IPI INTERNATIONAL PARKING INSTITUTE
CONFERENCE & EXPO

Appendix 26

The Value of On-Street Parking

A Recommended Approach To Prioritizing Uses Of On-street Public Right-of-way.

Dennis Burns, CAPP
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Nashville TN 2016 MAY 17-20

#IPIConf

Introductions

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Presentation Overview

- On-Street Parking Overview
- Competing Uses
- Planning Considerations
- Management Strategies
- Audience Engagement Exercise
- Changing Technology Landscape
- Prioritization Strategies
- Value Calculations
- Q & A / Discussion

Introduction

- This presentation looks at the importance of on-street parking management from the perspective of managing curb-lane uses and public right-of-way in urban environments.
- It will address the escalating and often competing uses for this valuable real estate.
- It also provides recommended approaches to estimating the value of an on-street space and strategies for prioritizing their uses.

On-Street Parking
A Brief Overview

On-Street Parking Overview

Characteristics of On-Street Parking

- On-Street parking is a critical resource for supporting retailers and other businesses
- It is usually the most convenient parking option for retail customers (and employees)
- This convenience (value) should translate to higher cost

On-Street Parking Overview

Characteristics of On-Street Parking

- The need to promote turnover is the key on-street parking issue
- Revenue generation is a secondary issue
- Enforcement is a requirement, but it must be balanced with public education, perception and acceptance
- Most experts suggest that on-street parking should be priced higher than off-street parking

Audience Engagement

Question 1:

By a show of hands, how many of your programs have on-street rates that are higher than off-street rates?

On-Street Parking Overview

Characteristics of On-Street Parking

- Like any valuable resource, public right-of-way must be managed to be used effectively and efficiently
- Key areas include:
  - Understanding the value of these assets and prioritizing uses based on local needs
  - Set policies and regulations for maximum community benefit in alignment with larger strategic and transportation program goals
  - Defining, communicating and enforcing regulations
  - Measuring and tracking what is happening

Management Focus Areas

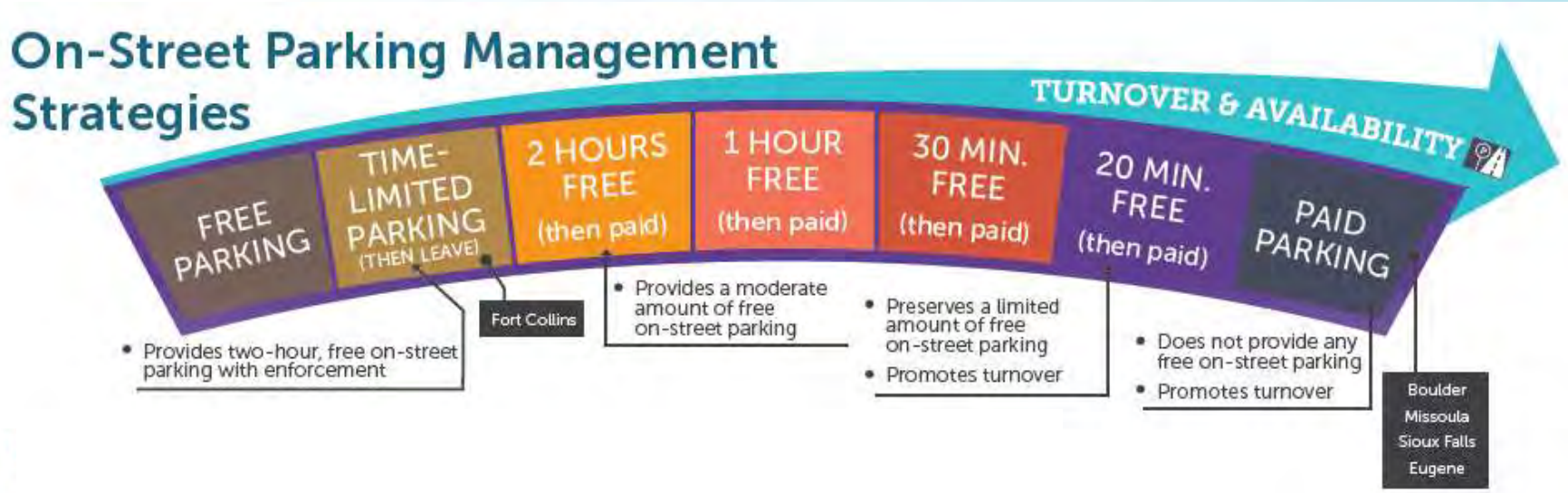
- Management Philosophy
- ADA Parking
- Time Limits
- Metered Parking
- Occupancy Monitoring
- Enforcement
- Fine Structures
- Electric Vehicles
- Pricing
  - Relationship of On and Off-Street Pricing
  - Demand-Based Pricing
  - Progressive On-Street Pricing

On-Street Parking Overview

Management Focus Areas

SPECTRUM OF PARKING ALTERNATIVES

- A combination of approaches and strategies is necessary to achieve the vision and objectives for parking and access downtown.
- These will vary based on each community/area.



On-Street Parking Overview

Management Strategies

- Enforce regulations
- Proper Program Goals
  - Keep folks honest and in overall compliance with the law
  - Unwise Enforcement Goals
    - Revenue, revenue, revenue
    - Ticket every violator

- Key Utilization Measures:
  - Meter Occupancy
  - Illegal Meter Occupancy
  - Capture Rate
  - Duration

Key Metrics:

- 85% - 90%
- 5% - 7%
- 33% - 40% (in core)
- 67% - 140% of regulated duration

Audience Engagement

Question 2:

Another interesting metric, suggested by a colleague, incorporates both "occupancy and price" to calculate what is in effect an "effective rate yield" measurement.

Is anyone in the room using this methodology?

On-Street Parking Overview

Management Strategies

- Measure and track what is happening
- Typical On-Street Management Information
  - Occupancy rate
  - Turnover rate
  - Average duration
  - Violation rate
  - Capture rate (% ticketed)
  - Average time to ticket
  - Disabled placard usage
  - Impact of non-residents

Parking Space Type	Average Turnover	Average Duration	Number of Time Violations
30-Minute	6.39	43 Mins.	35
1-Hour	5.71	1 hr. 8 Mins.	63
2-Hour	4.17	1 hr. 10 Mins.	59
Disabled	2.00	1 hr. 7 Mins.	NA
Unlimited	3.23	1 hr. 52 Mins.	NA

On-Street Parking Overview

Management Strategies

- The key to an effective parking enforcement program is attitude, consistency and fairness.
- Effective Strategies
  - Restructuring Fines
    - More forgiving on the front end
    - Escalating Fine Structure for Repeat offenders
    - Incentives for prompt payment
  - Ambassadorial Model & Other Strategies
    - Certified Tourism Specialist (City of San Antonio)
    - "Meter Angels" (Downtown Boulder, Inc.)
    - "Howdy Pardner!" (City of Cheyenne)
    - Holiday Ticket Amnesty Programs (Downtown Boulder, Inc.)
  - Residential Parking Permit Programs

Management Strategies

- **Parking fine structures should be developed to address the specific problems you are trying solve.**

  - In the example to the right, the fine structure was modified to be more forgiving to infrequent violators (typically visitors) and more punitive on repeat offenders (typically employees parking in short-term spaces.
  - In addition, incentives are built into the fine structure to promote prompt payment and thereby improve the citation collection ratio.

Overtime violation within 12-month period	Current Amount	Proposed Amount	After 8 days fine increases to:
1st overtime	$10	Warning	N/A
2nd overtime	$20	$10	$20
3rd overtime	$40	$25	$50
4th overtime	N/A	$50	$75
5th overtime	N/A	$75	$100
6th or more…	N/A	$100	$150

On-Street Parking Overview

Management Strategies

- The same issues apply all over the planet.
- Paul Barter consults on parking in Asia and Africa
- **Here are his "Unglamorous secrets to success":**
  - Establish clear rules and communicate with clarity where and when parking is legal or illegal
  - Build enforcement capacity (with supporting institutions)
  - Establish a trustworthy system for levying parking fees per unit of time (per minute or per hour for example)
  - Establish at least basic parking data collection capacities (initially very simple inventory and occupancy surveys for problem areas are enough, with duration surveys if possible)

Paul Barter, Reinventing Parking Blog

Changing Technology Landscape

Changing Technology Landscape

- Meter Technology
- Communications Technologies
- Sensors and Space Monitoring
- **Integrated "Smart Parking"** Systems
- Integrated Transportation Systems
- In-Car Information Systems
- **"The Connected Traveler"**
- **Impact of the "Sharing Economy"**
- Autonomous Vehicles

Changing Technology Landscape

Technology Applications

- Meters
  - Single-Space Credit card Meters
  - Pay-By-Space
  - Pay & Display
  - Pay-By-License Plate
  - In-Car Meters
- Sensor Systems
- Pay-By-Cell Phone
- Mobile Apps
- Toll Road Integration
- Mobile License Plate Recognition
- Parking Guidance Systems

- Integration of on and off-street parking systems?

Competing Uses

On-Street Parking Overview

Competing Uses

- One of the new trends we are seeing around the country is an escalation of new uses for curb-lane space and public-right-of way.

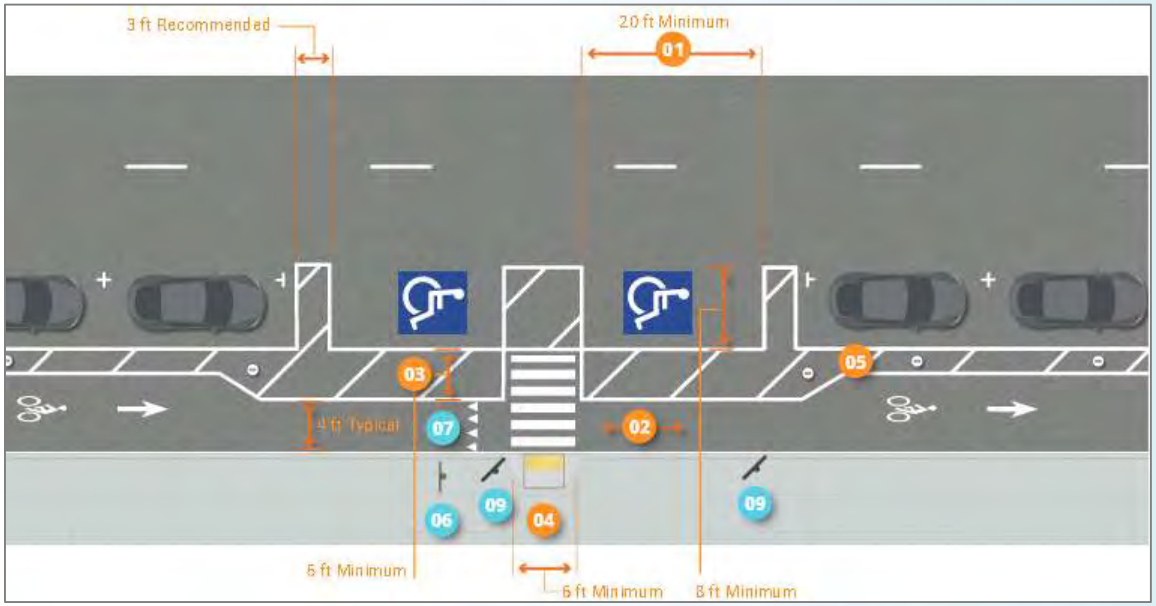
- With curb-lane space being a limited (and often diminishing) resource, developing effective policies to prioritize these resources is increasing in importance.

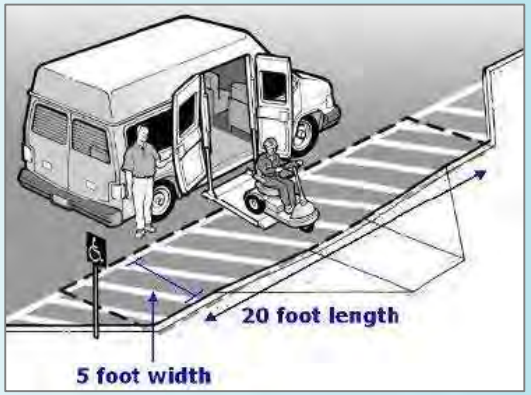
On-Street Parking Overview

Competing Uses –
Short-term Parking

On-Street Parking Overview

Competing Uses –
Accommodating ADA Requirements



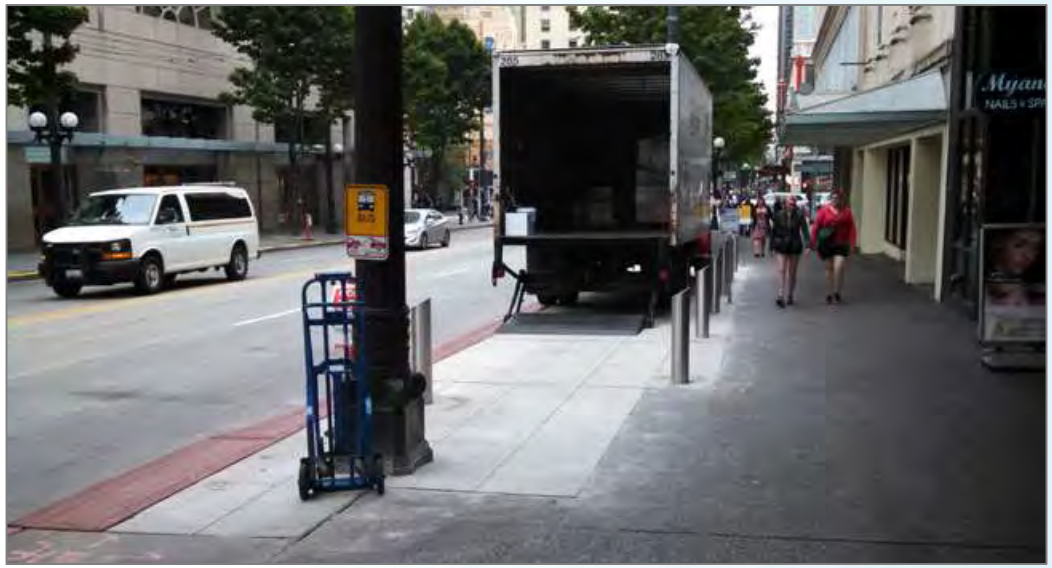


On-Street Parking Overview

Competing Uses –
Accommodating Bus Stops

On-Street Parking Overview

Competing Uses –
Accommodating Loading Zones



On-Street Parking Overview

Competing Uses –
Accommodating Bike Lanes, Bike Corrals & Bike Share Stations

On-Street Parking Overview

Competing Uses –
Accommodating Valet Parking

On-Street Parking Overview

Competing Uses –
Accommodating Dedicated Spaces

On-Street Parking Overview

Competing Uses –
Accommodating Parklets

On-Street Parking Overview

Competing Uses –
Accommodating Walkability Enhancements and Complete Streets Design

On-Street Parking Overview

Competing Uses –
Accommodating Construction

Audience Engagement

Question 3:

How many folks in this room are beginning to reassess your programs to accommodate less on-street parking in the future (to account for the impacts of the sharing economy, autonomous vehicles, complete streets and other competing uses)?

