Parking Policies for a Thriving City

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Pages excerpted from: Sam Levin, “A Green Solution to Oakland’s Housing Crisis,” East Bay Express, August 5, 2015.  
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Ben Adler, “Cities Finally Realize They Don’t Need to Require so Much Damn Parking,” Grist, August 2, 2016.  
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Speakers

**Mayor Stephen Gawron** was elected to the Muskegon city commission in 2001 and took the chair in July of 2012. His political journey began as a founder of a neighborhood association in 1992 and went well beyond what his wife expected. His family has over a 140 year history in the city and a keen appreciation for the dedication it takes by her citizens to keep progressing. Married to Susan for 33 years, father to college student Jacob and state employee for 29 years, his family has helped keep him together but will not take him shopping.

**Gordon Hansen** is a Senior Transportation Planner at the City of Berkeley. His primary role is managing goBerkeley, Berkeley's demand-responsive parking management program. Prior to joining the City of Berkeley, Gordon worked as a transit and parking planner at Nelson\Nygaard Consulting Associates and supported the launch of SFpark, San Francisco’s trailblazing parking management pilot project. Gordon is a native of Boston, Massachusetts, where he grew up riding subways and cultivating a passion for cities and urban transportation.

**Lauren Mattern**, Senior Associate with Nelson\Nygaard Consulting Associates, loves helping cities solve sticky innovation delivery challenges, and has a particular focus on curbside management, transportation options, and multimodal planning. She also has strong expertise with data-driven decision making, agile project management, and public sector communications strategies. Before joining Nelson\Nygaard Lauren served as Manager of Parking Policy and Technology at the San Francisco Municipal Transportation Agency, where she was integral in implementing the innovative SFpark program and oversaw parking policy efforts. She led pricing policy projects using new technology and coordinating with a variety of technical experts and public officials. Lauren connects transportation projects with broader city goals, such as public health, leading both technical projects and conceptual policy development. Her rich municipal experience implementing technically challenging projects allows her to build projects that are both forward-thinking and highly implementable.
The Muskegon Parking Strategy was a collaborative effort between the City of Muskegon, the Muskegon Community Foundation, Downtown Muskegon, Downtown Muskegon Development Corporation, and the Muskegon Lakeshore Chamber of Commerce.

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INTRODUCTION

A FUTURE VISION: LIVABLE MUSKEGON

The Downtown Muskegon Parking Strategy is about more than just parking. It is a strategy to enhance livability and vibrancy in downtown Muskegon.

It is a Strategy to generate economic development and increase downtown’s tax base.

It is a Strategy that seeks to increase mobility and accessibility by providing a range of modal choices and opportunities that include walking, biking, transit, and automobile.

This Strategy is provided to help downtown Muskegon address its parking with the end goal of making the community more livable. While opinions vary on what exactly makes a community livable, cities that lead in livability measures share some common traits. These communities are healthy, safe, prosperous, and walkable. They offer choices for efficient transportation to jobs, shopping, recreation, and education.

The City of Muskegon has completed a variety of Master Plans that have reinforced this vision of enhanced livability and vibrancy. While these plans continue to be implemented, downtown parking must now be seriously reevaluated in order to fully build the prosperous city that has been envisioned.
THE ROLE OF PARKING

As the largest single land use in downtown Muskegon, parking deserves more attention than it is typically given. Besides encouraging auto use, having such a large supply of parking influences the character, form, function and motion of the city. For example:

- Providing a supply of parking to meet peak demand for every use keeps buildings widely spaced apart, rendering walking and bicycling unpleasant and unsafe.

- Minimum parking requirements, while satisfying peak demand requirements, lead to large amounts of private land that is devoted to the storage of cars and oftentimes only partially filled. This is typically not the highest and best use of valuable downtown real estate, makes infill redevelopment difficult, and minimizes the taxable value of the land.

- Excessive amounts of pavement increases runoff and therefore burden the city’s stormwater systems.

- Requiring large amounts of parking in housing developments makes the housing more expensive, irrespective of resident demand, as the cost of parking is built into the cost of each unit.

Parking within downtown should be SUPPORTIVE OF COMMERCE, ACCESSIBILITY, VIBRANCY, WALKABILITY, and LIVABILITY. This Strategy will seek to recast parking into a supportive role, rather than as the primary land use that it is today.
For every car in the United States, there may be as many as 8 Parking Spaces.

99% of all car trips end in free parking.

**FREE PARKING**

The amount of parking supplied influences the demand for parking, and it is impossible to determine the optimal parking supply without consideration of the costs and benefits of providing the supply. In the United States, there are more cars than licensed drivers, and the gap has been widening since the 1980s.

Communities and habits have adapted to the idea of ubiquitous, free parking. As cities continue to grow and redevelop, parking needs and demands also need to transform. This physical transformation also requires parking management to change — especially if the desire is to encourage livable communities.

**Muskegon has an overabundance of free parking downtown.**

The pressure to provide more parking continues and new parking is added to the supply, driven primarily through the construction of private off-street lots that are associated with redevelopment. This increased supply is fueled by perceptions of “not enough parking” and policies that mandate out-of-date parking minimums.

This overabundance of free parking will need to be examined, particularly as Muskegon continues to redevelop, demand for parking grows, and the cost to construct parking increases. There are some parking policies that can aid in alleviating this stress, but ultimately the community will need to consider the unpopular decision to charge for parking in high-demand areas.

Parking pricing has been done successfully in places like Grand Rapids, Ann Arbor, Traverse City, Petoskey, and many other communities who continue to test pricing mechanisms. If done right, parking pricing can be helpful to businesses and painless to shoppers and visitors. The goal of pricing is to free up just one or two spaces per block, and shift the long-term parkers away from high-demand spaces.
WHY DOES PARKING MATTER?

The design and availability of parking has the potential to shape the look and feel of a city, the quality of life of its citizens and visitors, and the potential for new growth and development. The need to accommodate parking must be balanced with other competing goals for the built environment such as livability and economic development. It is important to acknowledge that it is impossible to accommodate the land consumption that would be required to park every vehicle since it would prevent Muskegon from achieving its goal of being a livable community.

PARKING:

- Impacts the look and feel of Muskegon.
- Is a critical part of the overall land use and transportation system.
- Can impact traffic congestion or the perception of congestion.
- Has a cost and value associated with every space (even if it is free).
- Varies based on the surrounding land use and time of day.
- Is part of city building and placemaking, with many stakeholders.
- May require trade-offs in behavior, expectations, and choices.
- Demand is most intense where there are centers of activity, mixes of land uses, and where land is valuable.
- Takes up valuable urban land (one off-street space = 300 square feet of physical space).
- Impacts housing affordability.
- Can contribute to urban sprawl and pollution.
THE MANAGEMENT OF URBAN PARKING

Parking problems (or the perception of not enough parking) are not unique to Muskegon. Similar patterns are found in cities across the United States, and certain strategies have consistently emerged to deal with them – this has been called the Evolution of Parking Management.

This evolution follows a typical progression:

Most communities will start without parking management strategies until free and abundant parking:

- Becomes congested and negatively impacts the area’s ability to attract shoppers or other pedestrians.
- Becomes the primary land use pattern and inhibits future development, city building, placemaking, and ultimately livability.

When this happens, local governments put parking regulations and controls in place, such as prohibiting parking in some locations and marking spaces more clearly. If parking availability continues to decline, governments introduce time restrictions on the free parking, attracting long-term parkers to spaces farther from the city center, where space turnover is encouraged. As parking congestion increases, some parkers may resort to the “two-hour shuffle” in which long-term parkers occupy high-demand spaces but move their cars every few hours to avoid citations.

Eventually, if parking demand outpaces supply, and construction costs for new parking remain prohibitive, cities turn to pricing to shift demand and influence mode choice. Parking pricing, in turn, can lead to residential “spillover,” as neighborhoods close to high demand areas are targeted by long-term parkers looking to avoid paying for parking. Local governments solve this with residential parking schemes (like parking permits) designed to give priority to residents who can purchase parking permits. Continued growth in car ownership and driving habits, combined with limited land in city centers has led to the use of Park & Ride lots, often with shuttles to move people between the lot and the city center. This can work for commuters and also for visitors and shoppers.
More recently, the concept of “Mobility Management” has found a place in cities trying to reduce congestion and promote a variety of travel modes. This tactic aims to enhance the accessibility of towns and cities for all people, regardless of their mode of transport. Providing connections between modes becomes very important when trying to create a “seamless journey,” where driving or taking a taxi is not necessary. Some large cities are also looking at “Performance-based Parking Pricing,” a strategy popularized by an urban planning professor from UC LA, Donald Shoup, and currently being tested in San Francisco. This tactic takes a market-based approach, varying the price of parking based on supply and demand.

The Downtown Muskegon Parking Strategy utilizes solutions and tools that are proven national practices in parking management. These tools, when applied strategically and sequentially during the redevelopment of the city’s core will make the downtown more healthy, safe, prosperous, and walkable.

The graphic to the right shows the sequence or evolution of parking management.
2008.00 PURPOSE
The purpose of this section is to manage vehicular and bicycle parking in a manner consistent with the regulating plan of this Form Based Code. Incremental infill development will enable applicants and the City to strategically accommodate parking needs while not comprising the urban form desired within downtown Muskegon.

2008.01 APPLICABILITY
The regulations of this Section shall apply in the following instances:

A. Whenever the use of a building or lot is changed to another classification of use, off-street parking facilities shall be provided as required by this Section.

B. If the intensity of use of any existing building (other than a detached house or duplex building) is increased through the addition of floor area, seating capacity, or number of employees, additional off-street parking shall be provided.

2008.02 PARKING AND LOADING REVIEW
Whenever three or more parking spaces are required, specifications shall be submitted to the Zoning Administrator for approval prior to permitting per Section 2326, 3 of the Muskegon Zoning Ordinance.

2008.03 USE OF PARKING AREAS
Vehicles shall not be repaired, stored or displayed for sale or hire in parking lots unless the principal use is classified in the applicable context area. Upon approval of the Zoning Administrator, parking lots may be used for temporary events and gathering.

2008.04 ACCESS STANDARDS
Parking shall be accessed from a side street whenever possible. If parking is accessed from a front street, there shall only be one point of access. Entries shall not exceed two lanes in width.

2008.05 MAINTENANCE STANDARDS
Parking and loading areas, as required, shall be paved, marked, and defined by curbs. Utilizing porous pavement, low impact design, and green infrastructure best practices for stormwater is encouraged.

2008.06 DIMENSIONAL REQUIREMENTS
Parking spaces shall be a minimum of 8' wide by 18' long. Maneuvering aisles shall be a minimum of 12' wide for one way traffic and 22' for two-way traffic. Excessively wide aisles shall not be permitted.

2008.07 ESTABLISHMENT OF USE CLASSES
The following table lists uses permitted in the Form Based Code and designates various use classes for establishing parking requirements.
## 2008.08 REQUIRED OFF-STREET PARKING SPACES

Up to the maximum number of required off-street surface parking spaces shall be provided and maintained on the premises or as otherwise allowed by this section per the above table.

A. In the case of a use not specifically mentioned, the requirement for off-street parking facilities for a specified use which is most similar shall apply, as determined by the Zoning Administrator.

B. Parking areas for other than detached house and duplex may be located up to 1,000 feet from the building they serve.

C. New businesses (uses) that are required to provide 15 parking spaces or less may forgo the parking requirements if they are located in a previously existing building.

D. Parking maximums may be waived by the Zoning Administrator when parking spaces are provided in structured or underground parking facilities.

## 2008.09 SHARED PARKING

A. Shared Parking with Staggered Peak Periods. Where a mix of land uses on two or more adjacent lots create staggered peak periods of parking demand, the on-site parking requirements for the adjacent lots may be reduced subject to the following:

1. Shared parking areas shall be located within 600 feet of the use.
2. Pedestrian connections shall be maintained between the buildings or uses.
3. Lots shall be adjacent and shall be interconnected for vehicular passage.
4. A shared parking agreement shall be submitted.

5. For shared parking with places of worship, the other uses shall not normally operate between the hours of 6:00am and 6:00pm on Sundays.

B. Mixed Use Buildings. Where one mixed use building on one lot creates staggered peak periods of parking demand, the on-site parking requirements for the single lot may be reduced subject to the following:

1. Mixed Use Building shall have different uses on multiple floors that create a staggered demand.

C. Accessibility of other modes of travel. To qualify, the site plan must incorporate transit stops, pedestrian connections to nearby transit stops, or bicycle parking facilities, as applicable.

1. Transit reduction. Buildings or uses shall be within 600 feet of a transit stop. MATS shall verify in writing that the transit stop is in a permanent location.
2. Bicycle reduction. Parking requirements may be reduced by one space for every four covered, secure bicycle parking spaces that are provided on site that are in addition to the required bicycle parking. Parking requirements may be further reduced by four spaces where free showers are available for employee use within the building.

## 2008.10 PARKING EASEMENTS AND AGREEMENTS

A. Written easements that provide for continued use and maintenance of shared parking shall be submitted to the Zoning Administrator for review and approval. Any agreement shall include provisions to address changes in use.
B. Shared parking leases or agreements shall have a term of not less than five years, including any renewals at the option of the lessee.

C. Should the agreement be voided or expire for any reason, the uses utilizing the shared parking facility shall provide all required parking spaces in accordance with the requirements of this Section or shall be in violation thereof.

2008.11 OFF-STREET PARKING LOT DESIGN/DRIVEWAYS

A. Off-street parking location and setbacks. Off-street parking lots shall conform to the parking placement standards in Section 2005 for the applicable context area.

1. Off-street parking areas shall be separated at least ten (10) feet from buildings in order to make room for a sidewalk, landscaping, and other planting between the building and the parking area.

Exception: This separation may be eliminated to the rear of buildings in areas designed for unloading and loading.

B. Off-street parking facilities required for detached house or duplex shall be located on the same lot or parcel as the building they are intended to serve, and shall consist of a driveway and/or garage. All residential driveways shall provide a minimum width of at least eight feet. Driveways must be paved. All parking spaces shall be paved and no more than one parking space shall be located within the required front yard. Additions to existing detached house or duplex shall not require the paving of an unpaved driveway.

