1) programs that require placard holders to pay for parking but allow extended parking times without setting aside specific spaces; (2) programs that require payment, allow extended parking times, and set aside specific spaces; and (3) the creation of two-tiered placard programs in which only some placard holders are allowed to park at meters for free.

Lindsay Bayley discussed current projects that CMAP has been involved with in the region and some of the challenges that Chicago's suburban communities face. Through their efforts, CMAP has learned that many communities aren't aware of their parking supply and occupancy rates. Some residents consider a longer walk to their destination as problematic. This varies by the demographic and crime rate in

different areas of Chicago. Areas that are viewed as being “safe” or are well-lit are more likely to have people who are willing to park and walk further to their destination.

Since the workshop, the City of Chicago key initiative includes plans to launch a Downtown Loading Zone Reform pilot program in 2017 to convert business-paid commercial loading zones to user-paid loading zones in the central business district, including the Loop. This program would be similar to programs that have been implemented in other cities, such as New York and Washington, D.C.

In addition to raising revenues, the proposed pilot program may help reduce parking congestion by addressing several of its causes. There are three main issues that the pilot aims to address. First, the existing system can cause confusion about what a loading zone is, causing non-commercial vehicles to use them and reduce necessary loading areas for commercial vehicles. Second, business owners pay for a loading zone, while use of the space is not limited to their business needs. And third, misuse of loading zones creates unsafe road conditions, leading to double-parking and traffic congestion when commercial vehicles cannot find a space. These conditions also increase delivery times and negatively affect movement of goods through the region. The main goals for this pilot would be to:

- Reduce improper usage: The pilot will create greater turnover and help to improve enforcement of usage rules in loading zones by removing one type of free loading zone. The new meter system will provide enhanced enforcement and increase turnover of trucks in downtown loading zones.
- Implement a user-fee system: The pilot program will shift the cost of loading zones to the users of the parking rather than a single business receiving goods. Under the current system, businesses pay for installation of a loading zone. Problems with the current system make it hard for delivery companies to find legal parking, so they consider parking citations a cost of doing business. The user-paid system should improve the ability of delivery vehicles to find legal parking and reduce the number of citations received. This would meet the city’s goal of better parking management even if there is some revenue reduction in the bargain.
- Improving traffic conditions: If properly used, these pilot loading zone areas should improve traffic conditions and reduce the number of commercial vehicles blocking bike lanes.

5.10 Portland, Oregon

The Portland workshop included presentations from representatives of the Portland Bureau of Transportation (PBT) and the City of Eugene. Leah Treat from PBT shared information on her agency’s efforts and said that managing parking wisely is an important element of planning for rapid population growth and urban development. Portland is already a very transit-oriented city with many programs aimed at moving people out of single-occupancy vehicles and into transit, biking, and walking. Yet, Portland had not updated its parking policies for decades.

Thriving retail districts have scarce parking and are typically surrounded by housing. Few neighborhoods currently have parking permit programs, and the city is looking to enact new policies to address parking shortages where they exist. Everyone who lives in those residential districts will be entitled to parking; however, it will not be free. The city is also working to adjust parking policies within its downtown, and new policies have been proposed. There have been preliminary discussions about increasing downtown parking meter rates by 40 cents to \$2.00/hour in order to bring occupancy rates back down to the 85 percent target. Also proposed is to increase hourly rates at one of the downtown SmartPark garages

which serves primarily commuters. SmartPark (Portland’s city-owned parking garage system) is highly subsidized. Prices are kept in line with commercial lots as downtown parking is undervalued and underpriced.

The city has learned that parking is an area where “we can’t just jump in and do it.” There is a need for extensive research and the collaborative development of policies that retain some flexibility. New meters and parking rules, including allowing longer meter stays, have recently been implemented in the 23rd Street retail district. All of the issues and options were discussed in advance with the community prior to policy decisions being made. Partially as a result, business owners have had a positive response to the changes.

Jeff Petry, from the City of Eugene, described that community’s Epark program, which is guided by three overarching goals: (1) enhancing neighborhood livability, (2) encouraging economic activity, and (3) reinvesting parking revenues. To manage parking supply to meet these goals, the city will issue parking permits for no more than 75 percent of the on street spaces available in high-density zoned residential areas. The program allows residents special on-street parking privileges with a permit.

Epark comprises 10 zones around the University of Oregon campus. Different rates and rules apply in different zones. For most of the zones, residents pay \$40/year per vehicle. Because demand exceeds supply, prices have been increased in three of the zones. Two of those are now \$99/quarter and the highest demand district costs \$150/quarter (down from \$180/quarter, as that rate had brought utilization down to a level below the city’s policy objective). Long-term residents of neighborhoods are offered a highly discounted permit.

Mr. Petry attributes the success of the city’s program to the agency being a positive and highly visible partner with the communities. The parking bureau has a unique relationship with the University and conducts ongoing outreach programs each year as new students arrive.

Since the workshop, Portland has begun the development of a Parking Management Plan that will incorporate, among other parking operation tools, performance-based pricing. The workshop helped provide the public and elected officials with valuable insight into various parking management tools. Further, the networking experience and connections they made at the workshop were, according to participants, extremely valuable and will assist them when implementing parking plans in the future.