Planning Considerations

Planning Considerations

- Urban design
  - Street-scape enhancements
  - Open-space
  - Landscaping
  - Historic preservation
  - Walkability
  - Bike lanes/Multi-use paths
- Complete streets
- Form-based code

Planning Considerations

- Access Management and Parking Strategies

Access Management & Parking Strategies

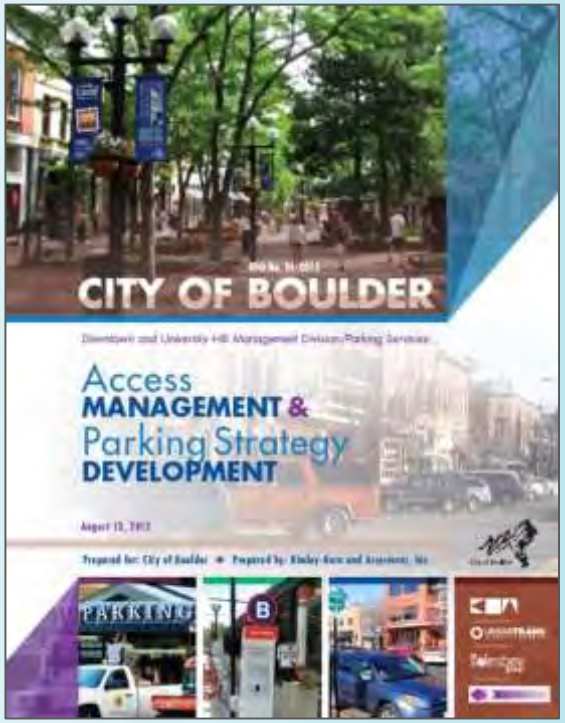
AMPS

AMPS AREAS OF FOCUS

1. District Management
2. Parking and Access Management
3. Transportation Demand Management
4. Technology and Innovation
5. Zoning and Code Requirements
6. Enforcement and Compliance
7. Performance-Based Pricing

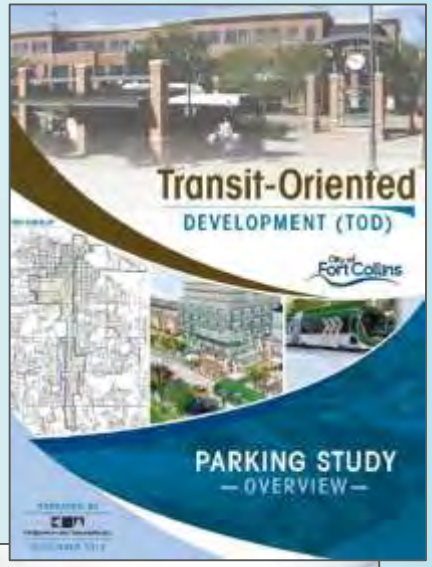
AMPS PROJECT DELIVERABLE CATEGORIES

- FUNDING STRATEGIES
- NEW TECHNOLOGY APPLICATIONS
- SUPPORTIVE OF CLIMATE COMMITMENT
- SUSTAINABILITY / TRIPLE BOTTOM LINE
- POLICIES AND REGULATIONS
- MULTIPLE PLAN INTEGRATION
- COMMUNICATIONS STRATEGIES
- NEW PROGRAM DEVELOPMENT / CURRENT PROGRAM REFINEMENT



Planning Considerations

- Transit Oriented Development
- Parking Requirements Reform
- Multi-Modal Strategies
- Shared Parking
- Sustainable Urban Management Principles
- Curb Lane Management



On-Street Parking –

Sub-Set of a Larger Transportation Agenda

On-Street Parking Overview

Management Focus Areas

"Sustainable Urban Mobility Planning"

There is wide consensus that sustainable urban mobility planning contributes to a better quality of life and is a way of tackling transport-related problems in cities more strategically.

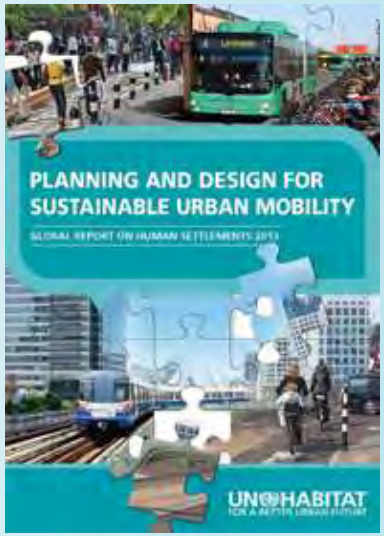
Check out:

https://www.itdp.org/

ITDP Institute for Transportation & Development Policy

On-Street Parking –

Sub-Set of a Larger Transportation Agenda



"Sustainable Urban Mobility Planning"

THE SUMP PLANNING MODEL

- Key elements include:
  - Vision development & goal and strategy setting
  - Identification and analysis of local mobility problems
  - Definition of key measures to tackle the local problems
  - Integrated policies and measures
  - Coordinated processes with complementary processes and plans
  - Stakeholder involvement and citizen engagement
  - Monitoring, process evaluation as well as progress evaluation
  - Implementation and budget plan

On-Street Parking –

Sub-Set of a Larger Transportation Agenda

SUMP "Boulder Style"

- Shared
- Unbundled
- Managed
- Priced

On-Street Parking –

Sub-Set of a Larger Transportation Agenda

- Congestion Management
- Dynamic Pricing
- Systems Integration
- Residential Permits
- Urban Design Considerations
- Sustainability Considerations

On-Street Parking –

Sub-Set of a Larger Transportation Agenda

The mission of the District of Columbia Department of Transportation is to:

Develop and maintain a cohesive, sustainable transportation system that delivers safe, affordable, and convenient ways to move people and goods — while protecting and enhancing the natural, environmental, and cultural resources of the District.

OVERVIEW

- Sustainability Plan
- EMS
- Climate Change
- Environmental Manual
- Great Streets Initiative
- AWI Design Guidelines
- Green Highways Partnership
- Green Alleys
- Bicycle Program
- LID
- CSS

d. delivers
district department of transportation

THE VALUE OF ON-STREET PARKING

On-Street Parking –

Sub-Set of a Larger Transportation Agenda

Core Values and Functions:

1. Safe Passages
2. Sustainable Living
3. Capital Assets
4. Prosperous Places
5. Firm Foundation

On-Street Parking –

Sub-Set of a Larger Transportation Agenda

- SF Park
  - City of San Francisco / FHWA
- LA Express Park
  - City of LA / FHWA

On-Street Parking –

Sub-Set of a Larger Transportation Agenda

- Mobility Lab
  - Arlington County Virginia

- Center for Urban Transportation Research (CUTR)
  - University of South Florida

Audience Engagement Exercise

THE VALUE OF ON-STREET PARKING

Klein On-Street Parking Survey - May 2016

City	State	MeterSpaces	Population
New York	NY	81,875	8,000,000
Los Angeles	CA	37,000	4,000,000
Norwalk	Ct	250	87,000
Philadephia	PA	15,000	1,600,000
Victoria	BC	1,950	420,000
New Haven	CT	3,000	135,000
Las vegas	NV	950	550,000
Baltimore	MD	12,000	622,000
Portland	MN	1,610	65,000
Portland	MN	1,625	62,000
Hartford	CT	1,568	124,000
Sacramento	CA	5,800	485,199
Lancaster	PA	1,000	100,000
City of Santa Cruz	CA	1,922	60,000
Austin	TX	7,200	900,000
Houston	TX	9,500	2,196,000
Houston	TX	9,200	2,200,000
Lexington-Fayette Cc	KY	1,200	310,000
Mobile	AL	412	200,000
Omaha	NE	4,800	915,312
San Francisco	CA	10,000	5,000,000
Anchorage	AK		300,000
Lincoln	NE		268,000
Allentown	PA		118,000
Fayetteville	AR		74,000

Review of Survey Data

Base Info

Review of Survey Data

Key Ratios

Klein On-Street Parking Survey - May 2016

City	MeterRev	TicketRev	Meter+TicketRev	TotalRev/Space/Year	MeterRev/Ticket/Rev
New York	$1,000,000,000	$565,000,000	$1,565,000,000	$19,115	1.8
Los Angeles	$57,000,000	$147,000,000	$204,000,000	$5,514	0.4
Norwalk	$420,000	$800,000	$1,220,000	$4,880	0.5
Philadephia	$52,000,000	$15,000,000	$67,000,000	$4,467	3.5
Victoria	$5,076,000	$2,000,000	$7,076,000	$3,629	2.5
New Haven	$6,000,000	$4,800,000	$10,800,000	$3,600	1.3
Las vegas	$2,000,000	$1,000,000	$3,000,000	$3,158	2.0
Baltimore	$14,291,961	$21,080,016	$35,371,977	$2,948	0.7
Portland	$2,353,118	$2,202,164	$4,555,282	$2,829	1.1
Portland	$2,100,000	$1,850,000	$3,950,000	$2,431	1.1
Hartford	$1,139,000	$2,600,000	$3,739,000	$2,385	0.4
Sacramento	$5,527,906	$8,291,057	$13,818,963	$2,383	0.7
Lancaster	$1,000,000	$1,200,000	$2,200,000	$2,200	0.8
City of Santa Cruz	$2,690,428	$1,400,064	$4,090,492	$2,128	1.9
Austin	$11,000,000	$4,000,000	$15,000,000	$2,083	2.8
Houston	$8,575,200	$9,705,000	$18,280,200	$1,924	0.9
Houston	$7,446,000	$9,705,000	$17,151,000	$1,864	0.8
Lexington-Fayette Cc	$933,304	$859,432	$1,792,736	$1,494	1.1
Mobile	$329,474	$242,520	$571,994	$1,388	1.4
Omaha	$3,700,000	$480,000	$4,180,000	$871	7.7
San Francisco	$2,000,000	$4,000,000	$6,000,000	$600	0.5
Anchorage	$1,850,820	$783,008	$2,633,828		2.4
Lincoln	$2,100,000	$620,000	$2,720,000		3.4
Allentown	$1,313,417	$1,849,334	$3,162,751		0.7
Fayetteville	$1,500,000	$76,000	$1,576,000		19.7

Recommendations

- Resource Prioritization Guidelines
- Metrics and Valuation Approaches
- Conclusions

On-Street Resource Prioritization Examples

Resource Prioritization

City of Seattle – SDOT

High

- Emergency Vehicles – Unpredictable, Temporary Highest Priority
- Mobility Permit Holders – Short-stay, Convenient, On & Off-Street
- Public Transport – Very Short-stay, good pedestrian access
- Cyclists – Close to destinations and public transport hubs
- Construction – Temporary, Allows for construction loading
- Loading – Short-stay, convenient to business entrances
- Motorcyclists – Close to destination entry points
- Taxis – Short-stay, dedicated on-street to improve legibility
- Visitors – Short-stay (1 – 4 hrs.), w/in reasonable walking distance
- Public Transport (Layovers) – Short-**stay to minimize "dead running"**
- Commuters – Long-**stay "9 to 5" employees**

Low

Resource Prioritization

City of Charlotte – Curb Lane Management Study

- Priorities developed in conjunction with **development of "Street Typologies"**

Resource Prioritization

City of Charlotte – Curb Lane Management Study

- Priorities developed in conjunction with **development of "Street Typologies"**

Street Typology Designation:
SIGNATURE STREET
Curb Lane Use Priorities:

1. Transit Operations
2. On-Street Parking (Non-peak)
3. Commercial Loading
4. Passenger Loading (Taxi, valet, etc.)
5. Vehicular Capacity
6. Other (Car Sharing, Electric Vehicles, etc.

Street Typology Designation:
PRIMARY/SECONDARY STREET
Curb Lane Use Priorities:

1. Vehicular Capacity
2. Transit Operations
3. On-Street Parking (Non-peak)
4. Commercial Loading
5. Passenger Loading (Taxi, valet, etc.)
6. Other (Car Sharing, Electric Vehicles, etc.

Estimating The Value of an On-Street Space

Defining the Value of an On-Street Space

- Calculating the value of an on-street parking space is not an exact science, but experts agree on the importance of on-street parking to retailers.

"Each on-street parking stall can generate up to $300,000 in annual retail sales. The importance of having stalls available to the shopper cannot be over-emphasized."

Bob Gibbs

Gibbs Planning Group

Fort Collins Downtown Retail Assessment Report

- Earlier Michael discussed on-street space value from a parking revenue perspective.

Defining the Value of an On-Street Space

- Following are a few examples of how the value of an on-street parking space might be calculated.
- Or, put another way: How do we quantify the high cost of employee parking in short-term parking spaces?
  - The quote from Bob Gibb's noted on the previous slide ($300K in retail sales/space) got a lot of media attention, but also drew some heavy skepticism.

Defining the Value of an On-Street Space

An example from a smaller community…

- There are approximately 8,400 employees in downtown Fort Collins.
- If only 5% of those workers use customer parking spaces, 420 spaces would be unavailable to shoppers.
- If each space turned over four times per day, they would accommodate 1,680 shopper trips.
- If each car carried 1.5 customers, there would be 2,520 customers.
- If a quarter those customers went elsewhere to shop and each customer spent $10.00, the total loss per day would be $6,300.