2008.12 PARKING STRUCTURES

A. Parking stalls and driving aisles shall meet the minimum required in Section 2008.06.

B. Internal arrangement and design shall be approved by the city engineer for appropriate grades, traffic circulation, aisle length, column spacing, ceiling height, exit stairwell and elevator location.

C. Parking structures shall be set back the same distance as required for the applicable Building Type.

D. An active use is required at the ground level of the parking facility where the structure is within an area identified for ground floor activation per the Context Area Map in Section 2005.02.

E. Space for the active use shall have a minimum depth of thirty (30) feet and minimum width not less than eighty (80) percent of the building frontage at the front property line and not less than fifty (50) percent of the building frontage on the side property line.

F. In lieu of an active use on the ground level, a parking structure may be paired with a liner building. Liner buildings may be one (or a combination of) the following Building Types:
   - Mixed Use Building
   - Flex Building
   - Live-Work Building
   - Multiplex Building
   - Rowhouse Building

G. Parking structures shall be architecturally compatible with the building they serve.

2008.13 OFF-STREET LOADING REQUIREMENTS

For off-street loading requirements refer to Section 2329 of the City of Muskegon Zoning Ordinance.

2008.14 PARKING LOT LANDSCAPING/SCREENING

A. Parking lot landscaping shall be provided in accordance with Section 2331, 8 of the City of Muskegon Zoning Ordinance.

B. Any frontage along all streets with surface parking at the build-to-line or within the required build-to-zone, shall be defined by a 3’ high street screen. Required street screens shall be of one of the following:
   - The same building material as the principal building on the lot or
   - A vegetative screen composed of shrubs planted to be opaque at maturity, or
   - A combination of the two.

C. The required street screen shall be located at the property line along the corresponding street. Street screens may include breaks to provide pedestrian access from any surface parking or service area to the public sidewalk.

2008.15 BICYCLE PARKING

A. Bicycle parking shall be located on paved or pervious, dust-free spaces, and shall be a minimum of 2’ by 6’. Bicycle parking shall be located in a convenient and visible area, and within 100’ of building entries, when possible.

B. Bicycle parking shall be provided at a rate of 20% of required vehicular parking.
Berkeley wins $1M parking grant to fix ‘2-hour shuffle’

December 18, 2015 9:00 am by Emilie Raguso

A Berkeley plan to improve residential parking woes won a $1 million grant this week from the Metropolitan Transportation Commission to help the city continue its goBerkeley pilot program for three more years. The goBerkeley effort was one of six projects to be awarded a total of $6 million, as part of the MTC’s Climate Initiatives Program, out of 20 projects that applied for the money earlier this year.

The goBerkeley program previously focused on bettering parking in commercial districts, and the city will now turn its attention to residential neighborhoods. The commission voted Wednesday to approve the funding. The city hopes to receive the money in February and begin planning in March, said city spokesman Matthai Chakko. The three-year pilot is set to include one year of planning and outreach followed by two years of implementation and evaluation.

The prior goBerkeley pilot tweaked pricing for meters and garages downtown, in the Southside neighborhood and in The Elmwood district to make it easier for visitors to those areas to park. During outreach for that program, the city heard from many community members about the need to refine its approach to residential parking, too.

The commercial pilot areas covered about 2,500 spaces, but the city estimates that there are 20,000 on-street parking spots in Berkeley: “The majority of these parking spaces are in residential areas and are unregulated or part of the Residential Preferential Parking (RPP) permit system.”

In RPP areas, vehicles without permits are limited to 2-hour parking during certain hours and days.

According to the city, “This 2-hour time limit encourages the ‘2 hour shuffle’ in most of the City’s residential streets, which leads to congestion and cold-starts from drivers moving their vehicles from one parking space to another to avoid the time limit violation. If successful, these pilot solutions could be rolled out citywide to drastically reduce vehicle miles traveled (VMT) and greenhouse gases (GHG) from driving. The pilot program could provide a ‘win-win’ for residents, businesses and the City by improving the parking experience, reducing congestion and GHG emissions.”
Potential goals of the pilot include achieving 80% occupancy of all blocks, both metered and residential; improving the “parking experience” for community members; and reducing both cold-starts and congestion, as described above.

The 80% occupancy standard was popularized by Donald Shoup, who argued in his book “The High Cost of Free Parking” that basing pricing and fees on parking demand can help change driver behavior for the better.

How might the city achieve this? Staff plans to look into extending RPP restrictions to evenings and weekends in high-demand areas. The city could also streamline the visitor permit parking system by offering mobile and online purchases. And the city might curtail the RPP requirements where occupancy is lower than 80%, or even eliminate or reduce the RPP requirement altogether.

The city also will investigate requiring motorists without permits to pay an hourly rate through some sort of mobile pay system.

“We want to make sure that residents get enough parking, and also to share the surplus parking with visitors,” Chakko said this week. “Right now, residents are the only ones paying. And people who are visiting are shuffling their cars every two hours. So we have one group that is paying the costs and another group that’s paying for the inconvenience. Those are issues that we’re trying to resolve.”

The program is also set to involve monitoring and evaluation to adjust rates to achieve the 80% occupancy standard by using an automated license plate recognition system to collect data.

Exactly where the city would roll out the new program has not been determined. That decision will be made after the city collects feedback from neighborhood groups, and plans to target areas where residents and businesses have asked for help. The city says current project areas — downtown, Southside and The Elmwood — are candidate project areas.

“Final strategies and project areas would be developed in consultation with the community and would be presented to the Council through a staff report and/or work session prior to implementation,” according to a September staff report that outlined the grant application. The city will need to kick in $500,000 in matching funds to help run the program but, according to the staff report, the money is already part of the budget for ongoing goBerkeley operations.

Mayor Tom Bates, who represents Alameda County on the 21-member Metropolitan Transportation Commission, said he was pleased with the unanimous decision.

“The grant would help us fight climate change and support our local economy by reducing vehicle miles traveled and improving parking availability in commercial districts. The funding would let us build upon the successes achieved in the goBerkeley pilot to further develop efficiencies in managing parking demand while integrating them with the Residential Parking Program.”

The Climate Initiatives Program run by the MTC aims to reduce “transportation-related emissions and vehicle miles traveled (VMT) and is a critical strategy for implementing Plan Bay Area,” according to the resolution approved Wednesday.
INFORMATION CALENDAR
December 16, 2014

To: Honorable Mayor and Members of the City Council
From: Christine Daniel, City Manager
Submitted by: Andrew Clough, Director, Public Works
Subject: goBerkeley Pilot Program Results and Next Steps

SUMMARY
The goBerkeley Pilot Program was launched in Downtown Berkeley, the Elmwood, and Southside/Telegraph in July 2013 with 3 overarching goals: to support economic vitality, to reduce congestion and emissions and to assess the feasibility of expanding the program beyond the 2-year pilot period. Council authorized the Pilot Program to test the extent to which a combination of free bus passes for employees, carshare discounts for businesses, and demand-based parking management could achieve these goals. The goBerkeley Pilot Program worked closely with businesses and residents, conducted visitors, resident and employee surveys, and collected transit usage and parking data before and during the pilot period. The program also tested automated parking data collection methods to ascertain the most accurate and cost-effective program design going forward.

This report presents the draft Final Project Report on the goBerkeley Pilot Program and presents initial options for next steps. Additional information for the Final Report will be presented to Council at a Worksession tentatively scheduled for January 27, 2015.

Results
The goBerkeley Transportation Demand Management (TDM) Program resulted in an overall reduction in automobile use, as participants chose alternatives to driving alone largely as a result of the 1,000 free employee AC Transit EasyPasses and deeply discounted carsharing benefits.

The goBerkeley Parking Program improved parking availability and customer satisfaction by adjusting parking rates and time limits.

- Drivers can now find a parking space more easily.
- On-street parking availability in the most congested areas has improved.
- Parking availability for visitors improved at Center Street and Oxford Garages.
- More drivers are using the Telegraph Channing Garage, a previously under-utilized facility.
- Increases to parking time limits and improved parking signage significantly improved the customer experience.
- Drivers have shifted from parking in neighborhoods to metered parking spaces.
These results were presented to the goBerkeley Community Advisory Group (CAG) on November 6, 2014 and to the Transportation Commission on November 20, 2014. The CAG includes representatives of the Transportation Commission, Elmwood Business Improvement District, Telegraph Business Improvement District and Downtown Berkeley Association. This information will also be presented to the general public at community meetings in January prior to the Council Worksession tentatively scheduled for January 27, 2015.

CURRENT SITUATION AND ITS EFFECTS
The goBerkeley Pilot Program was designed to test the degree to which transportation demand management (TDM) and parking management (primarily demand-based variable parking fees) could effectively work together to influence travel choice, increase the use of travel alternatives; decrease Single Occupancy Vehicle (SOV) travel; reduce congestion and vehicle miles traveled (VMT) searching for parking; and reduce greenhouse gas emissions.

The goBerkeley Pilot Program began program planning in 2011, hired staff and consultants and began collecting pre-project data in 2012, and launched publicly in 2013 in 3 study areas: the Elmwood, Telegraph/Southside, and Downtown Berkeley.

The City received three grants to support the Pilot Program. The MTC Climate Initiatives grant period expires in June 2015, the BAAQMD grant expires on March 1, 2015, and the FHWA grant is currently scheduled to end in June 2015.¹ Per the grant funding agreements, staff is now preparing to complete the project, compile measurable results, and produce a Final Report.

Draft Final Report Summary

**goBerkeley TDM Program**

The goBerkeley TDM Program sought to decrease SOV use, increase the use of travel alternatives and reduce traffic congestion in the three pilot business districts. The main focus was to remove or reduce the pay barrier to the use of transit and carsharing, and significant financial incentives were offered in the pilot areas:

- 1,000 free 6-month AC Transit “TravelChoice Berkeley” passes for residents;
- 1,000 free 1-year AC Transit EasyPasses for employees; and
- Deeply discounted City CarShare fees (up to 90% off) for businesses and their employees.

The goBerkeley TDM Program survey results show an overall reduction in automobile use, which indicates that some people did choose travel alternatives for some trips instead of driving alone. Details of the TDM Program are attached in Exhibit A. Notable employee survey results include:

- Increase in regular transit use – more people stating they use transit 1-3 days a week (23% to 33%)

¹ The City has requested an extension until June 2016 to accommodate delays in UC Berkeley’s project, which is part of the FHWA grant. Caltrans is currently reviewing the extension request.
• Increase in bicycle use across the board, notably in 1-3 days a week (+5%)
• Increase in more regular walking (1-5 days per week)
• Decrease in exclusive drive alone use (6-7 days a week)
• Increase in lower frequency car use (1-5 days per week or less)
• Significant increase in occasional carpool use (5% - 12%)
• Significant increase in occasional carshare use (4% - 16%)

These results are not surprising; people who commute alone commonly only switch to alternatives gradually. The goBerkeley TDM Program observed a notable increase in participants who use AC Transit 1-3 days per week and in participants who use the bus 1-3 days per month. This indicates that having the AC Transit EasyPass supported a gradual switch to travel alternatives for some trips.

More surprisingly, program participants also reported an increase in occasional carpooling and regular bicycling, even though the program didn’t provide direct incentives for these changes. The goBerkeley TDM program participants increased their use of multiple travel modes. This openness to multiple travel modes is a very valuable foundation for continuing efforts to encourage the use of more sustainable travel options.

Results: Free One-Year AC Transit EasyPass for Residents
The TravelChoice residential outreach was completed in 2012, before the other goBerkeley program elements were established. This program was led by TransForm, the City’s partner agency. A team of TravelChoice staff contacted 5,460 households in the goBerkeley project area, had conversations with 1,800 people, and provided customized travel information to nearly 900.

1,000 6-month AC Transit “TravelChoice Berkeley” passes were offered to households living in multi-family housing sites in the Elmwood, Southside/Telegraph and Downtown neighborhoods. A total of 651 passes were distributed (passes weren’t fully distributed largely because of the high number of UC students in the project area who already have UC EasyPasses).

The post-project travel diary surveys found an overall 3.1% reduction in automobile use, with 94% of participants reporting that they were walking on more trips, 90% reporting using transit more, and 19% reporting biking more.

Results: Free One-Year AC Transit EasyPass
The goBerkeley EasyPasses for employees in the pilot areas began to be distributed in July 2013. Distribution was complete within the first month, as 38 businesses with 1,000 employees signed up. Nearly half (494) of the 1,000 eligible employees used their EasyPasses 6,000-7,000 times each month.

Based on a follow-up survey of users, the goBerkeley TDM Program increased transit usage among program participants. Among those who activated their EasyPass:
• 99% used their EasyPass at least once during the 1 year program
• 48% used their EasyPass at least twice per week
• 82% reported that they used transit more often because of the EasyPass
• 83% said would not have otherwise purchased a transit pass (which indicates that most program participants were regular transit users previously)

EasyPass users provided very positive feedback in follow-up surveys such as, “If it weren’t for the program, I probably never would have ridden the bus”, and “I had never really used AC Transit before, and this turned me into a regular commuter.” Notably, EasyPass use increased steadily over the 1 year program period, a promising trend as people slowly discover their travel options and change their behavior. (See additional information in Appendix A.)

Challenges & Lessons Learned: EasyPass
Approximately half of the 1,000 eligible employees activated and used their AC Transit EasyPass. This is a very high usage rate for universal transit pass programs, and is approximately twice the rate of the City of Berkeley’s own employee EasyPass usage.

However, participating business managers and employees expressed some frustrations with the program. The most common reasons given for not using the EasyPass included:
• Living outside of AC Transit’s service area.
• Commuting by AC Transit would take longer than driving.
• Employers did not participate in the EasyPass because they felt that filling out the necessary paperwork was cumbersome.
• Employers did not promote the EasyPass to their employees because they did not think they could notify all their employees adequately (such as with shift work).
• Enrollment after the in-person enrollment period was difficult. Language barriers and/or access to computer/phone made it difficult to submit enrollment forms.