5.11 San Diego, California

The San Diego workshop included speakers from the San Diego Association of Governments (SANDAG), the Downtown Parking Management Group, and multiple cities.

Representatives from SANDAG said that the region is facing many parking-related issues and noted that parking requirements can often hinder smart growth, affordable housing, commercial growth, and transit-oriented development. Through its research, the agency noted that in many of its communities parking requirements are high for residential and commercial uses, parking data collection and inventory updating is infrequent, and wayfinding technology is uncommon. Other parking-related concerns include limited turnover, inadequate enforcement, spillover, competition for curbside space, people cruising/circling while looking for parking, and high single-occupancy-vehicle mode share. When

it comes to pricing, only 6 out of 18 cities in the SANDAG region charge for on-street parking, and only one of those cities uses smart meters.

In order to help address these issues, SANDAG created the Regional Parking Management Toolbox. The toolbox is a step-by-step interactive web-based document that was customized for the San Diego region and includes over 20 case studies. The toolbox helps planners understand the issues associated with parking management, including data collection and analysis for parking inventories, occupancy counts, and turnover analyses. The toolbox also contains best practice information on considering community characteristics, citations, and parking trends. There are six steps the toolbox covers, including place-type identification, collection of data to understand real versus perceived parking problems, exploration of strategies based on previous steps (including an interactive experience), understanding best practices from North America, and benefits of various parking strategies.

A representative from the Downtown Parking Management Group provided insight regarding the views of business owners in downtown San Diego toward parking. He noted that downtown business owners struggle to address the parking challenges of their patrons. In 2003 the city proposed increasing hourly parking rates from \$1.00 to \$1.60. Many local business owners opposed the increase and negotiations led to a compromise price of \$1.25 per hour. Besides yielding a parking rate increase, the process led to the development of parking districts within the downtown. At the time it was revealed that some districts had only 30 percent parking utilization rates. In these lower demand areas parking time limits were relaxed and rates were reduced. These efforts led to increased utilization and parking revenue. The city is using some of its parking revenue to fund the development of a mobility plan, which will help the city address parking demand. At the same time, new development means the city needs to update its parking occupancy data; based on recent increases in parking revenue, occupancy has likely increased, which means the city will likely need to adjust parking rates (upwards) and possibly also time limits (downwards) in some districts.

Outside of San Diego many communities are also dealing with growing demand for parking. Del Mar, a small town of 4,500 residents, must accommodate 3 to 4 million beach goers a year. National City, the densest city in the San Diego region, has a military base, marine terminal, and 60,000 residents, all of which create significant parking demand. In addition, Oceanside is seeing increased parking demand from new retail, entertainment, and community development. These cities are addressing parking demand in various ways. Del Mar is experimenting with variable parking rates in one of its parking lots and Oceanside is considering a similar effort. Oceanside is also setting aside funds for efforts that will reduce vehicle parking demand, such as improvements to bicycle and pedestrian facilities, subsidized transit passes, rideshare incentives, and a transportation resource center. National City was recently awarded grants to create and implement a parking management plan and wayfinding program.

Follow-up with workshop attendees revealed that staff at Circulate San Diego has used workshop information to assist in developing a published report on how the city of San Diego can better implement transit-oriented development. The report includes specific recommendations to allow developments near transit to provide somewhat less parking and to satisfy some of their parking requirements with alternative transportation choices.

SANDAG noted that it is kicking off a Caltrans funded grant for the San Diego and Western Riverside Regional Park and Ride Strategy where they will develop proposed management strategies for each region. These strategies may include a phased approach towards future paid parking facilities. The study should be complete in about 2 years.

SANDAG also noted that, like National City, the City of Carlsbad is undertaking the development of a comprehensive parking management plan. The City of San Diego has expanded smart meters and just announced a new parking app that will be coming out soon.

Several attendees also noted that the networking experience and connections they made at the workshop were extremely valuable and will assist them when implementing parking plans in the future.

6 Generalized Outcomes and Lessons Learned

The workshops included presentations from many cities of various sizes that are facing unique issues; however, many shared themes were revealed. Most presenters expressed a belief that parking is a mobility issue that affects how cities function and housing affordability. City representatives also seemed to agree that they could manage their parking facilities more efficiently than they currently do and that performance pricing is a tool to achieving that goal.

Cities are working to take advantage of new technologies that will help them better manage their parking, but many are only in the early phases of doing so. While most large cities have rolled out smart meters, they have yet to take full advantage of those meters to adjust parking rates based on demand. Cities are also looking for low-cost ways to estimate parking utilization rates and share the resulting information with drivers.

While most cities have areas where parking is in high demand, they also have areas with excess capacity. Cities are working to figure out how to incentivize drivers to move from areas with little capacity to those with excess capacity. This is being done through price and time-limitation adjustments, the installation of wayfinding signs, and efforts to provide real-time occupancy data.

Attendees at the parking workshops seemed excited about the future of parking management. When contacted after the meetings many shared information about how their cities are working to improve parking availability and decrease negative externalities associated with excessive parking demand. Attendees said that workshop content helped reinforce work they were doing and provided them with new ideas, talking points, and direction.

Workshop attendees said most frequently that the opportunity to establish new contacts and strengthen preexisting ones was of greatest value to them. This led to the sharing of information, both during the workshops and since, on how best to manage parking systems and collaboration to turn the best ideas into operational reality.