- Annualized at six shopping days each week, the total loss would amount to nearly $2 million in Downtown revenue.
- Obviously this impacts the merchants, but it also impacts the municipality in terms of lost sales tax revenues.

Defining the Value of an On-Street Space

Another model from the Maine Downtown Center:

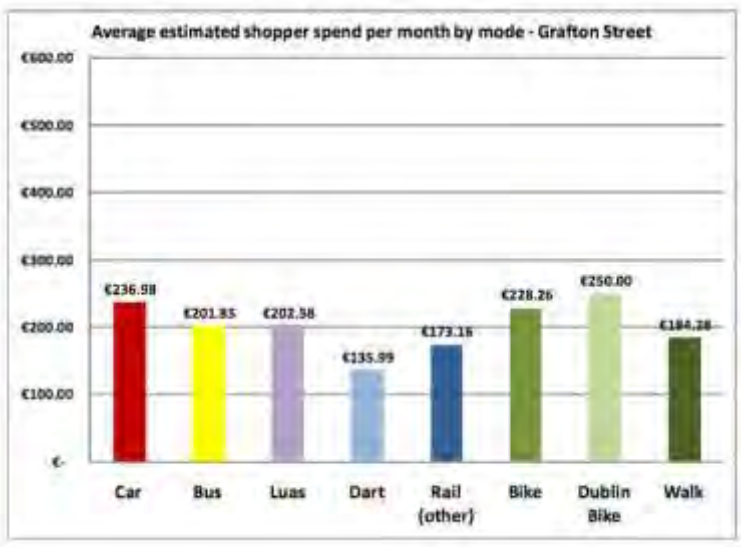
Just like real estate, values vary by region and economic factors.

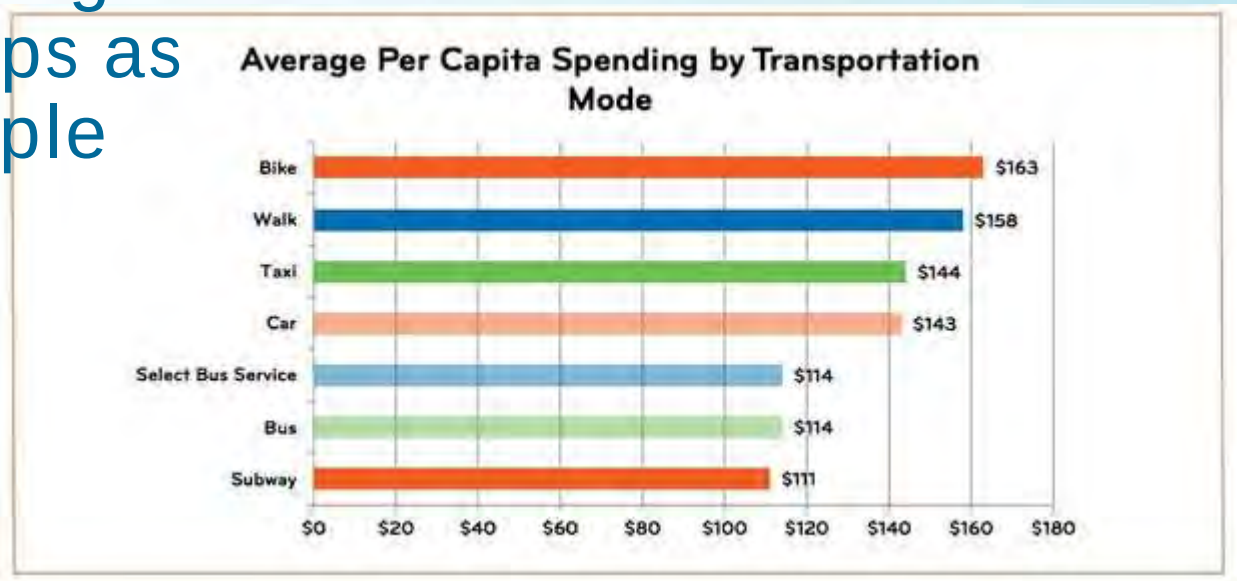
*Total annual sales generated by Main Street businesses:**	**$ _____**
MINUS *Sales made to those who live or work in the district:*	- $_____
MINUS *Sales made to those who get to the district by public transit, walking or biking:*	- $_____
EQUALS *Total sales made to those who drive to the district to shop:*	= $_____
DIVIDED BY *Number of parking spaces available in the given area:*	_____
EQUALS *Sales made per parking space per year:*	= $_____
DIVIDED BY *52 weeks in the year:*	52
EQUALS *Sales made per parking space per week:*	= $_____
DIVIDED BY *Average days / week the district's businesses are open:*	_____
EQUALS *Average sales made per space per day of business:*	= $_____

* (If you don't have a more accurate estimate, estimate $200,000 per retail store, service business, and professional office – slightly more for economically thriving districts, slightly less for economically struggling districts)

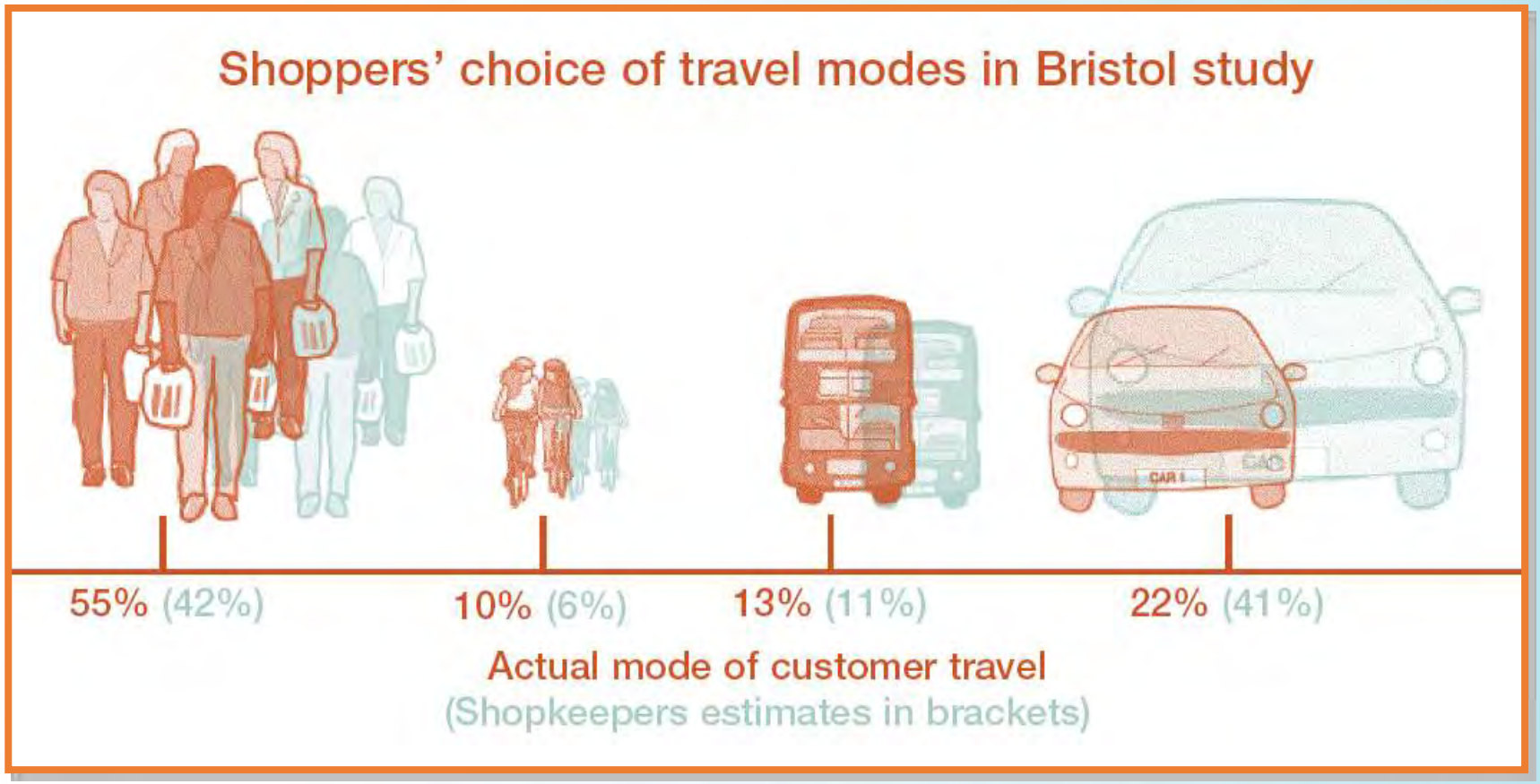
Defining the Value of an On-Street Space

- Others argue that the spending patterns by mode choice are not as heavily weighted to auto trips as most people think.





Defining the Value of an On-Street Space



Source: UrbanTrans Australia

Defining the Value of an On-Street Space

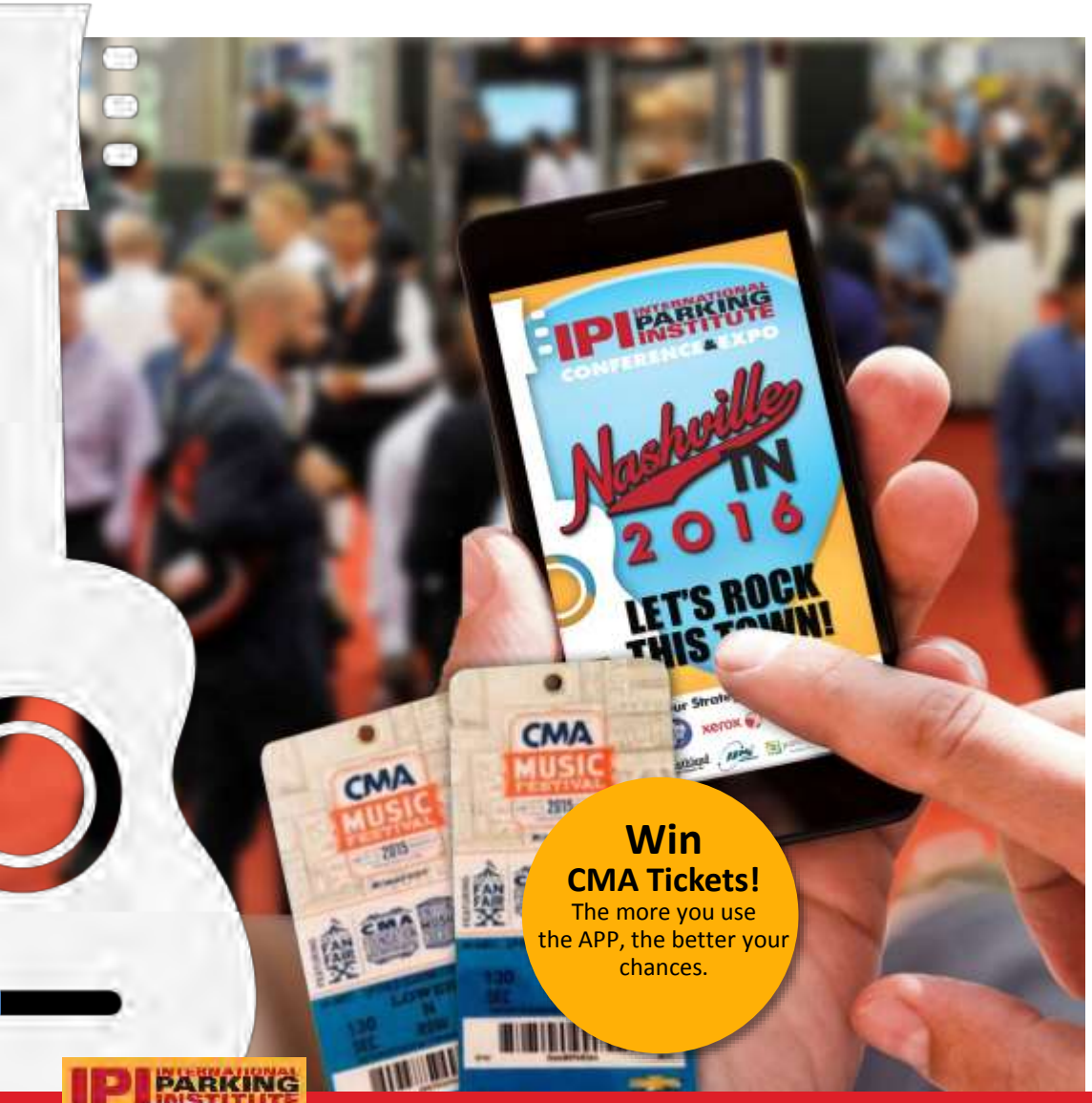
Another model from Australia used a similar methodology to the example above but took it another step by taking the retail revenue per hour/per space and reducing it further to a **"revenue per hour per square foot" metric.**

This allowed them to consider the impact and benefit of replacing auto spaces with bike parking.

Conclusions

- On-Street parking is just one possible use **for valuable "curb-lane real estate".**
- As parking professionals, we should objectively define the value of these assets as we consider how best to prioritize the **use of these limited resources (if we don't** want to lose them).
- It is also critical for us to step back and objectively consider the best uses of these spaces within the larger context of the environments we are serving.