These obstacles contributed to a low rate of EasyPass activation and usage at the beginning of the project. Intensive project staff outreach and technical assistance nearly doubled the usage rate, but this extra program support was only possible because of the program’s grant funding.

If the City or another agency, such as a dedicated Transportation Management Association, Chamber of Commerce or Business Improvements Districts, were to re-establish an employee transit pass program, the benefits would be significant, but the administrative challenges and the resources required for pass distribution should not be underestimated.

City CarShare Business Memberships and New Pods
Two battery-electric vehicles and chargers were installed in Telegraph/Channing Garage for public use, and three hybrid City CarShare vehicles were placed in the Telegraph and Elmwood study areas. The five vehicles added by the goBerkeley program were well utilized; used at about the same rate as the other City CarShare vehicles in Berkeley.

The additional vehicles and goBerkeley outreach attracted new members, as 200 more Berkeley residents became City CarShare members. Business membership is a much smaller piece of the carshare market, but City CarShare did sign up 10 new businesses
through the goBerkeley program, and now has 15 Berkeley businesses and 62 employee members.

A quarter of employee members who responded to the survey report using carshare services at least 1-2 times per month over the past 6 months, and employees using carsharing occasionally (1-3 times per month) increased four-fold, from 4% to 16%, over the program period.

Challenges & Lessons Learned: Carsharing
Despite significant financial incentives and intensive marketing efforts, the Carshare Program only enrolled 10 new businesses in Berkeley. Business owners, managers and employees were surveyed to understand the obstacles to businesses use of carsharing. Some common reasons were:

- Many businesses found it hard to understand how carsharing could help them within their retail/business operations.
- Most small- to medium-sized businesses reported that they use their personal vehicles for both commuting and business travel, and want to continue to do so.
- The program required an initial membership fee, after which City CarShare waived sign-up fees and offered up to $200 in driving credits. Many businesses did not see the value in paying the membership fee.
- Some businesses expressed interested in joining, but were unable to obtain the internal company approvals to make the membership payment.

These obstacles greatly limited the size of the business carshare program. Nevertheless, non-business members benefitted from the addition of hybrid and electric vehicles in Elmwood and the Telegraph area, and business usage rose over the program period. It seems that, when the value of carsharing is understood and initial barriers are overcome, carsharing can be a new business travel option for at least a small segment of local business.

goBerkeley Parking Program
Following a series of community meetings and a Council Worksession, Council authorized the adjustment of parking rates and time limits at parking meters, parking lots and parking garages on July 16, 2013 (Ordinance 7,305-N.S., Resolution 66,245-N.S.). The new policies called for parking rates and time limits in the Pilot Areas to be adjusted to achieve parking occupancy rates of 65-85% per block, and that changes would follow the rules below.

Where the majority of parking spaces on blocks experience average occupancy:

- Under 65%: Rates are lowered and time limits raised to incentivize parking
- 65-85% (target occupancy): No adjustments are made
- Over 85%: Rates are increased to increase turnover and/or shift parking to other areas

On this basis, rate and time limits were adjusted in fall 2013 and spring 2014. (See Appendix B for a table of base rates and time limits, and changes within each pilot area.)
Results: Demand-Based Parking Rate and Time Limits

The results of the goBerkeley Parking pilot were measured using observed parking availability, meter transaction data, and community surveys. Detailed results, including tables, graphs and maps, are provided in Appendix B. Major findings include:

- Changes to parking rates and time limits succeeded in changing driver behavior and shifting parking demand to metered areas with available parking.

- Visitors report that finding a parking space is easier. The majority of drivers report that finding parking is easy - 78% of drivers surveyed now feel that finding parking in the study areas is “Very Easy”, “Somewhat Easy” or “Neutral”, an increase of 41%. The percentage who feels that finding parking is difficult fell by nearly half – just 22% now feel that finding a parking space is “Very Difficult” or “Somewhat Difficult”, a decrease of 41%.

- Parking at meters in Value Zones increased by 38% during the pilot, while only 5% fewer cars are parking in the Premium Zones. While this may be the result of more people driving overall, it implements City General Plan Policy T-35 which calls for “better utilization of existing parking.”

- On-street parking remains full in the evening after meter enforcement ends on almost all of the metered blocks in all three pilot areas. Nearly one-third (27%) of the on-street parking at night is used by employees and residents.

- Employees and residents report spending $23 per parked vehicle on average, while visitors spend $54 per parked vehicle.

- A majority of parkers continue to rank “Proximity to Location” as the most important factor in seeking a parking space. This underscores the importance of on-street parking availability over all other factors, including parking price.

Area-Specific Results: Downtown

- Parking availability improved significantly in the Downtown Premium area. The percentage of “full” blocks dropped from 37% to 25%. However, parking availability is still not in the target range; 37 blocks still have parking occupancy above 85%.

- Although some parkers shifted from premium rate on-street meters around Berkeley Way into the value rate Berkeley Way Parking Lot, there is still a surprising amount of available parking in the lot while the more expensive on-street meters next to the lot are heavily used.

- The program made visitor parking available at the Center Street and Oxford Garage. The commuter parking rate increases and other changes achieved the target occupancy of 70-80% at the City’s two downtown parking garages.

- On-street parking remains full in the evening after meter enforcement ends at the majority of metered blocks. Nearly one-third (29%) of the on-street parking at night is used by employees and residents in the Downtown.

- Downtown employees/residents report spending an average of $26 per vehicle while Downtown visitors report spending $56 per vehicle.
Area-Specific Results: Southside/Telegraph

- Parking occupancy in the Premium Area did not change significantly, but occupancy increased dramatically at meters in the Value Area. The number of blocks that are over-utilized increased from 1 to 12.
- Short-term visitor parking at Telegraph/Channing Garage rose 22%, and reached the target occupancy range of 75%, during the pilot.
- On-street parking remains full in the evening after meter enforcement ends at almost all of the metered blocks. Nearly one-quarter (26%) of the on-street parking at night is used by employees and residents in the area.
- On average, employees/residents report spending $14 per vehicle while visitors report spending $38 per vehicle.

Area-Specific Results: Elmwood

- Parking occupancy increased on weekdays and was unchanged on Saturdays. Half of all of blocks are now within the target 65%-85% occupancy, and the remaining half are too full.
- The goBerkeley project added 3 more parking spaces in the Elmwood Lot through re-striping. The lot is now in the target occupancy on weekday afternoons, but still becomes full at other times.
- On-street parking remains full in the evening after meter enforcement ends at almost all of the metered blocks. Nearly one-fifth (17%) of the on-street parking at night is used by employees and residents in the area.
- On average, employees/residents report spending $10 per vehicle while visitors report spending $72 per vehicle.

The data and survey results indicate that demand-based parking management has improved parking conditions and customer satisfaction where it has been implemented. It also illustrates the need for continued parking management where targets have not been reached, and as conditions continue to change.

Results: Automated Data Collection and Parking Enforcement

One of the goals of the goBerkeley Pilot Program was to assess the long-term feasibility of demand-responsive parking management. One of the key issues is that demand-responsive parking management requires extensive and regular data collection in order to accurately track changes in parking demand and travel behavior. The cost of collecting and analyzing this data will be one of the challenges to sustaining a long-term demand-based program.

To assess a variety of options, goBerkeley carried out an Automated Data Collection and Enforcement Pilot to test new technologies to assess their capabilities to:

1. Collect parking data in a cost-effective and sufficiently accurate manner to serve a feasible parking management system in the long-term; and
2. Improve the efficiency of parking enforcement operations.
SFpark
Pilot Project Evaluation Summary

A summary of the SFMTA’s evaluation of the SFpark pilot project
An overview of SFpark
A summary of the policies of the SFpark pilot project

This section summarizes the policies behind the SFpark pilot project and how the project design enabled a rigorous evaluation.

What is SFpark?

SFpark is the brand for SFMTA’s approach to parking management. SFpark was a demonstration project funded through the Department of Transportation’s Urban Partnership Program. For the SFpark pilot projects, the SFMTA used several strategies to make it easier to find a space and improve the parking experience, including:

- Demand-responsive pricing
- Making it easier to pay at meters and avoid citations
- Longer time limits
- Improved user interface and product design
- Improved information for drivers, including static directional signs to garages and real-time information about where parking is available on- and off-street
- Highly transparent, rules-based, and data-driven approach to making changes to parking prices

SFpark piloted and cultivated several emerging technologies, including smart meters, parking sensors, and a sophisticated data management tool.

Demand-responsive pricing

At the heart of the SFpark approach is demand-responsive pricing, whereby the SFMTA gradually and periodically adjusted rates up or down at meters and in garages. The goal was to achieve a minimum level of availability so that it was easy to find a parking space most of the time on every block and that garages always have some open spaces available. Furthermore, meeting target availability also means improving utilization of parking so that spaces—on-street or off—would not sit unused.

On-street

For on-street parking, the SFpark used occupancy data from in-ground parking sensors in each space to adjust rates at meters up or down to help achieve the target occupancy rate of 60–80 percent. Each data-driven rate adjustment used the following rules. When average occupancy was:

- 80–100 percent, the hourly rate was raised by $0.25
- 60–80 percent, the hourly rate was not changed
- 30–60 percent, the hourly rate was lowered by $0.25
- Less than 30 percent, the hourly rate was lowered by $0.50

Hourly rates were not allowed to exceed $6.00 per hour or go below $0.25 per hour. SFpark adjusted on-street rates about every eight weeks starting in August 2011. Over the course of the two-year pilot evaluation period (i.e., through June 2013), the SFMTA made ten on-street rate adjustments.

Off-street

As parking garages were converted to the SFpark approach, the SFMTA simplified rate structures, reduced discounts that previously encouraged peak hour commuting (e.g., early bird, daily, monthly), and moved to time-of-day pricing to make sure rates between meters and garages were easy to compare, and to make it easier for customers to understand what they would be charged. Thereafter the SFMTA changed hourly rates quarterly according to the following rules. When average occupancy was:

- 80–100 percent, the hourly rate was raised by $0.50
- 60–80 percent, the hourly rate was not changed
- Less than 40 percent, the hourly rate was lowered by $0.50

Evaluating SFpark

The SFMTA used data gathered during the pilot period to evaluate how effectively the SFpark approach delivered the expected benefits. To isolate and measure the effects of these policy changes, the SFMTA designated seven parking management districts as pilot areas, which included 6,000 metered spaces, or a quarter of the city’s total metered parking spaces, and 12,250 spaces in SFMTA-administered garages, or 75% of the off-street spaces managed by the SFMTA. The SFMTA also used two additional areas as control areas where no changes to parking management or technology were implemented. The SFMTA collected “before,” “mid-point”, and “after” data in both pilot and control areas.

This document summarizes the SFMTA’s evaluation of the SFpark pilot project. The full evaluation is available at SFpark.org.

Download the full evaluation at: SFpark.org/docs_pilotevaluation
SFMTA evaluation results

An overview of the benefits of the SFpark pilot project

The SFMTA evaluated the SFpark pilot project to see how effectively this approach to managing parking delivered the expected benefits. This section outlines what the SFMTA learned from this evaluation and provides transportation managers in other cities an overview of how parking management can help achieve their goals.

Rate change summary

Over the course of the SFpark pilot project, the SFMTA lowered the average hourly rate at meters by 11 cents from $2.69 to $2.58 and average hourly rates at SFpark garages by 42 cents from $3.45 to $3.03.

SFpark improved parking availability

While the SFpark pilot project had many goals, its primary focus was to make it easier to find a parking space. More precisely, the goal was to increase the amount of time that there was parking available on every block and improve the utilization of garages. Besides helping drivers, making it easier to park more of the time was expected to deliver other benefits (e.g., reducing circling, double parking, greenhouse gas emissions, etc.).

Even as the economy, population, and overall parking demand grew, parking availability improved dramatically in SFpark pilot areas. The amount of time that we achieved the target parking occupancy (60 to 80 percent) increased by 31 percent in pilot areas, compared to a 6 percent increase in control areas. On blocks where people paid the meter most of the time (in high payment compliance or “HP” pilot areas) where we would expect pricing to be most effective, achievement of the 60 to 80 percent target occupancy rate nearly doubled.

Even more importantly, the amount of time that blocks were too full to find parking decreased 16 percent in pilot areas while increasing 51 percent in control areas. In other words, SFpark made it easier for drivers to quickly find parking spaces. In areas where people pay at the meter most of the time, the impacts were even more notable, with a 45 percent decrease.
Secondary benefits

This section outlines the benefits of meeting occupancy goals and making sure that there are open parking spaces.

It is easier for drivers to find a parking space. In SFpark pilot areas, the amount of time most people reported that it took to find a space decreased by 43 percent, compared to a 13 percent decrease in control areas.

Traffic speed improved. While overall traffic speed decreased, it decreased by 3 percent in areas with improved parking availability, compared to a decrease of 6 percent in areas with worsened parking availability.

Vehicle miles traveled decreased. As a result of less circling, pilot areas saw a 30 percent decrease in vehicle miles traveled from 8,134 miles per day in 2011 to 5,721 miles per day by 2013. Control areas saw a 6 percent decrease.

Peak period congestion decreased. SFpark encouraged people to drive at non-peak times and improved parking availability when it mattered most. On-street parking availability improved by 22 percent during peak periods, compared to 12 percent during off-peak. In SFpark garages, morning peak entries rose 1 percent while off-peak entries rose 14 percent, and evening peak exits rose 3 percent while off-peak exits rose 15 percent. This suggests that SFpark helped to reduce peak-period congestion, which makes the roads flow more smoothly for drivers and transit.

Traffic volume decreased. In both pilot and control areas, where parking availability improved, traffic volume decreased by approximately 8 percent, compared to a 4.5 percent increase in areas where parking availability worsened.

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Traffic volume decreased. In both pilot and control areas, where parking availability improved, traffic volume decreased by approximately 8 percent, compared to a 4.5 percent increase in areas where parking availability worsened.
1. INTRODUCTION & OVERVIEW

Many cities have expressed an interest in learning more about SFpark. This book is intended to support other cities as they consider similar initiatives.
were the same all day, every day, regardless of demand. Meter rates were set lower than the rates at municipal garages, giving drivers financial incentive to circle to find on-street parking.