Q & A / Discussion



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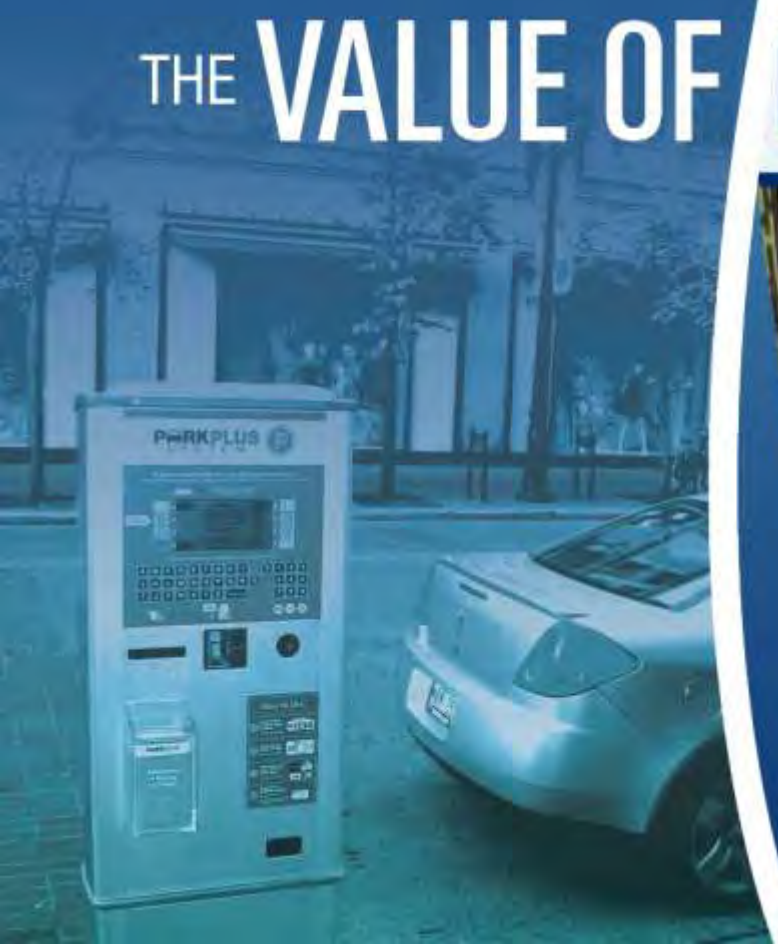
A Recommended Approach To Prioritizing Uses For On-Street Public Right-of-Way

THE VALUE OF ON-STREET PARKING



Klein & Associates.

Kimley»Horn
Expect More. Experience Better.

Update on Parking Requirements Reform

Downtown Development and Future Parking Needs Study

Report Version: 1.0

Prepared for:

DMC Transportation & Infrastructure Program
City of Rochester, MN

Prepared by:

SRF Consulting Group, Inc.
Kimley»Horn

Date: 12/3/2016
DMC Project No.: Rochester J8618-J8622 Parking/TMA Study

Table of Contents

File Name: Rochester J8618-J8622 Parking/TMA Study_Task_Parking_Requirements_Reform_Update_12-06-2016.

Update on Parking Requirements Reform

Introduction

This report is intended to be supportive of and a supplement to the recent work by the City, Olmsted County Planning and Nelson Nygaard's work related to Interim Zoning Code updates. It will be important to integrate all of these recent updates and the information contained in this draft report to ensure consistency and coordination moving forward.

Rochester Parking/TMA study will address a wide range of parking and access management program elements including parking management strategies, economic development, planning, operations, communications, technology, shared mobility strategies and others. The field of parking and access management has advanced significantly in recent years with new programmatic and strategic planning approaches, emerging best practices, and technology solutions that can transform and expand the positive role that parking can play in helping communities achieve success.

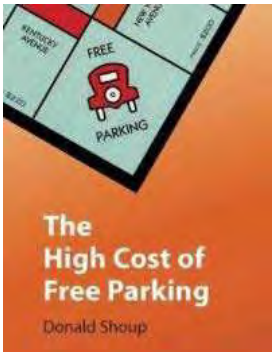
A primary objective of this planning effort is to align parking system philosophies and programs to be more supportive of the DMC Development Plan specifically, and the City's larger community and economic development goals in general. There are many opportunities for parking to be integrated into larger community and economic development strategies. The development of effective and collaborative relationships between parking management and downtown stakeholders can transform and greatly enhance the vitality of downtown environments. Parking and Transit are two areas that literally provide millions of "customer touches" each year. Improvements to the ease of use of parking and access customer service can have a dramatic impact on how a community is perceived and on the success of community businesses and the livability of its neighborhoods.

This specific document explores the changing approaches to municipal parking requirements (what is now be referred to a "parking requirements reform") as well as new approaches to parking facility development and financing. It also offers the City an opportunity to expand the way parking is viewed and describes the important role parking plays in creating vibrant, healthy communities and business districts. The report also promotes the philosophy that rather than focusing on parking in isolation, there needs to be a greater focus on overall downtown access. In other words, parking should be viewed as being an integral component of a community access strategy, rather than a discipline in isolation from the larger transportation

system. This broader focus on "access management" while keeping a focus on the importance of parking specific issues provides a more balanced and sustainable community transportation system.

In summary, by evolving the parking program to better support the overall DMC plan and downtown and community development objectives, the parking and access management program can better support opportunities to better align parking and economic development, deliver a more comprehensive and sustainable approach to community access strategies, and establish more collaborative relationships with related agencies and community partners.

Parking Requirements Reform – The Scholarly Debate



This section of the report explores several important topics that are very relevant to this study. There is in fact a serious and significant national discussion occurring related to benefits and problems associated with the ubiquitous use of minimum parking requirements across the US and the world. Professor Donald Shoup, author of the "High Cost of Free Parking" and a Distinguished Professor of Urban Planning at UCLA, has led the charge in this area; promoting how better parking policies can improve cities, the economy, and the environment. Shoup recommends that cities should charge fair market prices for on-street parking, use the meter revenue to finance added public services in the metered neighborhoods and remove off-street parking requirements.

Recently several other noted academicians and planners have weighed in on the discussion of the importance of parking in general, expanding the research related to minimum parking requirements and proposing new options for how cities should approach these issues. We will focus on three publications. The first is a book entitled "Parking Management" published by Mr. Todd Litman, founder of the Victoria Transport Policy Institute. The second is a recently published book by Richard Willson entitled: "Parking Reform Made Easy". The third is a book by Eran Ben-Joseph entitled: "Re-Thinking A Lot – The Design and Culture of Parking".

However, before we launch into that discussion, there is another key issue worthy of exploration – the surprising importance of parking to Transit Oriented Developments.

Parking and Transit Oriented Developments

The following is an excerpt from an article by Mark Gander, Principal Planner; Director of Urban Mobility and Development at AECOM and a member of the Board of Directors for the Green Parking Council.

"There are approximately 250 million registered vehicles (2010) in the United States. When these vehicles are not in use, which accounts for more than 90 percent of their time, they must be parked. Because of this, off-street parking space availability is ubiquitous; its footprint is vast in scale. As MIT Professor of Landscape Architecture and Planning Eran Ben-Joseph recently noted, in some U.S. cities, parking lots cover more than a third of the land area, becoming the single most salient landscape feature of our built environment. This ubiquity is further compounded because cities require parking everywhere, yet ironically its absence is noticed most."

"The ubiquity of parking is not accidental: Parking matters. It plays an important role in the success of cities, communities and places as well as in the development of mixed-use projects and sustainable transportation. Parking supply and pricing often have a direct impact on the ability to create compact, healthy communities. Too much parking at residential properties correlates with more automobile ownership, more vehicle miles traveled, more congestion, more carbon emissions, and higher housing costs. It also results in lost development opportunity because excess parking area could have been used instead for residential or commercial development or public realm uses such as parks and plazas."

Parking also has both direct and indirect environmental consequences. Direct environmental impacts include excessive land consumption, increased storm water flows, degraded water quality, and exacerbated heat island effects. Additionally, parking structures themselves use substantial amounts of natural resources and energy to construct and require on-going maintenance to operate. In many cases parking structures are seen as unsightly when they are not internalized in mixed-use buildings or wrapped by liner buildings. Parking also indirectly affects the environment because it influences how and where people choose to travel. Where free and ample parking is provided, people make the rational choice to drive almost everywhere — and these areas register more vehicle miles of travel per capita with resulting increases in greenhouse gases and other pollutants.

Striking a balance between parking supply and development is a crucial challenge in developing the character of urban environments and transit-oriented development (TOD)areas . Residents in urban environments and TOD projects are twice as likely not to own a car as other US households. They're also two to five times more likely to commute by transit than others in the region. On the other hand, residents will need access to cars even if not on a daily basis and commercial establishments require some amount of

parking to service their non-walking clientele. In many cases, developers will be unable to secure financing unless parking is provided.

Unfortunately, many communities have simply applied conventional parking ratios to urban environments and TOD projects. Because such standards have a suburban bias and are based largely on low-density single land uses, they limit the expected community benefits of TOD, and possibly, lead to project failure.

Transit Oriented Development (and urban environments in general) include four foundational elements:

- Development around transit that is dense and compact, at least relative to its surroundings;
- A rich mix of land uses—housing, work, and other destinations, creating a lively place and balancing peak transit flows;
- A great public realm—sidewalks, plazas, bike paths, a street grid that fits, and buildings that address the street at ground level; and
- A new deal on parking—less of it; shared wherever possible; energy efficient and designed properly.

Right sizing parking for urban environments and TODs necessitates a multipronged approach to understanding the existing and projected parking utilization and available supply in and around the project areas as well as the projected demand for new parking once the project is completed. Conducting a diagnostic parking study that is comprehensive and aligned with mobility choices is essential to this effort. Once the facts about demand, price, utilization, built form/development pattern, and household characteristics are understood, then appropriate strategies can be employed.

Key elements include understanding differences among markets, unbundling or separating the full cost of parking from the associated use, and reducing (or eliminating) minimum parking requirements for certain land uses or certain areas. Understanding the parking uses by market and type then make it possible to look for opportunities for implementation of a wide range of measures from new

technology (e.g. smart parking), to specific policies and physical design modification to consolidate and locate parking more efficiently.

To ensure that parking meets the needs of an urban environment or TOD project, while not impacting the TOD's benefits, there are a number of strategies that municipalities can employ working in conjunction with developers to provide the appropriate amount of parking. These strategies can be grouped into several categories, including reduction; demand; design; and pricing. Each of these categories is discussed briefly below.

Reduction

Given the research, along with the information developed by a parking supply and demand study, municipalities should make every effort to reduce the parking requirements for TOD projects. Eliminating parking minimums and instead employing parking maximums for TOD projects will help decrease parking oversupply. Similarly, requiring shared parking where multiple developers combine parking needs into one shared parking lot or structure may also help eliminate an oversupply of parking.

Note: An emerging area for the City of Rochester to keep an eye on is fast moving evolution of what is now being called "Shared-Use Mobility". See attached article on this topic in the appendices.

Demand

Reducing the need for car travel is critical to decreasing parking demand. Municipalities or developers should consider establishing car sharing programs where multiple users have access to a fleet of cars when they need them. Similarly, municipalities and transit agencies could increase incentives for using public transportation, including providing subsidized transit passes, establishing residential parking programs for adjacent neighborhoods backed by parking enforcement, and constructing bicycle parking facilities.

Design

Designing for pedestrians is an important element to right-sizing parking. This requires reducing or eliminating design elements that hamper pedestrian use such as the number and size of curb cuts. It also requires adding elements that provide for greater pedestrian safety and aesthetic appeal. These elements might include constructing pedestrian walkways separated from parking and roads, wrapping parking behind existing buildings, designing the first level of parking structures to include other uses such as stores and restaurants, and adding public amenities like art space or public plazas which incorporate green infrastructure.

Pricing

Pricing is another strategy that can be used to influence how and where parking is used and located within a transit station area. On-street parking can be priced to encourage availability of on-street spots for preferred populations such as short term customers. In this case, the cost of parking for 15 or 30 minutes near shops located in the transit station area might be minimal while parking prices for more than 30 minutes is set quite high. Another strategy is to price parking to reflect parking desirability, i.e. spaces closest to activity hubs and on-street are priced higher than spaces at the downtown fringe and parking garages.

While increasing transit ridership, walking and biking are essential to establishing sustainable and livable communities, the car will continue as the principle mobility choice for years to come. Given this circumstance, municipalities and developers will still have to provide parking for urban environments and TOD projects and the surrounding area, but should do so in a way that is appropriately sized and located.

A Growing Interest in Parking Requirement Reform

In the graphic below, architect and designer Seth Goodman shows how parking and living spaces compare in major cities across the U.S. A more localized version of this research concentrated on the Northwest US is also available as is research on other land uses compared to parking spaces.

The research that focused on the northwest US challenges the common assumption that smaller cities behave more like suburbs in terms of parking requirements. It's a mixed bag. Spokane, Washington and Eugene, Oregon all mimic the requirements of larger cities. Rochester is another good example of this. We should not take for granted that a relatively small population (around 115,000 in the city proper) automatically translates to higher parking requirements. These examples demonstrate that cities don't need Manhattan-like conditions to ease up on parking minimums.

In Auckland, New Zealand, their City Council is debating whether to include traditional parking minimum requirements as an element of their Unitary Plan (comparable to City Comprehensive Plans in the US). The ad to the right illustrates how some advocacy groups are trying to influence the debate.

In the following pages, we examine the origins of parking requirements, the impediments to change, and how these policies can be reformed.

The Case For and the Case Against Reforming Parking Requirements

Background on Traditional Minimum Parking Requirements

According to research published by professors Donald Shoup, Richard Willson and others, in many instances, efforts to accommodate parking have overextended actual need. The approach used by many cities to establish minimum parking requirements is typically a generic formula based on satisfying the maximum demand for free parking. Although this practice allows city planners to err on the side of caution, it has some serious drawbacks. In practical terms, this practice increases the cost of development and creates disincentives with respect to smart growth development and redevelopment. In addition, generic parking requirements create excess parking spaces that consume land and resources, encourage automobile use and associated pollution, and degrade water quality. The oversupply of parking is of particular concern for smart growth development in urban areas where the existing parking infrastructure can be better utilized and parking alternatives, such as shared parking and increased use of transit and pedestrian modes, can be more readily implemented.

With the shifting trend toward urban revitalization over the past decade, the timing is opportune for instituting changes in parking requirements and transportation behavior. An important way to reduce the demand for parking and the need to supply parking to meet maximum demand is to provide transportation choices. This can be achieved by reducing the supply of parking in areas where transportation choices exist and by providing incentives for making other choices. Such changes will encourage infill redevelopment and reduce vehicle miles traveled, mobile source emissions and congestion. They will also increase ridership for public transit and, in turn, provide the additional revenues needed to support public transit improvements.

There are, of course, potential drawbacks to reducing the supply of parking. Lenders, for example, may be unwilling to approve loans because plans do not meet their minimum parking requirements; developers may be concerned about the long-term marketability of their property; and residents may fear that parking will spill over into surrounding residential neighborhoods. Such concerns can be more readily addressed if:

- The factors that affect parking demand are understood;
- Walkable, pedestrian-oriented development design is implemented; and
- Viable transportation choices exist.

Concerns are also alleviated when developers, employers, and employees are aware of programs that balance the attractiveness of other transportation choices. The Transportation Equity Act for the 21st Century (TEA-21), for example, allows businesses to give their employees up to $100 per month in tax free transit subsidies. TEA-21 also allows employees who commute by public transit or vanpool to deduct the cost of commuting from their taxable income if they do not receive a subsidy.

Establishing Parking Requirements

On the Victoria Transport Policy Institute (VTPI) website and in his book on Parking Management, noted planner and transportation consultant Todd Litman does a good job of laying out the traditional approach to establishing parking requirements and makes a strong case for the use of more flexible and localized criteria in creating zoning codes especially as it relates to parking requirements.

In setting parking requirements, planners typically use generic standards that apply to general land use categories (e.g., residential, office, retail). Such standards have been developed and published by professional organizations, including the Institute of Transportation Engineers (ITE), based on experience in many locations. Much of the data on which these standards are based comes from low-density, single-use developments with limited transportation choices. Therefore, the generic parking rates cannot take into account the mix of context-sensitive, community specific variables - density, demographics, availability of transportation choices, or the surrounding land-use mix - all of which influence the demand for parking and should be reflected in parking requirements.

Instead, requirements are based on the maximum demand for parking, when parking is provided at no charge to users, and walking, biking, and transit are not available choices. This formula yields a surplus of parking that is costly for developers to provide, and it subsidizes personal automobile use and encourages auto use even in areas where convenient transportation choices exist. Because of the way in which they are typically established, parking requirements are remarkably consistent across different cities, despite varying levels of economic vitality, population size, and development density.

Alternatively, parking requirements can be established using methods that are better tailored to specific development projects. This approach entails careful

consideration of the following land use characteristics that relate to parking demand:

- Development type and size.
    - Takes into account the specific characteristics of the project.
    - Parking demand is influenced by the size of the development (typically measured by total building square footage), as well as the type of land use (e.g., retail, industrial). Generic parking formulas address these factors to some extent.
- Population and development density.
    - Considers the density and demographic characteristics of the people using the building, including employees, customers, residents, and visitors. Information on income, car ownership, and age distribution also helps in projecting total parking demand.
- Availability of transportation choices.
    - Takes into account the modes of transportation available to employees, visitors, and residents. Proximity of public transportation to a particular development, for example, will reduce parking demand.
    - Walkable neighborhoods and bicycle amenities will also reduce parking demand.
- Surrounding land use mix.
    - Considers the surrounding land uses and density to better understand parking needs, and evaluates whether overall peak demand is lower than the sum of peak demands for different uses. This concept takes the timing of parking demand into account in determining the aggregate demand of multiple uses.
    - The type of community in which a development is located will also affect parking demand. For example, if a project is located in a city's central business district, the availability of general use parking will reduce onsite parking demand. On the other hand, if the development is located in a residential area, on-street parking may be unacceptable to local residents, increasing the need for off-street parking at the development.

Land use and demographic information are important tools for establishing project-specific parking requirements that create a better match of supply and demand for parking than do many generic requirements.

Moreover, adjusting parking requirements downward to reflect realistic demand helps reduce the total cost of development, particularly in urban areas. By reducing cost, a potential deterrent to smart growth development and redevelopment can be removed.

The following table from the VTPI website summarizes a wide range of parking management strategies and indicates typical reductions in the amount of parking required at a destination, and whether a strategy helps reduce vehicular traffic, therefore providing congestion, accident and pollution reduction benefits.

Strategy	Description	Typical Reduction	Traffic Reduction
Shared Parking	Parking spaces serve multiple users and destinations.	10-30%	
Parking Regulations	Regulations favor higher-value uses such as service vehicles, deliveries, customers, quick errands, and people with special needs.	10-30%	
More Accurate and Flexible Standards	Adjust parking standards to more accurately reflect demand in a particular situation.	10-30%	
Parking Maximums	Establish maximum parking standards.	10-30%	
Remote Parking	Provide off-site or urban fringe parking facilities.	10-30%	
Smart Growth	Encourage more compact, mixed, multi-modal development to allow more parking sharing and use of alternative modes.	10-30%	X
Walking and Cycling Improvements	Improve walking and cycling conditions to expand the range of destinations serviced by a parking facility.	5-15%	X
Increase Capacity of Existing Facilities	Increase parking supply by using otherwise wasted space, smaller stalls, car stackers and valet parking.	5-15%	X
Mobility Management	Encourage more efficient travel patterns, including changes in mode, timing, destination and vehicle trip frequency.	10-30%	X
Parking Pricing	Charge motorists directly and efficiently for using parking facilities.	10-30%	X
Improve Pricing Methods	Use better charging techniques to make pricing more convenient and cost effective.	Varies	X
Financial Incentives	Provide financial incentives to shift mode, such as cash out.	10-30%	X
Unbundle Parking	Rent or sell parking facilities separately from building space.	10-30%	X
Parking Tax Reform	Change tax policies to support parking management objectives.	5-15%	X
Bicycle Facilities	Provide bicycle storage and changing facilities.	5-15%	X
Improve User Information and Marketing	Provide convenient and accurate information on parking availability and price, using maps, signs, brochures and electronic communication.	5-15%	X

Improve Enforcement	Insure that parking regulation enforcement is efficient, considerate and fair.	Varies	
Transportation Management Associations	Establish member-controlled organizations that provide transport and parking management services in a particular area.	Varies	X
Overflow Parking Plans	Establish plans to manage occasional peak parking demands.	Varies	
Address Spillover Problems	Use management, enforcement and pricing to address spillover problems.	Varies	
Parking Facility Design and Operation	Improve parking facility design and operations to help solve problems and support parking management.	Varies	

Environmental Impacts of Parking

The significant environmental costs associated with parking are not typically factored into development decisions, and only recently have begun to be considered in setting parking requirements. Construction of unnecessary impervious surfaces increases the impacts of storm water runoff, either on the storm sewer system or the surrounding land. Paved surfaces can also result in water pollution and flooding, resulting in a decline in adjacent property values. Heat islands, or areas of artificially raised temperatures, also are exacerbated by unnecessary pavement.

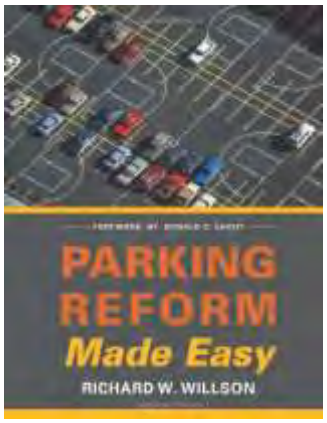
Consuming land for parking also reduces the land available for green space or other, more productive development. Land preserved as part of the green infrastructure allows storm water to percolate into the soil, provides wildlife habitat, provides air quality and noise reduction benefits, and is aesthetically desirable. Land developed for living, working, and shopping rather than just parking provides more intensive use. This lowers the demand to develop other land nearby or elsewhere in the region. Intensifying uses also creates a more supportive environment for transit and walking, and potentially for bicycling as well.

Providing more parking than demanded, and at artificially low prices, contributes to several harmful environmental impacts. First, this subsidy of automobile use leads directly to excess driving. This results in increased auto dependency and air pollution, accidents, and congestion. Second, it indirectly degrades the attractiveness of walking and biking, by increasing distances between activities and creating uninteresting routes.

Third, it indirectly undermines the potential for transit service by decreasing the density potential of development projects.

All of these environmental costs tend to be greater for parking built in green field areas where there is more inexpensive but ecologically-sensitive open space available and where development densities are lower thus requiring more and longer automobile trips. Because these environmental costs are not realized by developers, they do not influence development decisions which are driven primarily by the direct financial costs that are typically lower in green field areas.

Parking Requirement Reform



The following is an excerpt from the book "Parking Reform Made Easy" by Richard Wilson. Richard W. Willson, Ph.D., FAICP, is Professor and Chair in the Department of Urban and Regional Planning at California State Polytechnic University, Pomona.

Parking requirements in zoning ordinances create one of the most wasteful elements of transportation and land use systems: unoccupied parking spaces. Each space requires over 300 square feet of valuable land or building area, yet many sit empty. Minimum parking requirements at shopping malls, for example, often lead to sprawling developments surrounded by large, underused parking lots. Spaces for workplaces may be well-used during the day but remain unoccupied in the evening because they are not shared with other land uses.

Sometimes, the parking required is greater than the amount of parking ever used. Parking is overbuilt and underutilized for two reasons: 1) zoning requires an excessive parking supply, and 2) it prevents efficient sharing of parking among different land uses. Both reasons reflect a legacy of single-use zoning and an automobile-first approach to planning. Minimum parking requirements prevent private developers from responding to market conditions, and lessen developers' interest in sharing parking or developing sites that are accessible without driving. Planners sometimes claim that developers would build the same amount of parking regardless of regulations, but if that's true, then why impose minimum parking requirements in the first place?

Parking requirements should be framed as a means of providing access, not an end. Parking requirements are only one of several ways to ensure storage for private automobiles. Private auto transportation, in turn, is only one of several ways to provide access. To carry out parking reform, we must counteract the decades-old practice of thinking about access in terms of roadways and parking.

Why Parking Requirements?

Early zoning ordinances did not have parking requirements. Zoning sought to manage the external impacts of properties, such as when a new building represented a fire hazard to the structure next door. In the mid-20th century, parking requirements were added to address surface street congestion caused by patrons driving in search of parking. Planners didn't foresee that minimum parking requirements would favor private vehicle travel, lower overall density, and increase traffic.

In surveys conducted in 1995 and again in 2013, local planners in southern California were asked about parking requirements and found a repetitious justification for minimum parking requirements: planners wished to "ensure an adequate number of parking spaces." This response reflects a lack of critical thinking about fundamental public objectives, such as accessibility, economic development, and sustainability. The response also reflects an outdated vision of separated land uses, unrestricted auto-mobility, and plentiful free parking. Thus, many parking requirements are relics that undermine current land use and transportation goals.

The following tables from Richard Willson's book summarize the cases both for and against minimum parking requirements.

The Case FOR Parking Minimum Requirements

- Reduce street congestion around the development site
- Avoid parking spillover
- Create orderly development patterns
- Anticipate possible intensification or changes in the use of a development
- Create a level playing field among developers
- Encourage growth of core areas by increasing parking supply in those areas
- Reduce parking management by making the adjudication of conflicts between property owners unnecessary

The Case AGAINST Parking Minimum Requirements

- Encourages private vehicle usage and lengthens trips
- Adversely impacts transit and alternative modes
- Reduces development density
- Creates inhospitable project design
- Thwarts development and economic activity (little or no direct revenue)
- Makes construction of affordable housing more challenging
- Hampers investment in infill development and adaptive reuse in core areas

Why Change Is Difficult

Some regional and state policymakers recognize that existing parking requirements are excessive, but most have neglected the issue because parking is a responsibility of local governments. Yet parking requirements are crucial to accomplishing federal, state, and regional objectives in transportation, land use, and the environment. There are recent indications that if local governments do not carry out reforms, states may do it for them. In 2012, a proposal in the California legislature (AB 904) sought to override local parking requirements in transit-rich areas. Legislators subsequently tabled the proposal, however, showing the power of local governments to resist state interference in parking policies.

Many local planners know the parking requirement status quo is wrong. They have observed wasted land, turned away restaurant proposals in historic districts, and seen affordable housing not pencil out. Despite these undesirable outcomes, planners have not made changes. Why? Some may feel powerless to change ossified regulations, sensing weak political support and lacking technical expertise to justify changes. Others may want the negotiating leverage that excessive parking requirements provide to extract public benefits from developers. Furthermore, planners know that parking is a key point in NIMBY (not-in-my-back-yard) resistance to development, so avoiding parking controversy can help ensure economic development. In effect, cities are addicted to parking requirements. The addiction is analogous to smoking, where immediate gratification overwhelms future costs.

Change means freeing ourselves of parking dogma, habits, and golden rules. The old reality dictated fixed parking requirement ratios and exhibited an unwillingness to deviate from standard practice, even when it made sense to do so. This approach emphasized precision and uniformity. It undervalues important considerations of local variability, policy relationships, environmental capacity, and human behavior. All the land-use plans, design reviews, and streetscape renderings in the world will not produce desired outcomes if we do not reform parking requirements.

Why Not Eliminate Parking Requirements?

According to national experts, deregulating off-street parking allows markets to determine parking supply levels and provokes a fresh debate about justifications for public regulations and subsidies for all transportation modes. Currently, minimum requirements compel the provision of access for driving and parking, whereas zoning codes seldom impose equivalent requirements for bus, bicycle, or pedestrian facilities. When they do, those requirements have been added more recently and are at a lower investment level.

Under minimum requirements, even those who do not drive share in paying the cost of parking. Parking costs are embedded in higher retail prices, lower workplace salaries, higher rents, and the like. In these ways, most minimum requirements tend to prioritize private vehicles. Eliminating minimum requirements would begin to level the playing field for all travel modes.

Cities such as Philadelphia, Portland, and Seattle have recently reformed their parking requirements and adopted limited deregulation. Deregulation shifts the approach from automatically requiring parking to not supplying it until it is economically justified. It is a big change from standard practice and should be coupled with programs for shared parking and advanced parking management. Still, the idea of eliminating minimum parking requirements hasn't gained traction in many places. Local officials are often buffeted by demands from residents, storeowners, and employees for more parking, not less.