The historical approach to parking management that emphasizes flat meter rates and short time limits to achieve turnover has been reasonably effective but is not convenient for drivers, nor does it explicitly manage toward creating parking availability and thereby achieving broader goals for the city or its transportation system. Low parking availability is inconvenient for drivers but also causes broader problems. For example, when parking is hard to find people either double-park or circle the block looking for parking. Circling drivers are distracted drivers who make lots of right and left turns trying to find a place to park, causing safety issues for other drivers, cyclists, and pedestrians. Circling also wastes time and fuel.

Consequently, everyone experiences the burden of unnecessary greenhouse gas emissions and roads that are less safe and more congested. Store owners often complain that it can be difficult for their driving customers to find a place to park. Public transit sometimes must navigate its way around double-parked cars or drivers waiting to make right or left turns, slowing transit and making it less reliable.

Project goals and outcomes

The primary goal of SFpark was to make it easy to find a parking space. In other words, SFpark aimed to manage demand for existing parking supply toward availability targets so that people, when they choose to drive, rarely circle to find parking or double-park. To the extent the right level of parking availability is maintained, everyone benefits.
The SFMTA’s evaluation of SFpark, which is detailed in Chapter 4, found that SFpark delivered many of the benefits that were expected. The principle goals and outcomes of SFpark include:

- **Demand-responsive pricing to meet occupancy goals.** SFpark used gradual and periodic (i.e., about every eight weeks) demand-responsive rate adjustments to find the lowest rate possible to achieve availability targets. SFpark increased rates when parking was hard to find and lowered them when demand was low. Even in the context of a growing economy and population, the evaluation shows that parking availability improved dramatically in SFpark pilot areas, significantly outperforming control areas. The amount of time that we achieved the target parking occupancy increased by 31 percent in pilot areas, compared to a 6 percent increase in control areas. Even more significantly, the amount of time that blocks were too full to find parking decreased by 16 percent in pilot areas when it increased by 51 percent in control areas.

- **Meeting occupancy goals to make it easier to find parking.** When there are always a few spaces available, drivers have to spend less time circling for parking. In SFpark pilot areas, the amount of time that it took for most people to find a space decreased by 43 percent, compared to a 13 percent decrease in control areas. SFpark also shortened the distance drivers had to travel before finding a spot.

- **Easier payment methods.** New parking meters accept payment by coin, credit card, the SFMTA parking card, and phone. The likelihood for participants in an intercept survey to report that it was somewhat or very easy to pay for parking increased in pilot areas by 75 percent, or twice as much as in control areas where meters were not upgraded.

- **Lower rates.** In addition to making it easier to pay, SFpark also lowered rates. Over the course of the SFpark pilot project evaluation period, the SFMTA lowered the average hourly rate at meters by 11 cents from $2.69 to $2.58 and average hourly rates at SFpark garages by 42 cents from $3.45 to $3.03.

- **Longer time limits.** Time limits in SFpark pilot areas were extended to four hours and in some areas eliminated altogether. This change emphasized using smart rates rather than inconvenient time limits as the primary tool for creating parking availability, which is the ultimate goal of turnover.

- **Fewer parking tickets.** By making it easy to pay and extending parking time limits, it is easy for drivers to avoid parking tickets. In SFpark areas, the number of parking-meter related citations issued decreased by 25 percent compared to a 12 percent decrease in control areas.

- **Better parking information.** SFpark helped drivers find spaces with a combination of real-time and static information. Parking wayfinding signage directs drivers to lots and garages; variable message signs and show which garages have availability; mobile web apps and the region’s 511 system showed on- and off-street parking availability; and an open data feed enabled others to display the data as well.

- **Reduced congestion and improve traffic flow.** More parking availability means that drivers spend less time circling to find parking, which implies less congestion and greenhouse gas emissions and better quality of life. In both pilot and control areas, where parking availability improved, traffic volume decreased by approximately 8 percent, compared to a 4.5 percent increase in areas where parking availability worsened. And while overall traffic speed decreased, it decreased only by 3 percent in areas with improved parking availability, compared to a decrease of 6 percent in areas with worsened parking availability.

- **Reduced illegal parking.** More parking availability means that fewer drivers should be tempted to double-park or park illegally in bus zones, on sidewalks, or in front of fire hydrants or driveways. The evaluation showed that where parking availability improved, double parking decreased. Instances of double parked vehicles increased as parking occupancy rates increased and began to spike around 80 percent occupancy. Double parking decreased in pilot areas by 22 percent, compared to a 5 percent decrease in control areas.

- **Improved transit speed and reliability.** Less circling and double-parking helps transit become faster and more reliable, especially on busy commercial corridors. Transit speed increased 23 percent from 6.4 to 6.6 mph along corridors with reduced double parking, and it decreased 5.3 percent from 7.1 to 6.7 mph along corridors with increased double parking.

- **Improved safety for all road users.** The right level of parking availability reduces double-parking and circling, both of which present hazards for pedestrians, bicyclists, and other drivers. The SFMTA assumed that reducing circling by distracted drivers looking for parking helps to reduce collisions with pedestrians, cyclists, and other cars.

- **Better air quality.** Approximately half of San Francisco’s greenhouse gas emissions are transportation-related. Less congestion and circling, as well as helping Muni to become more viable for more trips, reduces greenhouse gas emissions and other pollutants. The evaluation showed that greenhouse gas emissions decreased. Drivers generated 7 metric tons of greenhouse gas emissions per day just looking for parking in pilot areas. This dropped by 39 percent by 2013, compared to a decrease of 6 percent in control areas.

- **Less congestion and circling, as well as helping Muni to become more viable for more trips, reduces greenhouse gas emissions and other pollutants.**

SFPark significantly improved parking availability in pilot areas, which improved customer access to commercial districts. SFpark also significantly improved the utilization of our garages, helping to return them to their original purpose—to make it easy to find parking for short-term trips and support economic vitality rather than as places for commuters to park. While available data does not allow us to confirm a causal relationship, the SFMTA assumes that improving parking availability improves customer access to commercial districts and therefore supports economic vitality.

- **Increasing funding for transit.** Though raising revenue was not a goal of the project, between meter, garage, citation, and parking tax revenue, SFpark appears to have caused a net increase of $1.9 million annually parking-related revenue. By City Charter, this additional revenue returns to the SFMTA to help pay to operate public transit.

### Schedule

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<th>Year</th>
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<td>Meter and sensor installation</td>
<td>Demand-responsive pricing in pilot areas</td>
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<td>Real-time parking data in pilot areas</td>
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Scope

- 7 pilot areas with new policies, technology, and significant data collection
- 2 control areas with no new policies or technology but significant data collection
- 6,000 metered spaces, or 25 percent of the city’s total
- 12,250 off-street spaces, or 75 percent of off-street spaces managed by the SFMTA

Relevance for other cities

Cities around the world are interested in the common and urgent goals of reducing traffic congestion and transportation-related greenhouse gas emissions.

SFpark is a demonstration of a parking-based approach to congestion management. Parking availability and price are two of the most important factors when people choose whether or not to make a trip by car. The combination of time-of-day, demand-responsive pricing and off-peak discounts at garages was intended to reduce circling and double-parking, and to influence when and how people choose to travel.

SFpark is relevant for other cities because the SFpark approach is replicable. Every major city already has parking management infrastructure (e.g., parking meters and garages), and people are accustomed to paying for parking. Parking-based strategies complement other congestion management strategies, and they are relatively low cost, do not present privacy issues, and require only local approvals in most cases (rather than state approvals, which can be the case for approaches such as congestion pricing).

Lessons learned

The following observations and overall lessons learned were gathered during pilot project planning, implementation, and evaluation.

Project planning

- **Scope of work.** It is easy to underestimate the scope, magnitude, and technological sophistication necessary to offer real-time parking data and provide demand-responsive pricing.
- **Executive leadership.** Many challenges accompanied planning and implementing a ground-breaking project with complex technology, significant policy changes, and a large amount of discovery and uncertainty. The support of a dedicated executive at the agency was critical, as was having appropriate financial resources.
- **Understanding the parking supply.** For reasons explained in Chapter 4, understanding the existing parking supply was a critical first step in the planning, implementation, and evaluation of SFpark.
- **Strong and coherent intellectual foundations.** This parking management approach was based on the pioneering academic work of Professor Donald Shoup from UCLA. The clarity and strength of those foundations made it easier to develop policies, goals, and tools that were clearly communicated and understood.
- **Striking the right balance between complexity and simplicity.** We have had to balance the potential complexity of managing parking effectively with the need to have something simple enough to be communicated clearly and quickly to customers. We had to strike a similar technological balance between what is desirable and what is feasible.
- **Emphasizing data collection and project evaluation.** The SFMTA committed to stakeholders that we would gather the data that would allow a rigorous evaluation of the project. That improved the project’s credibility.
Communications

- Parking management as powerful tool. With the SFpark pilot project, the SFMTA has shifted towards recognizing parking management as a powerful tool for achieving transportation goals. Being able to communicate that promise with our customers and stakeholders, and then following through by lowering parking rates where merited, was important. These actions help to establish more trust and credibility in SFMTA parking management. Many people were skeptical of the SFMTA’s goals for parking management and feared that SFpark was simply a way to raise parking rates.
- Destination of revenue. In San Francisco, revenue from parking meters, citations, and garages is returned to the SFMTA to support transit services. It was important to have a clear explanation of how parking revenue from SFpark (or SFMTA parking management) is used, and relating parking management revenues to funding transit and the overall transportation system was typically well-received.
- Effective communications. Having a skilled communications and design team that was passionate about the project was essential to the project’s success. The technology used did not meet our initial expectations. In particular, the accuracy and reliability of parking sensor data is new, subtle, and complex. There were uncertainties regarding the technology and its potential benefits.
- Conducting extensive outreach. Outreach, including hundreds of one-on-one meetings with community leaders from the start of the project, was essential to the project’s reception. Through this outreach, key leaders in the community came to understand the project and were then able to effectively advocate for SFpark to their constituencies. Project outreach to customers, stakeholders, and within the SFMTA required a large amount of time and effort.
- Transparency. It was helpful to be open and clear about SFpark’s goals, policies, and methods. For instance, when rates were adjusted, both the rules and the data used to make decisions were shared online.

Contracting and administration

- Procurement approach. It was important to choose a flexible contracting and procurement approach so that we could move quickly in an unpredictable environment.
- Uncertainty and discovery. Because of that high degree of uncertainty and immaturity in the field, a significant amount of discovery was required for the development of the back-end SFpark system. With the continuous adjustments necessary for the project, the collaborative and interactive Agile methodology was more appropriate than the traditional process-based approach to project management.
- Permitting and regulations. Permitting and regulations (e.g., poles, street installation, power, signs), as well as contract negotiations for new technologies, took much more time than expected.
- Procurement logistics. The logistics of procuring so much new equipment presented significant challenges and required resources, including warehouse and staging areas, people to receive and verify the goods, and accounting.

Implementation and operation

- Enforcement. Parking policies require effective enforcement. Without it, the benefit of any policy changes is likely to be compromised.
- Urgency. Federal project deadlines created an urgency that is uncommon in public projects and gave us aggressive goals to work towards.
- Custom technology. The technology used in SFpark is not plug and play. Implementing SFpark required a lot of hand coding for different technologies to work together. As this field and market matures, this problem will likely diminish, but for now it remains an issue for any city, as well as an opportunity to significantly upgrade a city’s ability to manage data and make more informed decisions.
- Organizational changes and challenges. Creating the SFpark data management system and then preparing to run a real-time information service required several significant changes within the SFMTA. From a technical perspective, it has challenged the SFMTA to determine the best ways to use, support, and maintain in that system with the rigor that is required for providing a high-availability data service.
- Most technology used did not meet our initial expectations. In particular, the accuracy and reliability of parking sensors is not perfect, which limits the possibilities of what can be done with that data. However, the technology continues to evolve and improve. In the meantime, the SFMTA has developed a method for approximating parking availability from meter payment data.
- Parking sensor data is new, subtle, and complex. There was a learning process for SFMTA to discover how to better understand and use that data for operations, contract management, and evaluation. As parking sensors become more commonplace, it is likely that de facto standards will develop in this area.
- Pursuing SFpark on a pilot basis was a sound approach. To have attempted this change all at once citywide would have had an unacceptably high risk of failure.

Institutional

- SFMTA’s role. The fact that the SFMTA manages on-street parking, municipal parking garages and lots, and parking enforcement allowed the SFMTA to focus more on project delivery instead of interagency coordination and communication. In some cities, various parking functions are managed by separate agencies, which may pose significant challenges.
- Internal consensus and cultural change. Even with the SFMTA’s advantageous organizational structure, building internal consensus and cooperation for SFpark’s significant policy, organizational, and technological changes required significant time and effort.
- The SFMTA Meter Shop was critical. SFpark was only possible because of the Meter Shop’s strong support of the program and previous accomplishments. One foundation for the SFpark pilot project was the Meter Shop’s existing meter data and configuration management system. Without it, the SFpark project likely would have had to undertake that separate (and sizeable) development effort. The existing system also meant that the Meter Shop was already accustomed to using information systems to manage meters and could advise the SFpark development team.

Even with the SFpark pilot project, the SFMTA has shifted towards recognizing parking management as a powerful tool for achieving transportation goals. Being able to communicate that promise with our customers and stakeholders, and then following through by lowering parking rates where merited, was important. These actions help to establish more trust and credibility in SFMTA parking management. Many people were skeptical of the SFMTA’s goals for parking management and feared that SFpark was simply a way to raise parking rates.

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Pursuing SFpark on a pilot basis was a sound approach. To have attempted this change all at once citywide would have had an unacceptably high risk of failure.
Downtown Saint Paul is an historic regional center that has experienced significant regeneration over the past decade. Targeted investments in a new convention center, ballpark, regional medical center and light rail transit have helped foster additional central district-developments in business, residential and entertainment uses. As Saint Paul’s traditionally stable downtown business environment evolves into a vibrant mixed use location, this economic boon also puts a strain on the existing parking supply.