Kimley-Horn staff researched TOD parking requirements in several other communities including the following:

- Denver Zoning Code: Maximum number of spaces shall not exceed 110% of the minimum parking spaces required by context-specific ratios (Denver's method of calculating parking requirements everywhere). Parking in structures doesn't count toward the maximums.
- Aurora TOD Zoning Sub-District: Minimum 0.5 – 1.0 space per multi-family dwelling unit depending on proximity to a transit station compared to 1.0 – 2.5 spaces per unit depending on number of bedrooms outside TOD.
- Lakewood Transit Mixed Use Zone District: Minimum 1 space per unit, maximum 2 spaces per unit. Parking in structures doesn't count toward the maximums. The parking requirements may be met on-site or off-site at a distance of up to 600 feet from the use.
- Eugene, Oregon: Establishes parking exempt areas not subject to minimums including Downtown and a couple other areas.
- Metro Portland recommends three actions when the parking ratio is below 1.0 space/unit:
    - Charge for all covered parking
    - Add car-share in the area
    - Provide first rate bicycle facilities (lockers, wash areas, secured bike parking, etc.)

Examples of progressive parking requirements from additional communities are reviewed later in this report (See Peer Cities section).

Developers Responses to Different Approaches to Parking Requirements

Approaches to parking reform vary from community to community. Accordingly, the table below shows the range of reform options, including the traditional approach in which the minimum requirements exceed expected use. At the other end of the spectrum is deregulation, with no minimum or maximum parking requirements. In many cities and towns, the best approach is somewhere in between, with deregulation in central business districts and transit-oriented developments, and reduced minimum requirements in other areas.

Developers Response to Parking Requirements

APPROACH	MINIMUM REQUIREMENT	MAXIMUM REQUIREMENT	DEVELOPER RESPONSE
Traditional	> Utilization	None	Rarely builds more than the requirement
Moderate reform	= Utilization	None	Assesses market for project, may exceed the minimum
Big city approach	< Utilization	A fixed ratio or percentage of minimum	Makes market decision whether to supply the minimum or build to the maximum
Partial deregulation	None	A fixed ratio	Makes market decision whether to supply any parking or build to the maximum
Deregulation	None	None	Makes the market decision whether/how much to build

In Praise of Incrementalism

According to Richard Willson, in the past decade, many cities initiated comprehensive zoning code reform, and others are planning such efforts. Comprehensive reform efforts allow planners to rethink parking requirements while they consider the basic organization and functioning of the zoning code. These efforts also allow planners to bypass the complexity of older codes that have undergone countless revisions. Ideally, planners will amass enough political clout and financial resources before undertaking the daunting task of comprehensive zoning code revision.

There are many situations, however, where financial resources and political capital are not sufficient for comprehensive parking reform. In these cases,

an incremental approach can produce good results. It makes sense to start where there is support, either from elected officials or from community or district stakeholders. Code reformers can work with these stakeholders and produce parking requirement reforms, parking overlay zones, or partial deregulation without creating opposition that might emerge in a citywide effort.

These early successes often build support for larger, more comprehensive efforts. Rather than viewing pilot projects or experiments as somehow inferior to comprehensive parking reform, we should see them as effective ways of producing valuable information, testing innovative ideas, and ultimately generating change.

Rethinking Parking – Another Perspective on the Potential of Parking Lots

In his 2012 book entitled "Rethinking a Lot: The Design and Culture of Parking", Eran Ben-Joseph, professor of landscape architecture and urban planning at the Massachusetts Institute of Technology, argues that parking lots are so prevalent in our daily life that we should take them more seriously.

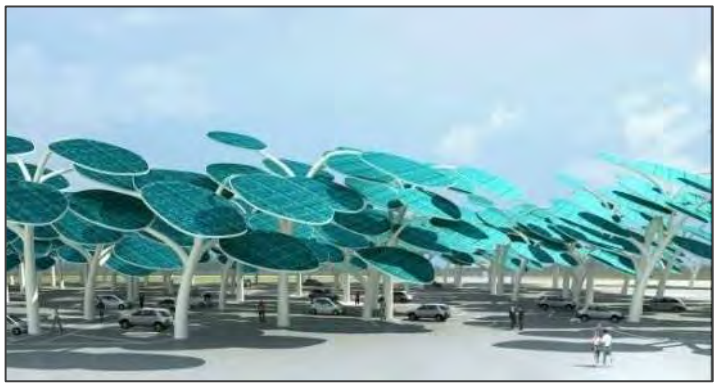
There are an estimated 600,000,000 passenger cars in the world, and that number is increasing every day. So too is Earth's supply of parking spaces. In some cities, parking lots cover more than one-third of the metropolitan footprint. It's official: we have paved paradise and put up a parking lot. In ReThinking a Lot, Eran Ben-Joseph shares a different vision for parking's future. Parking lots, he writes, are ripe for transformation. After all, as he points out, their design and function has not been rethought since the 1950s. With this book, Ben-Joseph pushes the parking lot into the twenty-first century.

Can't parking lots be aesthetically pleasing, environmentally and architecturally responsible? Used for something other than car storage? Ben-Joseph shows us that they can. He provides a visual history of this often ignored urban space, introducing us to some of many alternative and non-parking purposes that parking lots have served - from RV campgrounds to stages for "Shakespeare in the Parking Lot." He shows us parking lots that are not concrete wastelands but lushly planted with trees and flowers and beautifully integrated with the rest of the built environment. With purposeful design, Ben-Joseph argues, parking lots could be significant public places, contributing as much to their communities as great boulevards, parks, or plazas. For all the acreage they cover, parking lots have received scant attention. It's time to change that; it's time to rethink the lot.

The parking lot is the antithesis of nature's fields and forests, an ugly reminder of the costs of our automobile-oriented society. But as long as we prefer to get around by car (whether powered by fossil fuel, solar energy or hydrogen), the parking lot is here to stay.

It's hard to imagine an alternative. Or is it? I believe that the modern surface parking lot is ripe for transformation. Few of us spend much time thinking about parking beyond availability and convenience. But parking lots are, in fact, much more than spots to temporarily store cars: they are public spaces that have major impacts on the design of our cities and suburbs, on the natural environment and on the rhythms of daily life. We need to redefine what we mean by "parking lot" to include something that not only allows a driver to park his car, but also offers a variety of other public uses, mitigates its effect on the environment and gives greater consideration to aesthetics and architectural context.

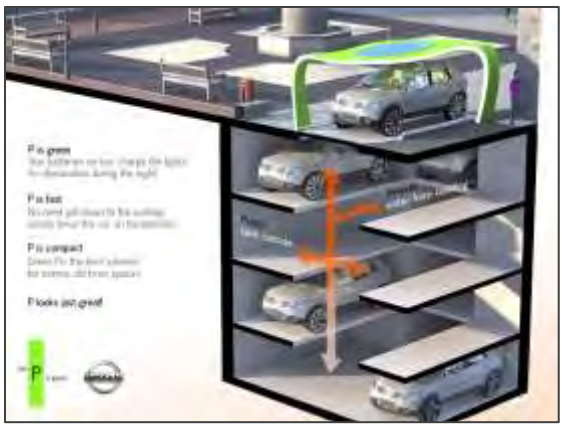
It's estimated that there are three nonresidential parking spaces for every car in the United States. That adds up to almost 800 million parking spaces, covering about 4,360 square miles — an area larger than Puerto Rico. In some cities, like Orlando and Los Angeles, parking lots are estimated to cover at least one-third of the land area, making them one of the most salient landscape features of the built world.



Such coverage comes with environmental costs. The large, impervious surfaces of parking lots increase storm-water runoff, which damages watersheds. The exposed pavement increases the heat-island effect, by which urban regions are made warmer than surrounding rural areas. Since cars are immobile 95 percent of the time, you could plausibly argue that a Prius and a Hummer have much the same environmental impact: both occupy the same 9-by-18-foot rectangle of paved space.

A better parking lot might be covered with solar canopies so that it could produce energy while lowering heat. Or perhaps it would be surfaced with a permeable material like porous asphalt and planted with trees in rows like an apple orchard, so that it could sequester carbon and clean contaminated runoff.

The ubiquity of parking lots has also led to an overlooked social dimension: In the United States, parking lots may be the most regularly used outdoor space. They are public places that people interact with and use on a daily basis, whether working, shopping, running errands, eating, even walking — parking lots are one of the few places where cars and pedestrians coexist.



Better parking lots would embrace and expand this role. Already, many lots provide space for farmers' markets, spontaneous games of street hockey, tailgating, even teenagers' illicit nighttime parties. This range of activities suggests that parking lots are a "found" place: they satisfy needs that are not yet met by our designed surroundings. Planned with greater intent, parking lots could actually become significant public spaces, contributing as much to their communities as great boulevards, parks or plazas. For instance, the Italian architect Renzo Piano, when redesigning the Fiat Lingotto factory in Turin, eliminated the parking lot's islands and curbs and planted rows of trees in a dense grid, creating an open, level space under a soft canopy of foliage that welcomes pedestrians as naturally as it does cars.

The parking lot also has an underutilized architectural function. A parking lot is the first part of a space you visit or live next to. It is typically the gateway through which dwellers, customers, visitors or employees pass before they enter a building. Architects and designers often discuss the importance of "the approach" as establishing the tone for a place, as the setting for the architecture itself. Developers talk about the importance of "first impressions" to the overall atmosphere conveyed to the user.

Yet parking lots are rarely designed with this function in mind. When they are, the effect is stunning. For instance, the parking lot at the Dia art museum in Beacon, N.Y., created by the artist Robert Irwin and the architecture firm OpenOffice, was planned as an integral element of the visitor's arrival experience, with an aesthetically deft progression from the entry road to the parking lot to an allée that leads to the museum's lobby.

For something that occupies such a vast amount of land and is used on a daily basis by so many people, the parking lot should receive more attention than it has. We need to ask: what can a parking lot be?

In Summary…

The strategies and policy considerations discussed above are alternatives to setting a parking requirement based on a neighboring city's requirement or a national average. However through this study we will be evaluating options to reassess parking requirements based on specific land use categories (for example applying differing standards to "student housing oriented projects" compared to other multi-family housing developments based on the demonstrated differences in parking demand generated by this specific use). We will also be assessing changes to the current ordinance such as varying requirements based on development size or context features, varying requirements based on development size or context features, such as transit accessibility, mixed-land uses, shared parking and overall development density. The use of alternative compliance mechanisms that provide more context specific data from which to make rational and measured adjustments to parking requirements are also being assessed.

Parking reform can also be coordinated with regional planning and modeling activities. For example, in King County, Washington, the Metro Transit's web-based GIS tool provides data on parking utilization for multi-family housing and tests alternative parking ratios in terms of costs and impacts.

Note: More information about King County, Washington's King County Multi-Family Residential Parking Calculator can be found at http://www.rightsizeparking.org/.

In the case of Rochester, the use of the "Park+" parking demand modelling software that has been purchased by both the City could provide a similar analysis tool.

Best Practices Review

This section of the parking study summarizes some of the parking best management practices that are recommended and/or have been successfully implemented in other communities. These practices are tools to address existing parking issues and accommodate future demand. It is important to remember that these strategies are not mutually exclusive and may need to be modified to suit the needs of the City of Rochester . Many of these strategies are complementary and are most effective when used in conjunction with one another.

Innovative Alternatives or Supplements to Minimum Parking Requirements

Some local governments have implemented alternatives to generic parking requirements that increase availability from existing supply, reduce the demand for parking, or create more cost-effective and environmentally sensitive parking structures that preserve pervious surfaces. By lowering total development costs, some of these parking alternatives have consequently encouraged smart growth development and redevelopment. This section summarizes proven alternatives and includes discussion of their establishment, advantages, and potential concerns. The alternatives are organized according to their influence on parking supply, parking demand and pricing.

Increasing Availability from Existing Supply or Limited Expansion

Frequently, the supply of parking in developed areas is sufficient to meet parking demand, but a combination of reasons limit the availability of that supply.

Context-specific Minimum Requirements

As discussed in the Introduction, generic minimum requirements are typically set based on maximum observed demand for free parking in areas with no transportation choices. However, parking demand is determined by a range of factors that lead to significant variations within and across jurisdictions, meaning that a single standard for each land use may not be appropriate. Other factors that are strongly correlated with lower vehicle ownership in urban areas are frequent transit service, small household sizes, low incomes, a high proportion of seniors, and rental housing.

Similarly, at commercial developments, transit access, mix of uses, and density are good predictors of parking demand. Often developers are interested in finding ways to reduce the vehicle trip generation calculations

for their expected development, so that they can demonstrate fewer impacts on the surrounding roadway network, while they may not always be so eager to reduce the amount of parking to supply.

A major challenge for cities is how to convert this research and data, together with experience from other settings, into local parking requirements or planning approvals for specific developments. Some of the mechanisms being used are:

- Transit Zoning Overlays
- New Zoning Districts or Specific Plans
- Parking Freezes
- Reductions for Affordable and Senior Housing
- Case-By-Case Evaluation
- Land Banking and Landscape Reserves

Maximum Limits and Transferable Parking Entitlements

In contrast to generic minimum parking requirements, maximum limits restrict the total number of spaces that can be constructed rather than establish a minimum number that must be provided. Planners set maximum limits much like they set minimum requirements. Typically, a maximum number of spaces is based on square footage of a specific land use. For example, the City of Portland, Oregon restricts offices in the central business district to 0.7 parking spaces per 1,000 square feet, and retail to 1.0 space per 1,000 square feet of net building area. Contrary to what might be expected, the maximum limits in Portland have not led to a parking shortage because of the balance of transportation choices available.

Maximum requirements are not ideal for all locations. It is crucial for municipalities that employ maximum requirements to have accompanying accessible and frequent public transportation. It is also important for the area to be sufficiently stable economically to attract tenants without needing to provide a surplus of parking. Several cities have implemented maximum parking requirements, including San Francisco, California; Portland, Oregon; and Seattle, Washington.

Shared Parking

Different types of land uses attract customers, workers, and visitors during different times of the day. Shared parking is another alternative that city planners can employ when setting parking requirements in mixed-use areas.

An office that has peak parking demand during the daytime hours, for example, can share the same pool of parking spaces with a restaurant whose demand peaks in the evening. This alternative also reduces overall development costs.

By allowing for and encouraging shared parking, planners can decrease the total number of spaces required for mixed-use developments or single-use developments in mixed-use areas. Developers benefit, not only from the decreased cost of development, but also from the "captive markets" stemming from mixed-use development. For example, office employees are a captive market for business lunches at restaurants in mixed-use developments.

Shared parking encourages use of large centralized parking facilities and discourages the development of many small facilities. This results in more efficient traffic flow because there are fewer curb cuts, and turning opportunities on main thoroughfares. This has the added benefits of reducing accidents and reducing emissions from idling vehicles stuck in traffic.

Establishing shared parking requirements involves site-specific assessment or use of time-of-day parking utilization curves. Montgomery County, Maryland allows for shared parking to meet minimum parking requirements when any land or building under the same ownership or under a joint use agreement is used for two or more purposes. The county uses the following method to determine shared requirements for mixed-use developments:

- Determine the minimum amount of parking required for each land use as though it were a separate use, by time period, considering proximity to transit.
- Calculate the total parking required across uses for each time period.
- Set the requirement at the maximum total across time periods.

Many available sources document procedures for calculating shared parking requirements, from 1983's "Flexible Parking Requirements" to 2003's SmartCode.

In-Lieu Parking Fees and Centralized Parking

Municipalities establish in-lieu parking fees as an alternative to requiring on-site parking spaces. With in-lieu fees, developers are able to circumvent constructing parking on-site by paying the city a fee. The city, in return, provides centralized, off-site parking that is available for use by the development's tenants and visitors. The fees are determined by the city and

are generally based on the cost of providing parking. Cities set fees in one of two ways, either by calculating a flat fee for parking spaces not provided by a developer on-site or by establishing development-specific fees on a case-by-case basis. Shoup reports that in-lieu fees in the United States range from $5,850 to $20,180 per parking space. These fees can be imposed as a property tax surcharge.

In-lieu parking fees provide advantages to both planners and developers. Allowing developers to pay fees in-lieu of constructing parking has the following benefits:

- Overall construction costs may be reduced;
- Construction of awkward, unattractive on-site parking is avoided;
- Redevelopment projects involving historic buildings can avoid constructing parking that would compromise the character of the buildings;
- Planners can ensure that existing parking facilities will be more fully utilized; and
- Planners can encourage better urban design with continuous storefronts that are uninterrupted by parking lots.

In establishing in-lieu parking fees, planners must be cognizant of potential developers' concerns about the impact of a lack of on-site parking on the attractiveness of developments to tenants and visitors. This can be an issue if available public parking is insufficient, inconveniently located, or inefficiently operated. Planners must carefully consider the parking demand for each participating property and provide enough parking to meet this demand in order to avoid creating a perceived or real parking shortage. Planners must also work to ensure that public parking facilities are centrally located and operated efficiently.

Centralized parking facilities can reduce the costs of parking because large facilities are less expensive on a per space basis to build and maintain than small facilities. Centralized parking, as an alternative to on-site parking, also improves urban design and preserves the historic nature of communities. Some cities mandate centralized parking facilities and finance them through development impact fees in lieu parking fees or negotiated contributions established during the environmental review process.

Increasing Availability by Decreasing Demand

Demand reduction can be achieved through a variety of programs and policies that attempt to reduce the automobile transportation demand, and thus reduce the needed supply of parking. While these programs are typically developed by local governments, their success often depends on the commitment of businesses to implement them effectively.

Demand reduction programs include: car sharing, subsidies for transit, transit improvements, pedestrian and bicycle amenities, and vehicle trip reduction programs. When employers allow telecommuting and/or flexible work schedules that reduce commuting, demand is also reduced.

Car Sharing

Car sharing is a neighborhood-based, short-term vehicle rental service that makes cars available to people on a pay-per-use basis. Members have access to a common fleet of vehicles on an as-needed basis, gaining most of the benefits of a private car without the costs and responsibilities of ownership. In programs with the most advanced technology, members simply reserve a car via telephone or the Internet, walk to the nearest lot, access the car using an electronic card, and drive off. They are billed at the end of the month.

In commercial developments, car-sharing can also be a useful tool to reduce parking demand. Employees can use a shared vehicle for errands and meetings during the day, allowing them to take transit, carpool, walk or bicycle to work. Car-sharing works best in compact, mixed-use neighborhoods, where firms with corporate memberships tend to use the vehicles during the day and residents use them in the evenings and on weekends.

As well as reduced parking demand, car-sharing brings a broad range of other benefits, including fewer vehicle trips, and improved mobility for low-income households who may not be able to afford to own a car. Formal car-sharing programs have been established in many cities including Boston, Massachusetts; Washington, DC; San Francisco, California; Oakland, California; Portland, Oregon; Seattle, Washington; and Boulder, Colorado. Many others are in the process of establishing operations. Alternatively, developers can provide shared vehicles themselves, or facilitate informal car-sharing among residents.

Also, see appendix on Shared Mobility.

Improvements to Transit Service, Pricing, and Information

Transit subsidies can be provided by employers, by cities, or by residential property managers. In the case of employer-paid transit pass schemes, the employer pays the cost of employees' transit, converting the fixed cost for parking spaces into a variable cost for the public transportation subsidy. This fringe benefit for employees reduces the demand for parking at the workplace, which in turn reduces traffic, air pollution, and energy consumption. It also reduces the cost associated with providing parking, as transit subsidies are generally less expensive than providing parking.

Improvements to Pedestrian and Bicycle Service

Demand for parking can be reduced by providing pedestrian and bicycle amenities that make it easier and more pleasant for people to walk or bicycle rather than drive. These amenities and design changes can alleviate traffic congestion. In particular, improving the walkability and pedestrian orientation of employment centers can address the increasingly common "drive to lunch" syndrome. For example, the auto-orientation of Tyson's Corner, Virginia has resulted in terrible traffic at lunch time because people cannot walk to eating establishments or to do errands.

Vehicle Trip Reduction Programs

Another direct form of demand reduction involves instituting vehicle trip reduction programs. Vehicle trip reduction programs combine several types of demand reduction components to meet explicit vehicle trip reduction goals.

Thus, instead of capping the number of parking spaces, local officials limit the number of vehicle miles traveled in a particular region. These types of programs attempt to decrease the number of trips by single occupancy vehicles (SOVs) and increase the use of a variety of commuting alternatives, including transit, carpooling, walking, and bicycling.

To increase the effectiveness of vehicle trip reduction programs, cities or employers can incorporate an assortment of complementary program elements to balance transportation choices. The following are some examples:

- "Guaranteed ride home" services that allow employees who use public transit to get a free ride home (e.g., via taxi) if they miss their bus or if they need to stay at work late.
- Company fleet cars that can be used for running errands during the workday (e.g., doctor appointments).

- Preferential and/or reserved parking for vanpools/carpools.
- Carpooling and/or vanpooling with ride matching service. Ride matching can facilitate the identification of people who live close to one another. This service can be accomplished by providing "ride boards" or by using an employee transportation coordinator.
- Cellular phones for car and vanpooling to facilitate timing of pickups.

There is little incentive for employers to implement vehicle trip reduction programs if they are not granted reductions in minimum parking requirements. They would not be able to realize the potential cost savings from providing less parking, but would simply be faced with a large number of empty spaces. Several cities, such as South San Francisco, have acknowledged this through ordinances that reduce parking requirements for projects that include vehicle trip reduction programs.

Efficient Pricing

Although it is often provided at no charge to the user, parking is never free. Each space in a parking structure can cost upwards of $2,500 per year in maintenance, operations and the amortization of land and construction costs. Even on-street spaces incur maintenance costs and an opportunity cost in foregone land value. The cost of parking is generally subsumed into lease fees or sale prices for the sake of simplicity and because that is the more traditional practice in real estate. However, providing anything for free or at highly subsidized rates encourages overuse and means that more parking spaces must be provided to achieve the same rate of availability. Charging users for parking is a market-based approach by which the true cost of parking can be passed through to parking users. If the fee charged to users of parking facilities is sufficient to cover construction, operation, and maintenance costs, it will likely cause some users to choose not to park. Even where there are few alternatives to driving, parking pricing can encourage employees to seek out carpooling partners. In addition to reducing the cost of parking provision, pricing strategies bring major environmental and congestion benefits, particularly since they tend to reduce peak-period vehicle trips the most.

Parking charges have been found to reduce employee vehicle trips, and thus daily parking demand, by between 7 percent and 30 percent or more, depending on factors such as the level of charges and the availability of alternatives to driving alone. Parking price elasticities generally range from –0.1 to –0.6, with the most common value being –0.3, meaning that each 1 percent rise in parking fees is accompanied by a 0.3 percent decrease in demand.

Cash-Out Programs

Cash-out programs provide alternatives to directly charging users for parking. Under such programs, employers offer employees the choice of free or subsidized parking, a transit/vanpool subsidy equal to the value of the parking (of which up to $100 is tax-free under current federal law), or a taxable carpool/walk/bike subsidy equal to the value of the parking.

Employees who opt for the non-parking subsidies are not eligible to receive free parking from the employer, and are responsible for their parking charges on days when they drive to work. The cost savings associated with cash-out payments depend on the amount of the payments. If the full cash equivalent is provided, this demand reduction program does not reduce the total costs of providing parking. However, employees may accept cash payments lower than the full equivalent of the parking subsidy. If partial cash payments are used, employers face lower overall transportation subsidy costs and employees still benefit.

Differential Pricing by Trip Type

Parking pricing can be used as a sensitive tool to prioritize some types of trips over others, according to their purpose and duration. It allows managers to cater for desirable trips, such as short-term shoppers, while discouraging undesirable commuter trips, which add to peak-hour congestion and occupy a parking space for an entire day. These pricing strategies allow the overall supply of parking to be minimized, while ensuring spaces are available for critical users. They can also alleviate pressure to provide more parking from retailers and businesses, who may be concerned that poor parking availability discourages shoppers. Examples include:

- Lower or zero rates for short-term parking encourage shopping trips, while proportionally higher rates for long-term parking discourage all-day commuter parking, freeing up spaces for customers. Short-term parking allows many people to use a single space over the course of a day, rather than a single commuter, and generates revenue for businesses and sales tax dollars for cities.

- Parking charges that are levied by the hour or day, with no discounts for monthly parking, remove the financial disincentive to take transit occasionally. There is no perverse incentive to drive every day to "get your money's worth" from the monthly parking pass.

- Parking charges at transit stations that only apply before a certain time (such as 9 or 10 am) encourage off-peak transit ridership where spare capacity is available, rather than contributing to crowding in the peak.

Residential Parking Pricing

Parking charges can also be introduced at residential developments, through separating or "unbundling" the cost of parking from rents or sale prices. Rather than being provided with a set number of spaces whether they need them or not, residents can choose how many spaces they wish to purchase or rent. An alternative to direct charges is to provide "rent rebates" or discounts to residents who own fewer vehicles and do not use their allocated parking spaces.

Parking Benefit Districts

Parking pricing strategies can also be implemented through Parking Benefit Districts. Under this concept, revenue from meters and residential permits is returned to local neighborhoods. Once administrative costs are covered, all money goes to transportation and neighborhood improvements such as undergrounding of utility wires. Parking Benefit Districts allow developments to be built with less parking, while addressing potential spillover problems through market pricing of curb parking.

Earmarking revenue to directly benefit the neighborhood or commercial district helps to generate support for charges from local residents and businesses, which might otherwise resist charging for parking that used to be free. Cities such as San Diego and Pasadena, California, have implemented Parking Benefit Districts in their downtown business districts, using parking meter revenue.

Section #4: Peer City Reviews

In our research related to peer city parking requirements, we applied two primary criteria: communities of similar size or characteristics to Rochester or communities with progressive parking planning policies similar in values to Rochester . We identified five primary communities that met these criteria. These communities include:

- Ann Arbor, Michigan
- Berkeley, CA
- Portland, OR
- Eugene, OR
- Arlington County, VA

A summary of the key elements of each of these city's policies are provided below. More detailed information for each community is provided in

Appendix B. Appendix B contains selected examples of well-developed or progressive zoning codes including some not on the Peer Cities list noted above.

City of Ann Arbor, Michigan

- City's web page: www.a2gov.org
- Downtown Development Authority web page: www.a2dda.org
- Commuting programs and services web page: www.getdowntown.org

Key Policies and Initiatives

- GetDowntown Program – This is a commuter service and assistance program. It offers commuting programs and services to employees and employers in downtown Ann Arbor. Programs and services include the go!pass, Commuter Challenge, Bike Locker Rentals, Zipcars, free commuting assistance, and commuting materials.
- Go! Pass Program – It is an employee benefit which offers unlimited rides on the City buses with in Downtown Development Authority's (DDA) boundaries. Additionally, this program offers discounts for other commuter services and at downtown businesses.
- Commuter Challenge – It offers prizes for trying alternative modes of transportation. The modes include busing, biking, walking, carpooling, and van pooling. The program is offered only for the month of May.
- Bike Locker Rental – Locker rentals are offered at $60/month. The rentals are offered from April 1 to March 31. The fee is prorated if the rental starts after April. Monthly rentals are not available.
- To encourage alternative modes of transportation, the parking demand for office buildings were dropped from 4 to 3 per 1,000sf.
- Maximum parking demand ratio was implemented for many land uses.
- For downtown projects, developers are not required to provide parking for up to 400% of FAR.
- For some mixed-use land uses, 700% of FAR is allowed and parking is required for FAR above 400%.
- Bicycle parking is required for many land uses.
- Outside bicycle parking spaces can be used for meeting "useable open space" requirements.

- Areas for inside bicycle parking spaces are not included in calculating the vehicular parking requirements.
- Up to 30% of parking supply could be designed for compact cars only.