The downtown area has more than 28,000 parking spaces, which serve a wide variety of users. Employees place peak daily demands on the parking supply. Even with growing transportation options, many downtown residents still maintain a vehicle. An emerging nightlife and restaurant scene, a bustling events calendar, new sporting events, and a regional farmers market all draw visitors in growing numbers at non-traditional travel peaks. Each unique user adds to downtown’s vibrancy, but also presents new challenges in terms of balancing urban revitalization with the need for parking.

The Downtown Parking Management Strategy provides an accurate view of parking activity and issues in Downtown Saint Paul in order to ensure appropriate parking availability for current and future users.

This document is a summary of three technical memoranda that detail the analysis supporting the Downtown Parking Management Strategy, summarized within:

» Technical Memorandum #1: Existing Conditions
» Technical Memorandum #2: Land Use, Zoning, and Future Demand
» Technical Memorandum #3: Parking Management Strategies

STRATEGY RECOMMENDATIONS

• Use information and technology to create smart policies and effectively manage parking.
• Coordinate and integrate city parking management with overall economic development and transportation goals.
• Manage on-street parking using a market-based approach to better utilize parking supply.
• Create off-street parking policies in the context of a multimodal system.
• Integrate access and transportation demand management to become a downtown with attractive travel options.
• Invest in placemaking to support downtown growth.
• Update the parking portion of the Zoning Code to support responsible economic development.
This section outlines parking strategies based on the findings from the parking supply and demand analysis, background review, build out analysis, and stakeholder meetings. Many of the specific strategies are interrelated and should be considered in tandem. They include items not obviously parking-specific - such as pedestrian improvements - that have an important impact on behavior and parking in Saint Paul.

Strategies are organized into seven categories and are ordered from highest to lowest impact. More detail on each strategy is included in Technical Memorandum #3.
1. INFORMATION AND TECHNOLOGY

Use Information and Technology to Create Smart Policies and Effectively Manage Parking

Downtown Saint Paul would benefit from enhanced parking information and integrated technology. The parking system can be more efficiently utilized with web- and app-based platforms that provide parking and transportation access options, consistent downtown wayfinding signage that identifies major parking locations, readable and clear regulatory and rate signage on-street and at each off-street facility, and signage that links multiple modes of transportation. Supporting strategies include technology improvements that would integrate on- and off-street facilities to help with parker convenience for both daily employees and the occasional visitor, including a single pay-by-cell payment system, real-time information for off-street facilities, and more.

1.1 Have a centralized and integrated transportation website and app.
1.2 Coordinate and contract with a single vendor for pay-by-cell for on- and off-street public parking facilities.
1.3 Incentivize private ramps/ lots to also use the same pay-by-cell vendor.
1.4 Coordinate real-time information for off-street public and private parking facilities and display via website and app. Consider bulk purchase of real-time information signage for facilities.
1.5 Replace coin-operated meters with smart technology.
1.6 Create branded downtown wayfinding signage program.
1.7 Incentivize ramps to offer event parking, including free/cheap at remote facilities.
1.8 Prioritize coin-operated meters to accept pay-by-cell.
1.9 Regulate information signage on all off-street facilities.
1.10 Install signage in skyway to identify multimodal access.
1.11 Integrate enforcement technology into payment technology.
1.12 Explore MnPass for off-street parking payment.

2. CITY PARKING MANAGEMENT

Coordinate and Integrate City Parking Management With Overall Economic Development and Transportation Goals

Parking is often managed by multiple departments and decision-making bodies. This makes parking difficult to consistently coordinate among various groups. This is true in Saint Paul, where there is no central staff person or department that spearheads or oversees parking management in the context of larger City goals. This set of strategies identifies opportunities to integrate parking functions in the short, medium, and long-terms. These strategies also recommend the City becomes more equipped to be responsive to parking supply and demand changes through data reporting.

2.1 Create a mobility authority that includes parking management and transportation demand management.
2.2 Require utilization reporting for City, HRA, and private lots and ramps.
2.3 Allow City/parking management staff to have authority to change rates and time limits without Council or HRA approval.
2.4 Agree on and document a single set of parking goals.
2.5 Hold quarterly management meetings with key departments.
2.6 Train enforcement officers as downtown ambassadors.
2.7 Provide educational parking information and resources on parking citations.
3. ON-STREET PARKING

Manage On-Street Parking Using a Market-Based Approach to Better Utilize Parking Supply

Curbside parking is a highly-coveted resource in downtown Saint Paul, and parking utilization counts show little availability on-street. In support of City goals of promoting local business and fostering a strong economic climate downtown, the City should adopt several strategies to open up the areas that have the highest demand. The City can make a big impact in the perception - and realities - of the most congested parking areas by updating its approach to managing parking on-street. The opportunities range from setting goals and adjusting pricing and time limits to achieve availability goals, phasing out placards, feasibility analysis to add more on-street parking supply, creating a circulation and curbside management policy, and more.

Adding more parking spaces on-street, whether using existing vehicular right-of-way, angled parking, or other design, is a cost-effective and quick strategy to substantially add to the parking supply without expensive construction. This type of effort should be considered, but engineering and traffic feasibility analysis will be needed.

3.1 Phase out placards.
3.2 Tie on-street pricing to first hour off-street rates.
3.3 Create City “optimum occupancy” or availability goal for on-street parking.
3.4 Adjust parking meter rates, time limits, and spans to achieve optimum occupancy.
3.5 Create a circulation plan and curbside management policy.
3.6 Explore the feasibility of adding off-peak on-street parking.
3.7 Establish event rates for on-street parking.
3.8 Monitor utilization data.
3.9 Pilot and evaluate progressive pricing.
3.10 Work with the state to update disabled parking laws.
3.11 Explore valet in select areas.

4. OFF-STREET PARKING

Create Off-street Parking Policies in the Context of a Multimodal System

Some municipalities try to build their way out of a parking supply problem; others work to more efficiently manage the supply that they have. As Saint Paul strives to be a more multimodal downtown while attracting new employers, residents, and destinations, the City should create strong off-street parking policies that support its larger goals. One of the most challenging, but highest impact strategies is to require that monthly contract parking permit rates not have volume discounts, bringing the rate structure closer to hourly rates.

4.1 Require monthly rates to be closer to daily and/or per hour rates.
4.2 Increase parking availability in key areas in the evenings.
4.3 Create city “optimum occupancy” or availability goal for off-street.
4.4 Mandate rate structure closer to per hour rates.
4.5 Work with all lot and parking operators to disclose actual monthly lease rates.
4.6 Prioritize short-term parking on ground or skyway floor of ramps.
4.7 Introduce a ramp rating system to incentivize green, improved lighting, and cosmetic facility improvements.
5. ACCESS AND TRANSPORTATION DEMAND MANAGEMENT

Integrate Access and Transportation Demand Management to Become a Downtown with Attractive Travel Options

Parking is not just about parking: it is about getting from your car to your destination, about not driving when there are other transportation options, and about which parking lots are used based on easy and safe access. The City should use this detailed review of its parking supply and demand as a resource to impact travel to and from St. Paul, particularly through transportation demand management (TDM) measures. Incentives and programs, for example free downtown transit and parking cash out, can have an impact on employee mode share and overall cost and parking implications for major employers and developers. Even changing the behaviors of 5-10% of employees can have a profound impact on parking demand.

5.1 Introduce a commute management benefit to downtown employers/employees.

5.2 Explore conversion of one-way streets to two-way.

5.3 Require employers to provide parking cash-out as an employee benefit.

5.4 Partner with City, County, and State to equalize commuter benefits for public employees.

5.5 Offer a free transit pass for downtown employees.

5.6 Incentivize remote vehicular and bike parking and shuttles with existing Metro Transit service.

5.7 Open up skyways at nights and on weekends.

5.8 Support a “park-once” district; use fewer parking spaces.

5.9 Create mobility hubs at Union Depot and Central Station.

5.10 Promote Metro Transit real-time information.

5.11 Monitor bike parking demand and identify where parking rack changes are needed.

6. PLACEMAKING

Invest in Placemaking to Support Downtown Growth

Placemaking is about creating a public realm to maximize the downtown’s activity, economy, and vibrancy. Placemaking works to connect activities and spaces that connect to all types of people. This is inherently related to parking supply and demand: creating great places to walk may reduce overall parking demand because drivers may be more likely to park a little farther than they would have otherwise. Placemaking not only supports better utilization of the existing parking supply but also supports downtown’s economy and activity.

6.1 Encourage an 18/7 downtown by incentivizing a mix of daytime and evening uses.

6.2 Invest in inviting walking environment (explore feasibility of adding on-street parking, minimize curb cuts, add activity on sidewalk level, re-time traffic signals, add pedestrian-scale signage, etc.)

6.3 Prioritize investment at street-level along corridors such as 4th Street and at Central Station.

6.4 Introduce parklets in select areas to boost street-level activity.
7. PARKING-RELATED ZONING CODE

Update the Parking-Related Zoning Code to Support Responsible Economic Development

The City can strategically use its zoning code to help shape a modern parking system that matches the City’s increasingly dynamic downtown. The City has the authority, through its zoning code, to shape new development in downtown. These zoning recommendations would impact both design and policy, and they build off the already progressive approach to parking requirements that exists today.

7.1 Strengthen TDM ordinance by applying a simple, annual regulation to employers (not developers.)

7.2 Prohibit new free-standing single-use parking structures (ramps must be wrapped with active uses and/or have active ground floor uses.

7.3 Prohibit surface lots, or charge a surcharge/tax for providing surface parking.

7.4 Introduce a progressive in-lieu fee.

7.5 Introduce parking maximums (and lower maximums within ¼ mile of transit stations.)

7.6 Require unbundling of residential parking from units.

7.7 Require shared use parking.

7.8 Establish design standards that encourage better ramp design, tailored to neighborhood context.

7.9 Monitor parking impacts of new development projects.

7.10 Require car share and bike share stations, based on size of development.

7.11 Require bicycle parking tied to size of development.

SHORT-TERM AND HIGH IMPACT STRATEGIES

Below are the strategies that are identified as being able to be implemented in the short-term that are also high impact, meaning that they have the potential to have a substantial effect on parking in downtown Saint Paul. After each of these strategies is a performance metric, so the City and its partners can measure implementation progress.

1.1 Have a centralized and integrated transportation website and app. (METRIC: Have at least 12 major destinations link to site; have at least 5,000 app downloads)

1.2 Coordinate and contract with a single vendor for pay-by-cell for on- and off-street public parking facilities. (METRIC: Have all HRA/City ramps and all metered parking accept pay by cell)

1.3 Incentivize private ramps/ lots to also use the same pay-by-cell vendor. (METRIC: Have at least five ramps sign on)

1.4 Coordinate real-time information for off-street public and private parking facilities and display via website and app. Consider bulk purchase of real-time information signage for facilities. (METRIC: Have at least ten private ramps sign on)

2.2 Require utilization reporting for City, HRA, and private lots and ramps. (METRIC: Regularly receive 70% reporting rate)

2.4 Agree on and document a single set of parking goals. (METRIC: Document and adopt goals.)

3.1 Phase out placards. (METRIC: Document locations and prevalence of card use)

3.3 Create City “optimum occupancy” or availability goal for on-street parking. (METRIC: Document and adopt goals)

3.4 Adjust parking meter rates, time limits, and spans to achieve optimum occupancy. (METRIC: Adjust time span and enforcement hours)

3.7 Establish event rates for on-street parking. (METRIC: Pilot event rates near major destinations)

4.3 Create city “optimum occupancy” or availability goal for off-street. (METRIC: Document and adopt goal)

6.1 Encourage an 18/7 downtown by incentivizing a mix of daytime and evening uses. (METRIC: Five off-peak businesses open or extend hours)

6.3 Prioritize investment at street-level along key corridors. (METRIC: Pilot and evaluate business activity on 4th Street)

7.2 Prohibit new free-standing single-use parking structures. (ramps must be wrapped with active uses and/or have active ground floor uses (METRIC: Adopt code)
A Green Solution to Oakland's Housing Crisis

If the city stopped building giant parking garages, it could become a leader in sustainable development — and create more affordable housing in the process.

By Sam Levin @SamTLevin
August 5, 2015

Jason Laub did not want to dig a giant hole in the ground in North Oakland. On a recent morning, Laub stood in front of a chain-link fence protecting a vacant lot on Telegraph Avenue between 47th and 48th streets in the Temescal district. Laub, vice president of the Nautilus Group, an Oakland-based development firm, was giving me a tour of his company’s three residential projects underway in the neighborhood — all located in a three-block radius in the center of the bustling commercial district.

At our first stop at 4700 Telegraph Avenue, where Nautilus Group plans to build a 48-unit apartment building, Laub described the various options for ground excavation at the site. The firm’s engineers, he explained, have worked to minimize the project’s underground footprint. Guiding the discussion of how deep and how wide the company would need to dig was a question that has long vexed local developers: how many parking spaces should new residential projects include?

The deceptively simple question touches on one of the most critical and controversial topics of modern urban development. And the debate surrounding the construction of parking spaces for apartment buildings is now gaining momentum in Oakland as real estate investors are increasingly purchasing land and building new housing near BART stations — in neighborhoods where driving and car ownership have become much less essential.

On this stretch of Telegraph Avenue next to the popular brunch spot Aunt Mary’s Café and near the neighborhood cycling store Tip Top Bike Shop, the company plans to demolish a group of old, two-story residential properties and build a modern-looking, five-story building with mostly market-rate units and a ground-floor commercial space — possibly housing a microbrewery, Laub said.

"There’s some really great small businesses, really great culture, great food," Laub said, when I asked him why Nautilus chose to do its first major Oakland projects in this neighborhood. "We want to be part of it and contribute to creating a very vibrant and thriving area here." Plus, he said, the project is close to public transportation.

Nautilus Group’s three Temescal projects — 4700 Telegraph, 4801 Shattuck Avenue (one block west), and 5100 Telegraph (three blocks north) — are all just a ten- to fifteen-minute walk from the MacArthur BART Station. The City of Oakland is also in the process of redesigning Telegraph to be significantly more bike-friendly. It will soon implement Oakland’s first-ever protected bike lane, meaning a roadway exclusively for cyclists separated from car traffic by a barrier. Given the proximity to BART, numerous AC Transit bus lines, and increasingly bike-friendly roads in the area, residents of Temescal can
comfortably travel around the neighborhood and get to other parts of Oakland and the Bay Area without a car.

And because there is clearly demand for housing from residents who don't own cars and prefer biking, walking, and public transit, Nautilus Group has been working for months to plan and gain approvals for a design of its 4700 Telegraph project that does not cater to auto-dependent tenants. The company’s proposed concept may seem obvious and non-controversial to those who support greener modes of transit, but given Oakland's history of encouraging — and in many ways requiring — developers to accommodate car owners, Nautilus' plan actually offers a somewhat revolutionary approach. Instead of constructing at least one parking space for each of the 48 units — which would be the default minimum standard for a project of this size in this location, according to Oakland’s planning rules — the developers have secured a special exemption from city officials and will construct half the number of spaces in the project’s on-site garage.

"Building parking is very expensive," Laub said. "If we can reduce the number of parking spaces that we build ... that means we can do a lot of other things for this project."

Depending on the project and location, a single parking space can cost a developer anywhere from $35,000 to $75,000 to build, Laub said. For 4700 Telegraph, instead of building 48 residential parking spots (and 8 commercial parking spaces) in an underground 16,000-square-foot lot that has a footprint the size of the entire project, Nautilus will only be installing 24 spaces for tenants in an 8,200-square-foot garage.

With the financial savings from this reduced parking plan, Nautilus will be able to provide all residents with discounted public transit passes, free car-share memberships, secured bike parking, and other amenities. The company, however, had to go through an extensive process to convince city officials to let its project bypass municipal parking rules — the kind of effort that developers in Oakland have rarely completed on this scale. Instead, most developers continue to follow the city’s planning guidelines and rules — and build large parking garages in areas where they aren’t needed.

For this reason, environmentalists and housing advocates have begun pushing the city to allow and encourage developers to construct significantly fewer parking spaces than the Oakland Planning Code requires. And urban planning experts have increasingly recognized that overly strict municipal parking policies — which typically force developers to spend a significant amount of money building one or more parking space per new unit — ultimately drive up the cost of housing and stymie the creation of affordable units.

Critics point out that outdated suburban-style planning policies — like the ones Oakland still uses — incorrectly assume that all residents drive and want parking included in their rents. In truth, the much higher costs associated with mandated parking make housing less affordable for middle- and low-income people. Indeed, outmoded parking policies can help accelerate gentrification by forcing the construction of apartment buildings that attract wealthier people who own multiple cars and can afford to pay the higher rents that come with excess parking, thereby squeezing out lower-income tenants who want to live greener lifestyles.

One recent analysis of cities across the United States found that the costs of constructing parking garages with one spot per apartment result in average increases in rent of $2,700 per year. The study was conducted by Reinventing Parking, an international transportation advocacy group. The impacts of excess parking on affordability tend to be more severe in
denser urban areas because land is more costly and developers typically have to spend more to create structured garages (as opposed to paved surface lots, which are cheaper).

Led by Oakland-based nonprofit group TransForm, transportation and housing activists are pushing for local developers and the city to fundamentally rethink residential parking in a way that lowers costs for renters and shifts real estate investments toward affordable housing and sustainable modes of transit — and away from expensive parking garages.

Through its initiative called Green Traffic Reduction and Innovative Parking (GreenTRIP), TransForm has compiled and analyzed extensive data illustrating the potentially profound benefits of progressive parking strategies. The group’s research sheds light on how archaic rules have led to extremely inefficient uses of space and financial resources in Oakland development projects. TransForm’s research also shows that the city could make significant strides in tackling its housing affordability crisis and fighting climate change if it eliminated regressive parking requirements.

Yet it remains to be seen whether Oakland is willing to go far enough in adopting progressive reforms that could limit the spread of new parking and establish the city as a leader in sustainable development. And the need for change, advocates say, is urgent as rents skyrocket at alarming rates in Oakland and as real estate investors continue to propose and break ground on new projects. If Oakland doesn’t get it right soon, it could mean an influx of new development that lacks forward-thinking designs — and instead continues the promotion of 20th century car culture, harmful emissions, and unaffordable rents for years to come.

In the 1910s, the proliferation of automobiles started to shape the way cities and towns approached planning and development. Local governments began designing their cities in a way that encouraged — and required — families and workers to drive everywhere.

Federal law in the 1920s paved the way for municipalities to start using zoning policies to guide and regulate growth, and in 1926, the landmark Supreme Court decision Euclid v. Ambler enabled governments to exercise much greater control over land use on private property. That case gave birth to what is known as "Euclidean zoning," the practice of governments creating distinct districts with singular land uses — meaning residential areas, office parks, industrial zones, and shopping mall centers, all geographically isolated from one another. It was the policy basis for the American vision of suburbia — a lifestyle in which automobiles reigned.

Car-oriented development persisted for decades. Oakland created its first zoning policies in 1935, establishing separate residential, commercial, and industrial districts. Yet despite these conventional zoning practices, the city had some fairly forward-thinking urban planning in the 1930s. Most notably, the city’s Key System streetcar network connected many residential neighborhoods, such as Montclair and Lakeshore, to a dense, vibrant downtown.

But automobile use skyrocketed, and transportation officials eventually dismantled Oakland’s streetcar system in 1958. Meanwhile, federal, state, and local governments expanded the regional freeway network, cutting through, and in some cases, destroying existing neighborhoods and communities in the 1950s and 1960s. "It was the car that really
caused the demise of Oakland," said Rachel Flynn, director of the city's planning and building department.

In more recent decades, there has been increasing awareness in Oakland and across the country that these car-centric urban planning policies came with grave long-term consequences. "Cars dominated urban development in the Bay Area and most of California, so unwinding that is going to be a multi-decade process," said Ann Cheng, director of GreenTRIP. "The cost to our health, climate, and economy — there's just so many reasons why those days are over."

Among environmental and transportation advocates, there is now widespread recognition that in order to reduce greenhouse gas emissions, policymakers must spur smart growth in cities, meaning building high-density housing in downtowns and other transit-accessible neighborhoods — making it easy for residents to drive less or live without cars. The creation of more housing near BART stations could also have positive implications for public health; studies have consistently shown that physical inactivity is linked to obesity and other chronic health problems, and that when people live near public transit, they walk and bike more, and their physical and mental health improves.

Smart growth and urban planning that discourages car use can also boost local economies, given that small businesses and retail districts benefit when more people walk and bike to stores and restaurants. In the East Bay, high-density development could also help address the current housing crisis — in which the existing supply has greatly failed to meet regional demands.

What's more, sprawl and poor access to public transit in a city like Oakland drives up people's cost of living because they're forced to own, maintain, and drive cars. After housing costs, transportation is the second largest expense for Bay Area households, eating up an average of 27 percent of incomes, according to the Metropolitan Transportation Commission (MTC), the Bay Area's transit planning agency. Most of those expenses are related to auto ownership.

Supporters of new developments near transit also note that there is significant data demonstrating the huge demand for this type of housing. For starters, demographic data has shown that many Bay Area residents are using their cars less. In Oakland in 2013, according to the latest American Community Survey data, more than 45,000 people took public transit, walked, or biked to work — about 25 percent of the working population. That rate has climbed since 2009 when 43,000 people (23 percent of workers) biked, walked, or took transit. The Census data further showed that nearly 14,000 Oakland commuters said they had no access to a vehicle in 2013.

According to statistics from the Center for Transit-Oriented Development, which analyzes demographic trends related to public transportation, car ownership rates are dramatically lower for households within a half-mile radius of BART stations — 70 percent have zero or one vehicle. For households within a half-mile of the San Francisco Bay Ferry, which stops in Oakland and Alameda, 87 percent have one car or less.

The MTC's research has further found that significant numbers of Bay Area residents want to live near transit; a 2010 survey of 900 people concluded that two of the top factors people consider when choosing where to live are convenience for walking and biking and having a short commute to work. And MTC found that 38 percent of respondents said they would be
interested in living in a transit-oriented development. This group included low-income families with low car ownership rates, households with two incomes and no children, students, and younger, well-educated residents.

"Among the millennials, more of them are deciding they would rather have other things besides a car," explained Valerie Knepper, MTC's regional parking initiative manager. "They would prefer not to pay for parking or driving expenses."

While a number of recently adopted California and Oakland climate change policies are aimed broadly at supporting housing developments that accommodate alternative modes of transit and reduce car travel and emissions, one area in which policy has lagged substantially is the parking requirements for new projects, critics say.

Although parking policy often takes a back seat in debates over global warming, transportation, housing, and gentrification, urban planning experts say that the way governments decide where cars must be stationed and how much drivers pay for spaces can in many ways determine the long-term health and sustainability of a city. In Oakland, that means the ripple effect of reforms in parking policy could be profound — which is why a group of environmentalists are devoting their energy to changing it.
Oakland's Sweeping Plan for Parking

The mayor's office wants to implement a progressive pricing strategy in the city's commercial districts — and if successful, it could reduce greenhouse gas emissions and boost businesses.

By Sam Levin @SamTLevin

OCTOBER 28, 2015

Matt Nichols, Oakland's transportation policy director, wants to shift city parking meter rates.

When Shifra de Benedictis-Kessner joined the Downtown Berkeley Association in 2011, one of the most important challenges to tackle was parking. "People just couldn't find spots in the core around BART," she said. "The perception in downtown Berkeley was that parking was awful." The association subsequently partnered with the city to overhaul parking downtown — by raising meter prices on the most popular streets where it was impossible to find a spot and lowering the rates in areas that typically had a high number of available spaces.

The concept was based on a simple principle of economics: Where demand is high, increase meter prices, and where demand is low, decrease the fees. That pricing scheme encourages high turnover on crowded streets (thereby increasing availability) while also incentivizing drivers to park in peripheral areas that are typically underused. According to the city's data and anecdotal reports from businesses, the new downtown parking program has worked well. "There has been an immense improvement. If you want to park right there, right then, you can," said de Benedictis-Kessner, who is now executive director of the Temescal Telegraph Business Improvement District.

Oakland's mayor's office is now proposing the same concept for commercial districts throughout the city, including Temescal, with the hopes of boosting small businesses by making it much easier for drivers to find parking in busy retail corridors. If the city can overcome the typical obstacles to this kind of parking policy reform — a lack of funding to conduct proper studies and loud resistance from businesses and residents who oppose all meter rate increases — it could bring important economic and environmental benefits to Oakland.

Spearheading the effort is Matt Nichols, Mayor Libby Schaaf's transportation and infrastructure policy director, who in 2013 led the parking revamp in Berkeley, where he formerly served as a principal transportation planner. Nichols also previously studied under UCLA urban planning professor Donald Shoup, who is the leading academic expert on this parking concept, known as "market-based pricing" or "demand-responsive parking" (see "Berkeley's Parking Solution," 12/11/13). Nichols recently helped write an Oakland grant proposal requesting $2 million from the Metropolitan Transportation Commission (MTC), the Bay Area transit agency, which would enable the city to implement the progressive parking strategy in downtown, Uptown, Lake Merritt, Chinatown, Temescal, the Jack London district, and the Grand Lake district.
Cities, including Berkeley and San Francisco, have increasingly moved away from the conventional parking meter system in which all on-street locations in a district have the same prices and time limits. Instead, forward-thinking governments have launched market-based pricing systems, in which meter fees are established based on the needs and demands of drivers. That means helping shoppers and diners find convenient parking — not by building more garages or on-street parking spaces, but by setting fees in a way that encourages the most efficient use of the existing parking supply.

A key way to accomplish this is to flip the standard pricing model and make off-street parking garages cheaper than highly coveted on-street metered spots. That way, people who want to park for several hours will gravitate toward the affordable spots in nearby garages — which typically have high vacancy rates — thereby freeing up short-term spots in front of stores and restaurants for customers. The target "magic number," Nichols explained, is roughly 85 percent occupancy rate per block (meaning one or two empty spaces). That means if the block is constantly at 100 percent capacity, then prices need to go up, and if a block has a large number of open spots, then the city should decrease fees. This pricing model can also increase overall parking revenues through high turnover on more expensive on-street spots, and can also help support businesses, which, in turn, increases sales tax revenues for the city.

Once merchants see these programs in action, they are generally supportive, said Valerie Knepper, MTC's regional parking initiative manager and one of the officials reviewing Oakland's grant proposal. "The first response from some businesses is, 'If you charge for parking in front of my business, nobody will come here anymore,'" she said. "But this is actually a pro-business policy."

Most important, this pricing model can substantially reduce greenhouse gas emissions by eliminating the need for cars to drive in circles trying to find parking. When a large majority of motorists visiting a popular business district are forced to keep driving for five to ten minutes, the unnecessary pollution — not to mention, driver aggravation — can be substantial. Shoup's research has repeatedly demonstrated that when meter prices are too low, and time limits too long, parking becomes impossible to find, and as a result, a large percentage of on-street congestion and greenhouse gas emissions are directly attributable to cars searching for parking.

After Berkeley piloted market-based pricing in downtown, the Elmwood district, and a section of South Berkeley, the city estimated that it reduced the total vehicle miles traveled per day by 1,649 miles, which translates to 1.4 fewer tons of greenhouse gas emissions each year. And when San Francisco applied demand-based pricing to roughly 6,000 on-street meters and 12,250 off-street spaces, the city experienced a 30-percent reduction in vehicle miles traveled. "It's kind of amazing how much traffic is actually people circling," said Nichols, noting that drivers looking for parking are also the most distracted and more likely to get into collisions.

In most of the business districts included in Oakland's proposal, the meter rates are uniformly two dollars per hour with a two-hour time limit. Nichols said it was too soon to say exactly how much prices and time limits would change in certain districts and said the city would approach each neighborhood differently based on studies of area trends. The project would build on a 2014 pilot that Schaaf, then a councilmember, launched in
Montclair Village. There, the city raised prices to $2.50 per hour in high-demand streets and reduced the rates on peripheral blocks to one dollar per hour. Notably, the city incentivized drivers to use a nearby city-owned garage by offering spots for free for the first twenty minutes, followed by only two dollars per hour.

Daniel Swafford, executive director of the Montclair Village Association, the merchants' group, said that the system has helped divert parking to the garage, which has made it somewhat easier to park on-street. "They're utilizing spaces that are less important for folks who have to get in and get out," he said, adding that he thinks the city needs to raise on-street prices even higher, since it can still be challenging to find a spot on the main strip. In Berkeley, the city raised some meter rates on busy streets to $2.75 per hour while making city-owned garages only $1.50 or $2 per hour (and, in one lot, free for the first hour).

If MTC awards Oakland the grant, the city's first phase would focus on Civic Center and Old Oakland; Lake Merritt and Uptown; and Chinatown. It would also spend some of the funding to improve the Montclair program. The first phase would rely on a downtown parking study that the city's Public Works Agency recently completed. After collecting parking occupancy rates on a weekday afternoon, the city determined that while many downtown streets were crowded with parked cars (above 85 percent occupancy), there were many other streets, often nearby, that had a significant number of available spaces (below 65 percent occupancy). There were also four city-owned garages and lots that were below 65 percent occupancy. The city's proposal would establish "premium" zones with higher meter rates and "value" zones on the periphery and in garages with cheaper fees.

Phase two of the project — in Jack London, Temescal, and Grand Lake districts — would require further studies and outreach, Nichols said. And a third phase, which is not included in the MTC funding request, would focus on the commercial districts of Rockridge, Piedmont Avenue, and Fruitvale.

The MTC funding would also support a concept known as a "parking benefit district" in each area. That means setting up a system through which the city would reinvest a portion of parking revenues directly into the neighborhood, typically by allowing a merchants' group to dole out funds for certain streetscape improvements or other local projects. This feature is part of the Montclair Village pilot, though the city has not yet determined how much funding it will return to the business association for the first year. The grant proposal also features a number of "transportation demand management" (TDM) strategies, which are aimed at reducing driving and encouraging alternative modes of transit. That includes providing free transit passes to targeted groups of city and private employees in each district and other incentives designed to limit car use, such as subsidized bike-share memberships or preferential parking for carpool vehicles.

Oakland is seeking funding from MTC's Climate Initiatives Parking Management and TDM Grant Program, which will dole out a total of $6 million to projects across the Bay Area. Twenty agencies submitted initial project ideas, and MTC selected eleven of those, including Oakland, to write formal proposals. The funding requests call for nearly $10 million total, which means not every project will receive an award or their full request, according to MTC spokesperson John Goodwin. MTC will make final selections later this year and start distributing funds in early 2016.
Cities finally realize they don’t need to require so much damn parking

By Ben Adler on Aug 2, 2016

Some cities are starting to get smarter about parking, and that’s leading to less driving.

For the last half-century, zoning codes in many American cities and suburbs — even relatively walkable, transit-heavy ones — have typically required developers to provide a certain amount of parking for each new home or business, often far more spots than are needed. The costs of building that parking get passed on to residents and customers whether or not they drive. By subsidizing parking in that way, we encourage people to drive. And surrounding every building with parking makes cities less friendly to walkers and eats up green space.

But there’s been a spate of good news on this topic in the last year. New York City recognized that people who live in low-income projects with public transit access were very unlikely to own cars. So, in its recently passed rezone, the city eliminated parking requirements for low-income, “inclusionary” (meaning some units are affordable for low- or middle-income families), and affordable senior housing developments that are within a half-mile of mass transit.

Some New York City real estate developers are moving away from excess parking too. Mass transit options are so rich in Midtown Manhattan that city parking requirements are largely absent there, but developers have sometimes chosen to build a lot of parking capacity into their projects anyway, to appeal to future homebuyers, office workers, and store customers. That’s not the case, though, with the massive Hudson Yards project being built on the West Side of Manhattan, which will include 5,000 housing units, five office towers, and a retail center. It may have as few as 200 parking spaces. “That anything of this scale — and built near the Lincoln Tunnel and the West Side Highway — would eschew parking in this way is a clear testament to how much New York City has changed,” observed Politico New York last year. “As public transit options expand, and millennials continue to skew trends away from car ownership, the necessity for buildings to supply parking is dwindling.”

Other big, progressive cities are making similar moves. Chicago has a surplus of mandated free parking. But, last year, it expanded areas targeted for transit-oriented development, where parking requirements are minimal or nonexistent. In January, Washington, D.C., reduced parking requirements for multi-family buildings and commercial buildings near metro stations and along high-speed bus routes.

The impetus is economic as much as environmental. Hot cities such as Chicago and D.C. suffer from spiraling housing costs, and eliminating expensive parking requirements can help alleviate
that burden. “Builders find that parking minimums are high-cost, and for a high-cost city like D.C., that is one of the issues with affordability,” says Christopher Coes, director of LOCUS, a program at Smart Growth America that advocates for sustainable, walkable development. In fact, cities can use the reward of reduced parking requirements as an incentive to get developers to build more affordable housing.

Seattle has gradually eliminated parking requirements in much of the city, starting with commercial buildings and downtown and growing to include residential neighborhoods with good mass transit access. “There are a number of examples in the Northwest of cities reducing parking requirements,” says Alan Durning, executive director of the Sightline Institute, a Seattle-based environmental policy think tank.

Even smaller cities far from the coasts are breaking the habit of forcing free parking on their residents and businesses. Last year, the Fayetteville, Arkansas, city council eliminated parking minimums for every new building except homes. Previously, for example, a restaurant was obligated to provide one parking space for every 100 square feet. In Buffalo, New York, that dowdy emblem of industrial decline, Mayor Byron Brown’s proposed “Green Code” would eliminate parking requirements entirely.

“A lot of cities are reducing parking requirements around transit stations and in the denser areas,” says Donald Shoup, a professor of urban planning at UCLA and author of The High Cost of Free Parking. “It’s becoming obvious that minimum parking requirements prevent a lot of good things from happening,” he says. For example, if a developer has to build two parking spaces for every new apartment, or dozens of parking spaces for every new restaurant, there is no way to convert an old building that doesn’t have a parking lot or garage into new homes or businesses.

Many European cities, as you would expect, are ahead of the U.S. on this trend. Amsterdam, Copenhagen, Hamburg, Paris, and others have reduced or eliminated parking requirements over the last 15 years. According to a 2011 study by the New York City-based Institute for Transportation and Development Policy, a sustainable transportation advocacy group, those cities had less traffic and lower emissions as a result.

Although parking reform is catching on in the U.S., progress has been inconsistent. Many cities are leaving their parking requirements untouched, and some have actually increased them.

Portland, Oregon, surprisingly, has been one of the backsliders at times. In 2013, the Portland City Council took a step backward from its smart growth leadership and instituted parking minimums for new apartment buildings in certain neighborhoods with expanding populations. The councilors were responding to current residents who feared that a stream of newcomers would make street parking difficult. But, last month, the city council decided not to enact new parking minimums in Northwest Portland, another area with rapid housing development. Urbanism advocates in Portland cheered. They’ve argued that the proposed parking mandates would have pushed up prices for new apartments and condos in Northwest Portland or deterred them from being built at all.

Still, even when progress is made, it’s usually just in areas like downtowns. Outlying residential neighborhoods, and especially separate suburban towns, still typically require excessive parking for every new development. And eliminating mandatory garages or parking lots is only the first stage of true reform. Free curbside parking is also a huge subsidy for drivers. Shoup advocates charging for street parking in addition to eliminating parking minimums. That’s a long way off, but at least things are finally moving in the right direction.
EXECUTIVE SUMMARY

Late at night, when Chicago sleeps, apartment parking lots are at their peak usage. When CNT visited those lots and garages at 4:00 a.m., though, we found one third of the parking spaces sitting empty.

This may not seem like a huge problem, but each indoor, underground parking space – one individual space – costs $37,300 to build. Multiply that by all of the spaces in the lot, and the price tag is huge. We think that wasted money and space should be allocated to housing instead.

As we began to dig into this issue, some important questions emerged. How does that unused parking impact communities? How much of it exists? And how can rethinking how much parking cities mandate promote neighborhoods that are more compact and affordable with access to frequent transit?

To find out, CNT interviewed multifamily developers in Chicago and found that when communities ask developers to build too much parking, those spaces add time and money to projects. They drive up construction costs and rents for market-rate units. And parking requirements hinder the development of affordable housing near transit because subsidy programs cannot account for the dual price premiums on parking and land.

We then applied CNT’s pioneering approach to determining parking demand. When we built parking calculators for King County, Washington; the San Francisco Bay Area; and Washington, D.C., we visited parking lots and garages at 4:00 a.m., when most renters have parked their cars and are asleep in bed. Across all three cities, we consistently found one third of those residential parking spots sitting empty. So we decided to take the same approach at 40 affordable and market-rate apartment buildings across Chicago.

Consistent with our research elsewhere, we discovered that:

- **The supply of parking exceeds demand.** Buildings offered two spots for every three units. In reality, they only needed one for every three.
- **As parking supply goes up, much of it sits empty.** Apartments with fewer spaces saw a greater percentage of their parking used.
- **Apartment buildings near frequent transit need less parking.** Buildings within ten minutes of a Chicago Transit Authority (CTA) train stop had one spot for every two units. Even then, one third of their spots sat empty.
- **The opportunity costs add up.** If we applied these numbers to a 100-unit building near the CTA system, the empty parking spaces would add up to $825,000 in wasted construction costs.

Municipalities often mandate at least one parking space per new housing unit, even for buildings near transit stops. But with so many costly parking spaces already sitting empty, communities should rethink parking as a resource to be managed so that supply and demand can be more in sync. If that happens, parking costs decrease and the supply of market-rate units can expand. Affordable housing developers can stretch subsidies further. And land could be used more efficiently for retail, services, and amenities, making it easier to get to them without driving. This would reduce parking demand even more.

This report shows how it can be done:

1. Municipalities must right size their parking requirements to reflect the real demand for off-street parking near transit and create incentives to pass on the savings through affordable rents.
2. Developments only need a handful of spots when they include access to amenities like transit, car sharing, and bicycle sharing.
3. Good data can support more productive conversations when low-parked buildings are proposed at neighborhood meetings.

Chicago and its northern neighbor Evanston recently reduced parking requirements around transit for developers that include affordable housing. Regionally, however, high minimum parking requirements are still the norm. The data and recommendations in this report lay the framework for transit-oriented development that puts people before cars and passes on the value savings through more affordable rents.

Together, we can build communities with room for parking, amenities, and housing available to everybody. This report shows the way.
A century ago, Chicago was a great walking city. Like America’s other great walking cities, it came of age on an urban grid. In those days, land development wasn’t as tightly regulated as it is today, and there were no zoning codes to keep homes and retail apart. Neighborhood development made efficient use of the city’s grid by lining main transportation thoroughfares with shops and multifamily homes. The rest of the grid was filled in with smaller residential buildings on quiet side streets a short walk away. As a result, compact neighborhoods grew, many of which provided a mix of housing types at different price points with access to jobs, amenities, and public transportation. Then the car arrived, transforming urban transportation. An open question emerged: how do cars fit into communities designed for people?

For decades, planners answered this question through single-use zoning with parking minimums. Zoning laws divide properties by use – residential, commercial, industrial – and often require a minimum number of parking spaces on each property. Instead of coordinating land-use plans to maximize the community’s overall accessibility, interconnectedness, and affordability, neighborhood development became focused on the end use of each individual parcel.

Naturally, requiring developers to carve out land for parking restricts what could be done with a property. In Chicago, developers could no longer build in the style of the vintage apartment buildings that provided decent and affordable housing. Only developments with parking spaces were legal, leaving less space for housing units and more space for cars. In the suburbs, developers built multifamily rental in isolated locations where cheap land and favorable zoning made it easier to surround their buildings with a sea of desolate surface parking. In both city and suburbs, travel became less efficient and communities became more disconnected. It became difficult to do even basic daily errands without a car, further escalating the perceived need for parking and the cost of transportation.

After decades of developing for cars, the market has flipped. Parking became more expensive as walkable, transit-friendly neighborhoods grew increasingly popular. Today, developers interviewed in surveys like the ULI/PWC Emerging Trends of Real Estate report talk about repurposing and better utilizing existing parking lots and garages, reducing the construction costs of parking, and developing in line with the public’s demand for compact communities with easy access to jobs and amenities. Communities with a high quality of life will always need some parking, but it is critical to “right size” parking at a level below current public standards. This report is about achieving that right size for parking to increase neighborhood accessibility and affordability.

By treating parking as a resource to be managed, and not a mandate to be met, communities can apply the savings
from reduced parking spaces to building communities with a better mix of housing, transportation, and amenities. The tight housing supply could be expanded by applying the savings to new market-rate units. Additional affordable units could be developed from existing sources of subsidy. Buildings could preserve spaces for shared-use mobility or offer transit passes bundled into the rent to give people a broader range of mobility options. More land could be used for retail, services, amenities, and institutions in convenient locations, making it easier for neighborhood residents to reach them without driving.

Better understanding of parking demand and adopting policies to right-size parking can repurpose underutilized space to meet broader development and affordability goals. CNT has found that:

- **THE COST OF AN INDIVIDUAL PARKING SPOT IN CHICAGO CAN BE AS MUCH AS $37,300,** and this bears significant opportunity costs in increased housing prices, constraints on affordable housing development, and the efficient use of land.
- **PARKING MINIMUMS ADD TIME AND COST TO CHICAGO-AREA TRANSIT-ORIENTED DEVELOPMENTS.** In particular, this discourages developing affordable housing near transit, where the cost of land comes at a premium.
- **ON AVERAGE, ONE THIRD OF OFF-STREET RESIDENTIAL PARKING SITS EMPTY AT NIGHT.** This is a large and unnecessary gap between supply and demand. We collected this data at more than 41 buildings based on methods CNT developed in the San Francisco Bay Area, Seattle, and Washington, D.C.
- **ALTERNATIVE APPROACHES EXIST.** Recognizing the burden of unused residential parking on project cost and community accessibility, communities and developers are beginning to develop creative, alternative approaches that better align parking supply with demand.

CNT has been working with planners and researchers across the United States to find solutions to these problems. In King County, Washington, for example, CNT worked to develop an empirically based model for parking requirements. Local researchers went into buildings at 3 a.m. to measure the number of parking spaces that were actually used, and then CNT developed a model that related the number of occupied parking spaces to population, job density, the size of units and distance from transit. CNT found that the number of spaces required through zoning exceeded the demand for spots by 35%. CNT also brought this approach to the San Francisco Bay Area and to Washington D.C. CNT co-authored a paper on parking utilization in Washington, D.C., that was selected by the Transportation Research Board as the best transportation and land use paper of 2016.\(^2\)

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**PARKING IS A RESOURCE. SO IS LAND FOR DEVELOPMENT.**

Every community needs some parking, but with the right size of supply, neighborhoods can tilt the scales to dedicate more space to people than to cars. This in turn will allow us to create better connected, more spatially efficient, and more affordable communities.

**THIS REPORT SHOWS THE WAY.**

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Contemporary Approaches to Parking Pricing:
A PRIMER

U.S. Department of Transportation
Federal Highway Administration
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1.0 Introduction

United States drivers were introduced to the concept of paid, on-street parking in 1935 when the first parking meter was installed in Oklahoma City. In the ensuing decades little was done to improve the basic tools or processes of parking pricing. Many cities arbitrarily set fixed parking rates that resulted in excess demand for a finite resource. The failure of cities to price parking based on demand has resulted in an underperforming parking system, the impacts of which include lost revenue, increased congestion, decreased access to businesses, environmental harm, and inconveniences to travelers.

Underpriced and free parking also distort travel decisions. Studies have found that free parking can increase the drive-alone rate for commute trips by as much as 50 percent (Hess, 2001; Willson and Shoup, 1990a; San Francisco County Transportation Authority, 1996) and work by Donald Shoup (2006) reported that approximately 30 percent of cars in congested downtown traffic may be looking for parking, adding unnecessary vehicle trips to already congested areas. Correctly pricing parking can help address these issues.

Today, technological advances offer the opportunity to effectively manage and price parking. Improvements in parking management infrastructure and tools combined with innovative thinking by politicians, transportation and parking professionals, and researchers are advancing the field of parking management. New technologies are making it possible to collect and analyze large amounts of data about parking utilization. That in turn allows cities to define clear policy goals and accurately adjust pricing to meet those goals. Better technology has also improved revenue management, provided users with more payment options, and improved enforcement while lowering associated costs.

Because of the opportunities brought about by these new technologies, cities across the United States are able to improve their parking pricing policies to address congestion, improve customer service, increase availability, and address safety concerns for non-motorized travelers. For example, San Francisco and Seattle have both established occupancy goals for on-street parking. San Francisco aims to achieve occupancy rates between 60 to 80 percent and Seattle has a goal of two open spaces per block. Each city now regularly adjusts meter rates to meet the identified goals. Chicago and San Francisco are exploring the use of parking pricing as an alternative to cordon charges. Boulder and Aspen, Colorado have residential parking permit programs that allow commuters to purchase parking passes on a space-available basis. New York City is testing peak-hour parking charges, and Washington, DC is using license plate reader technology to support and analyze its performance-pricing program. Recent experiences in these cities and others provide lessons and opportunities for practitioners interested in advancing parking pricing policies.

This primer discusses advances covering a broad array of parking pricing applications, available technology, preferred user accommodations, and strategies for gaining public acceptance for policy changes. The information provided is meant to increase awareness of innovative approaches, help communities design strategies that are applicable to their unique needs, and encourage new innovations in the field of parking pricing.

The programs and policies discussed here are likely just the beginning of what will be transformative changes to parking management across the United States. Parking professionals will find ways to use technology that have not yet been considered, parking managers will push for more advanced equipment, parking technology will become more affordable, and consensus builders will advance new policies. The Federal Highway Administration (FHWA) hopes that this primer helps to further discussion and innovation during this exciting period.
FHWA and local governments are looking at leveraging market forces by pricing transportation resources to reduce congestion. Pricing, if properly instituted, accomplishes three important objectives:

1) It can allocate scarce transportation resources in a way that mitigates congestion and ensures greater efficiency from the entire transportation system;

2) It reduces potentially market distorting subsidies that have induced excess auto travel; and

3) It creates a revenue stream that can be invested in access enhancements, which could in turn reduce parking (and driving) demand.

Pricing parking can be a powerful tool—especially when used in conjunction with other travel demand management strategies—to influence travelers’ decisions about whether to drive alone, carpool, use transit, or use non-motorized travel modes. Reductions in drive-alone travel can subsequently reduce emissions and congestion and improve access and revenue generation.

This section of the primer discusses the two basic approaches to parking pricing: 1) free and fixed-rate pricing and 2) performance-based pricing. Within performance-based pricing there are two primary strategies: variable prices and escalating prices. These approaches can be used by cities to better manage parking supplies while simultaneously improving the travel experience of those who continue to choose driving. Depending on how parking revenues are invested, a parking strategy can more broadly improve access to an area where the desire to drive and park currently exceeds road capacity and/or parking supply.¹

### 2.1 FREE AND FIXED RATE PARKING

Cities own a tremendous amount of real estate that comprises the public right-of-way (ROW). While the value of the ROW as an asset is implicit in permit fees for uses ranging from block parties and construction to non-automobile storage, peculiarly, most cities allow residents and visitors to store their automobiles rent free on much of the ROW. In some instances, typically in business districts, municipalities will charge nominal parking meter fees. Because cars are parked about 96 percent of the time and because estimates of the number of parking spaces per automobile range from three to five, the 194 million registered vehicles in the United States take up between 5,200 and 8,700 square miles of parking space. The land devoted to parking in the United States could fill an area between the size of Connecticut and New Jersey—a valuable asset that is underutilized.

As noted in the introduction, the first parking meters were installed in Oklahoma City in 1935. Studies pre-dating the installation of those meters showed that vehicles parked on commercial streets belonged, by and large, to local merchants and their employees. Customers, who had begun to own automobiles at increasing rates, were left to circle around hoping that a parking space would become available. These drivers contributed to the incipient but fast growing downtown congestion problems. Civic leaders recognized that by renting the curb, rather than giving it away, they could shift the dynamic. Meters were first installed on only one side of each street. In the morning, as workers and merchants arrived, the free spaces quickly filled. By 10:00 a.m., as shoppers came downtown, metered spaces made up the majority of available parking. As customers completed their business and departed, the metered spaces were used by later arriving customers, who also paid for use of the parking spaces. By one account, merchants

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¹ In many instances of apparent parking under-supply it is infeasible and/or unsound to add parking capacity. This occurs where the street system is also congested and where adding parking would require reducing active uses of the land.
How Parking Management Can Help Cities Grow Smarter

An excerpt from the introduction to "Parking Management for Smart Growth," by Richard W. Willson, Ph.D., FAICP. Here Willson argues for parking management strategies as a critical tool for communities to get more out of the space devoted to cars.

For most members of the public, a substantive discussion on parking policy should focus only on how to make parking cheaper and easier (the list of suggested parking reforms as a result of a city of Los Angeles study in October is a perfect example). Recent years and decades, however, have revealed the many inadequacies of planning and development that prioritizes convenient parking above all other considerations. The public conversation and the will of politicians has yet to catch up to the preponderance of evidence about the negative effects of parking, and more work will be required in implementing rational parking policies in communities of all shapes and sizes.

That's where Parking Management for Smart Growth, by Richard Willson, Ph.D., FAICP, comes in. Building on the groundwork of the seminal The High Cost of Free Parking by Donald Shoup, Willson provides a practical guide to implementing new models of parking management—strategies that make more productive uses of the spaces that have been inefficiently devoted to the storage of cars for so long.

Planetizen shares this excerpt from the first chapter of Parking Management for Smart Growth in the hopes of keeping the discussion about parking at the forefront of contemporary planning practice, and in the hopes that the public will have more opportunities to inform their opinions about the impacts of parking on the quality of life of their communities. -James Brasuell

From “Chapter 1. Introduction: What is a Parking Space Worth?”

On the surface (pun intended), the parking space is mundane. It sits passively, is often unsightly, and performs one function—storing a vehicle. Worse, it is empty much of the time. Residential parking is underused during the day when people are at work, and workplace parking is underused in the evening when people are at home.

Yet parking is a central issue in community development and a big part of the daily lives of city administrators, residents, employers, employees, and retailers. Disparate stakeholders who agree on nothing else unite in their dissatisfaction with parking.
For many, a free parking space is a right, and it should be available directly in front of their destination. So, while the parking space is passive, the opportunity and excitement lies in how it is used. Recognizing the importance of the “sharing” economy, in which technology facilitates frictionless sharing of resources rather than ownership, provides a model for parking management opportunities. Downtown curb parking (on-street surface parking in the public right-of-way), for example, has always had qualities of the sharing economy—it is collectively owned, managed for efficient use, used by many different people over the course of the day. The question is: how can sharing economy concepts make better use of existing parking?

The “worth” of a seemingly generic parking space varies. Some spaces serve dozens of parkers per day, whereas others are seldom or never used. A never-used parking space is worthless—in the sense of not serving any transportation purpose. At the same time, that parking space has onetime and ongoing costs for land, construction, administration, and maintenance. A recent estimate placed the annualized capital and operating cost of one space at $8,235 for a suburban surface lot, $28,778 for an urban three-level structure, and $54,000 for an underground central business district (CBD) space (Nelson\Nygaard and Dyett & Bhatia 2012). Parking also has opportunity costs, such as other forgone uses for that land or building area, and negative externalities, including polluted storm water runoff, heat island effects, and negative design impacts. Strategic parking management reduces the number of worthless spaces so that less total parking can provide the desired land use and transportation benefits.

This era of tighter parking supplies requires strategic parking management. Parking management reduces the need to build parking for future development and allows parking supply to be reduced if better uses exist for the land or building area. The latter instance occurs when on-street curb spaces are converted to parklets, bicycle corrals, sidewalks, outdoor dining, or bus lanes, and more productive land uses replace off-street surface parking. Finally, parking management improves the prospects for the development and use of alternative travel modes. For example, higher parking charges induce some travelers to walk, bicycle, use transit, or be dropped off.

The benefits of strategic parking are broad and meaningful and extend beyond parking itself. Strategic parking management memorializes goals, implementation commitments, and phasing. It offers a managed implementation process as well as stakeholder and public agency accountability. As with any plan or strategy, however, benefits are not limited to the direct outcomes. Strategic parking management also has benefits as a process: it brings stakeholders together to share concerns, educates stakeholders about parking management and broader community development issues, and coordinates the many parties involved in parking. This can lead to new forms of coordination and collaboration, new institutional relationships, and heightened deliberative capacity concerning parking. Finally, strategic parking management bridges product and process in generating ongoing management of parking resources and systems with real-time information, adjustment procedures, and coordination protocols.
Without parking management, parking is a free-for-all—a competitive sport—with arbitrary winners (those lucky enough to find a prime space) and losers (those who don’t find one). In mixed-use districts, shoppers, employees, and residents compete for the same spaces. The classic case is on-street parking in front of a store. The store owner may arrive first thing in the morning and enjoy the convenience of parking there, as may the store’s employees. Over the course of the day, though, perhaps ten or fifteen customers could park in each of the spaces, or the space could be used by many more customers picking up bulky items or by trucks delivering inventory.

Which of these is the better use? Without parking management, that question is not asked. Instead, parking is on a first-come, first-served basis, resulting in costly unintended impacts.

Parking is a contested space because many uses compete for the land or building area the parking occupies. An on-street parking space can be used for traffic lanes, bus lanes, bus stops, bicycle lanes, sidewalks, or sidewalk bulb outs. Tactical urbanists propose parklets, sidewalk cafés,
performance spaces, and many other uses. Spurred by the “complete streets” movement, communities are considering the opportunity cost of devoting scarce public rights-of-way to parking. In the suburbs, urban designers, economic developers, investors, and real estate developers consider vast swaths of underused off-street parking and envisage other uses—parks and open space, bioswales, street-oriented infill development, mixed-use development, transit terminals and the like.

Parking is also a contested space because it is an extension of the driver’s personal domain. Unlike walking, bicycling, or transit—where people share public spaces—drivers experience their car as an extension of personal space, a part of their home. Improvements in vehicle technology have reinforced this feeling. Drivers view the world through the windshields of dimensions similar to their high-resolution televisions, with windows up, air-conditioning or heat on, audio entertainment provided, and perhaps their e-mails being read to them. Considering these features and the time spent in the car, it is easy to see how this space is an extension to the driver’s home. Seen this way, a driver’s perspective when looking for a parking space is that what is at stake is the driver’s home, rather than finding storage for a mobility machine. The heightened emotions brought to parking issues highlight this critical perception.

Parking management should anticipate the future because economic, social, technological, and environmental conditions affect the types of strategies that should be used. Thinking about parking’s use value is an important step in creating better land use and transportation policy. This perspective is reflected in the transition from parking as a component of real estate to parking as a service that is responsive to neighborhood or district goals (Gander 2014). Even if a parking space is well used, however, that does not mean that it should exist. Parking spaces are often occupied because the deck is stacked against alternative transportation modes—they are not available or convenient. Communities with aggressive plans for transit and active transportation need strategic parking management to make those plans effective.

The aim of *Parking Management for Smart Growth* is to guide practitioners to use the existing parking supply to produce the maximum community benefit and open the door to parking requirement reform and future shrinking of the parking supply. Obviously, the ratio of spaces per vehicle could never be 1:1, since private garages in single-family homes will never be shared by different uses, but many other forms of sharing are possible. Strategic parking management reduces the ratio of parking spaces per vehicle while increasing economic vitality and stakeholder satisfaction. Local public agencies and private/public partnerships should fully exhaust strategic parking management before resorting to requiring or building additional parking. This is a reversal of traditional practice, which mandates parking first (through ordinances and public parking construction) and then adopts minimal parking management techniques, if any. Rather, we should fully use available parking management measures to address parking issues before building any more parking.


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