Arlington County, Virginia

- Arlington County web page: www.arlingtonva.us
- Commuter Service web page: www.commuterpage.com
- Mobility Lab: http://mobilitylab.org/

Key Policies and Initiatives

- Office parking requirement is 1 space per 580sf (with associated apartment use), which is significantly less than the national average. Without apartment use, the requirement is 1/530sf.
- Hotel parking requirement is 0.7 per room. Again, significantly less than national average.
- Underground parking is encouraged.
- Parking requirements for Medical Office Buildings could be reduced by 10%.
- Parking requirements are reduced if approved shared parking programs are implemented.
- Parking is not required for the first 5,000sf of development (some land uses are excluded). For grocery stores, first 15,000sf is exempt, if the grocery store is not the principal land use.
- Office parking requirements could be reduced by up to 10%.
- 100% of required parking could be provided up to ¼-mile away.
- Reduced parking demand with approved TDM programs.
- Up to 15% of parking supply could be designed for compact cars only.
- Maximum parking requirements for many land uses.
- Parking near metro stations is not required if the development is located within 1,000 feet (with some exemptions).
- Mobility Lab is one of the most aggressive and successful transportation alternative programs in the country and is a recommended model for Rochester to review.

City of Berkeley, California

- City's web page: www.ci.berkeley.ca.us
- Commuter Service web page: www.ci.berkeley.ca.us/commute

Key Policies and Initiatives

- The City offers many commuter programs. These include:
    - The Tax Relief Action to Cut Commuter Carbon (TRACC)
    - Commuter Benefit Services for Employers
    - The City requires that employers with ten or more employees provide a commute program to encourage employees to use public transit, vanpools or bicycles. TRACCC, gives employers several options - businesses can offer their employees commuter tax benefits as a payroll deduction, provide a subsidized benefit, or offer a combination of the two.
- Commute Programs
    - Guaranteed Ride Home Program
    - Ride matching for carpools and vanpools
    - Transportation Programs at UC Berkeley
- Transit Information Services
    - 511 Transit Information
    - Getting There on Transit
    - Clipper, the Bay Area's Smart Card for Transit
- AC Transit Local and Transbay Bus Service
    - Other Bus Services in Berkeley
    - Paratransit Services
    - Rail Service in Berkeley
    - Bay Area Rapid Transit (BART)
    - Capitol Corridor (train service from San Jose to Sacramento)

  - Connecting AMTRAK passenger rail services

- Car Sharing
- Parking can be provided up to 300 feet away from the development.
- Joint-use, off-street parking is allowed if there are no substantial conflicts.
- Transit Service Fee (TSF) is collected to provide paratranist passes and promote ride sharing.
- Parking requirements are reduced if the development is located within 1/3-mile from a BART station.
- Subsidies available for approved TDM programs.

City of Eugene, Oregon

- City's web page: www.eugene-or.gov

Key Policies and Initiatives

- Parking requirements may be reduced (for some land uses) if the developer offers an approved shared parking plan.
- Bicycle parking is required with many land uses.
- Maximum parking ratio is used.
- Maximum parking cannot exceed 125% of minimum parking requirements.
- Parking requirements may be reduced if an approved Transportation Demand Management (TDM) plan is implemented.
- The City offers typical commuter services including bus, car pool, and van pool.

City of Portland, Oregon

- City's web page: www.portlandonline.com
- Commuter Assistance web page: www.portlandoregon.gov/transportation/43820

Key Policies and Initiatives

- Maximum parking for many land uses.

- Parking could be provided up to 500 feet away.
- Stacked parking with valet attendant is allowed.
- Parking requirements could be reduced by 5% for approved carpool programs.
- Parking requirements for residential developments are reduced or eliminated for all other land uses, if:
    - The development is located within 1,500 feet from a transit station, or
    - 500 feet from transit street where peak-hour service is provided at 20-minute intervals.
- Bicycle parking is required for many land uses.
- For every five bicycle parking spaces, one vehicle parking space could be eliminated.
- Parking requirements could be reduced by 10% if a transit supportive plaza is provided with the development.
- Motor cycle parking could be used to reduce vehicle parking by 5%.
- For every two cars sharing parking one vehicle parking space could be eliminated.
- "Smart Trip Business" initiative to encourage use of alternate modes of transportation. Some of the programs include:
    - Encourage use of bicycle at work place.
    - Businesses could be certified for as, "Sustainability Work Certified." The certifications include "Certified," Silver," and "Gold."
    - Car sharing programs.
    - Centralized Transportation Resource.
    - Employee education about use of transit.
    - "Commuter Challenge" program to encourage the use of alternate modes of transportation.

Recommendations

Recommendation #1: Minimum Parking Requirements that Vary Based on Land Use

1. Multi-family dwellings and mixed-use dwellings within the downtown or Transit-Oriented Development (TOD) areas shall provide a minimum number of parking spaces as shown in the following table; the maximum number of parking spaces provided per use shall not exceed 115% of the minimum required with the exception of parking spaces provided in parking structures:

Land Use	**Minimum Parking Requirement (+)**
Rent-by-the-Bedroom Multi-family Dwellings	Parking spaces/bedroom
All Bedrooms	0.75
Multi-family Senior Dwellings	Parking spaces/bedroom
All Bedrooms	0.3
Multifamily Dwellings # Bedrooms/Unit	Parking spaces/unit
One or less	0.75
Two	1
Three	1.25
Four and above	1.5
Demand Mitigation Strategy	**Parking Requirement Reduction (-)**
Affordable Housing (< 50% AMI)	50%[1.]
Transit Passes	10%[2.]
Car Share	5 spaces/1 car share[3]
Within 1,000 feet walking distance of MAX Station	10%
Shared Parking	Based on Shared Parking Study Results (Land Use Dependent)
Off-Site Parking	1:1
Bicycle & Pedestrian LOS A	10%[4.]
Parking Impact Study	Based on Proposal
Transportation Demand Management (TDM)	Based on Proposal
Maximum of 50% reduction without provision of a Parking Impact Study or Transportation Demand Management.	

2. Commercial Uses

General recommendations: Below are selected uses and possible minimum and maximum parking standards to be considered.

Existing Uses and Structures*: For any legally existing use, including structure, and related parking in place at the time of these regulations who proposes a change in use (including redevelopment of an existing building, repurpose or similar) which does not result in the material increase of the use/structure by more than 10 percent not to exceed 1,000 sq. ft., no additional parking shall be required. Any such use/structure which proposes to increase by greater than 10 percent or 1,000 sq. ft. shall provide parking for only the amount of the increase in the building above what is currently constructed. For new development within the TOD Overlay zone, the first 25 percent up to 5,000 sq. ft. is exempt from the off-street parking requirements.

Use	*Minimum Parking (recommended)*	*Maximum Parking*	*Additional Comments*
Restaurants a. Fast Food b. Standard	See recommendations in the Additional Comments column	15/1000 sq. ft. 10/1000 sq. ft.	*Revise the calculation standard for restaurants from gross leasable area to customer seating or similar to account for non-publicly accessible areas (storage, prep, etc.).* *Examples include parking standards based on either seats (1 space/3 seats), or based on customer service areas plus a prescribed number for employees (5 spaces/1000 s.f. customer seating area minimum not to exceed 12 spaces/1000 s.f. plus 0.7 spaces/ employee of the largest shift See additional information below.*

			Peer and other cities review range from 10/1000 sq.ft. to 15/1000 sq.ft.
Bars, Taverns, and Nightclubs		10/1000 sq. ft.	*See Restaurant comment*
Commercial Recreational a. Limited Indoor Recreation b. Outdoor c. Bowling Alley	 3/1000 sq. ft. .1/person cap 2.5/1000 sq. ft.	 6/1000 sq. ft. .3/person cap 5/1000 sq. ft.	
Theaters	1/6 seats	1/3 seats	*This standard is typical and reflects the average for families and young adults. Peer and other city reviews range from 1/2 seats up to 1/4 seats.*
General Retail	2/1000 sq.ft.	4/1000 sq. ft.	*The maximum could be reduced to 3/1000 s.f. within the TOD. Ranges observed in other communities range between 3.3/1000 to 5/1000*
Personal Business and Service Shop	2/1000 sq.ft.	4/1000 sq. ft.	
Shopping Center	2/1000 sq.ft.	5/1000 sq. ft.	*Similar to the General Retail Standard, the maximum could be reduced to 3.5 – 4.0 / 1000 s.f. within the TOD.* *A possible reduction measure is the provision of a MAX stop or similar within the center with a graduated scale if the*

			stop is within a specified distance.
Medical Office	2/1000 sq. ft.	4.5/1000 sq. ft.	*These uses can have high turnover rates and overlap of patients. 2/1000 is very low and may lead to increased complaints; could look at reducing the maximum from 4.5 to 4 or 3.5 within the TOD*
Financial Services	2/1000 sq. ft.	3.5/1000 sq. ft.	*Depending on proposed facilities, drive-through's, etc., these numbers vary throughout the peer and other cities review.*
Grocery Store, Supermarket	3/1000 sq.ft.	6/1000 sq. ft.	*These uses typically still have increased vehicular use. Peer and other cities review range between 3/ 1000 sq.ft. to 4/1000 sq.ft.*
General Office	1/1000 sq.ft.	3/1000 sq. ft. or .75/employee on the largest shift or 4.5/1000 sq. ft. if all additional parking spaces gained by the increased ratio (over 3/1000 sq. ft.) are contained within a parking garage/structure	*Peer and other cities review range between 2/1000 sq.ft. to 4/1000 sq.ft.*
Vehicle Servicing & Maintenance	2/1000 sq.ft.	5/1000 sq. ft.	*The City may want to clarify off-street parking versus on-site (overnight) vehicle storage of vehicles under repair. Peer cities review range between 2/ 1000 sq.ft. to 3/ 1000 sq.ft.*

Low Intensity Retail, Repair Service, Workshop and Custom Small Industry	1/1000 sq.ft.	2/1000 sq. ft.	*The City may want to consider an additional standard if a showroom or publicly accessible area is provided.*
Lodging Establishments	0.5/unit	1/unit	*The City may want to consider an additional clause if the lodging facility includes a restaurant, convention space or similar. An option is to use a reduced rate (percentage) of the accessory uses. For example, a restaurant within a hotel would need to provide parking at 50 percent of the standard restaurant parking requirement.*
Health Facilities a. Hospitals b. Long-Term Care Facilities	0.5/bed	1/bed .33/bed plus 1/two employees on major shift	*The City may want to also identify additional parking for physicians or other staff. These tend to be high*
Industrial: Employee Parking	0.5/ employee	.75/employee	*The City may want to clarify if this is based on the largest shift or similar metric.*

Notes:

Providing a minimum and maximum parking standard (range), provides for slight variations in the parking standard. Potential concerns include: if the proposed range is too small, the variations will be minimal and may not result in the desired outcome, triggering alternative compliance or variances. On the other extreme, ranges that are too great can reduce the potential for achieving greater use of TDM practices and/or other alternative compliance measures. A larger range can also lead to over-parking of sites resulting in less efficient use of land and reductions in transit usage.

The specific recommendations related to the proposed parking standards are based on Kimley-Horn's zoning code work in other communities, our best practices research conducted for this and similar studies around the country, the community values as expressed in related City of Rochester plans, parking utilization data conducted by City staff and finally feedback received through public outreach efforts as part of this study.

Recommendation #2: Alternative Compliance Based on TDM or a Parking Impact Study

Built into the Minimum Parking Requirements Matrix is a section that allows for reduction of the requirement based on providing additional parking demand mitigation strategies.

Two other options which are included on the Minimum Parking Requirements Matrix are to provide a Parking Impact Study or utilize the Transportation Demand Management (TDM) program.

Transportation Demand Management (TDM)

The basic concept is to provide a service to helps private employers access a range of parking and trip reduction tools and programs. Connecting developers to resources that can help them reduce parking demands (and therefore potentially lower the amount of parking they would be required to provide) is win-win scenario. The key is having a well-developed program that offers a range of choices that developers or businesses can choose from depending on the type of business or development they are providing.

In most of the programs researched (Washington DC, Arlington County VA, Boulder CO, Ann Arbor MI), defined packages of TDM strategies are available that employers or developers can sign-up for. There is typically a multi-year commitment required and agreements must be signed to qualify for parking reductions as part of an alternative compliance component of a development review process.

A related trend in the world of urban public transport lies in mobility systems that will provide bicycles, cars and other mobility services on demand. In the future, many mobility assets will be shared instead of owned by users. Convenient and reliable lifestyle services will be offered to "connected" citizens who will be able to easily access these combined mobility services via their smartphones. Integrated mobility services are emerging as a smart alternative to vehicle ownership in a rapidly urbanizing world. They offer new and easy to access options that can be tailored to better meet customer needs and address a range of issues related to evolving urban environments.

Combined mobility services take the concept of shared-use to a new level, recognizing that the desires for flexibility and efficiency which are driving

consumers to shared-use mobility solutions are further advanced when those solutions can be offered in an integrated platform. For those providers of mobility solutions that make the transition to combined mobility services, these developments offer a real opportunity to deliver sustainable growth over the next decades.

A draft example of a TDM checklist will be provided for review. Implementation of this recommendation is outside the scope of this project; however, it is recommended that the City of Rochester budget to create and staff a TDM Program.

Parking Impact Study

Developers may opt to engage a professional parking consultant at their expense to conduct a parking impact study. As the scope of these studies can vary, a matrix outlining a recommended scope to ensure that the essential information needed by City planning staff is provided in Attachment 2.

Costs for such a study vary and can range from as low of $5,000 to a high of $15,000 depending on the exact scope.

Recommendation #3: On-street Paid Parking

Continued investment in paid on-street parking in targeted areas and eventually in other areas of the City (especially in the DMC core area) while slowly increasing on-street parking rates until they are higher that off-street parking rates has several benefits. Charging for parking is the most direct way to both reduce parking demand and helps ensure the availability and turnover of on-street and improve the utilization of off-street spaces. This strategy is critical to developing on-going funding mechanisms to support parking infrastructure investment.

On-Street parking has other benefits as well. Beyond adding to the overall supply of parking, on-street parking slows traffic, creates better pedestrian environments by buffering sidewalks from moving vehicles, increases the viability of retail shops and services, and contributes to reducing the amount of land used for off-street lots.

There have been many technological advances related to on-street parking technology and related management applications. It will be important for staff to stay abreast of changes in this fast-evolving area.

Recommendation #4: Public/Private Partnerships for Parking Structures

This recommendation encourages the City to develop a comprehensive approach that emphasizes leveraging parking infrastructure investment as a key element of community and economic development. Parking investments, made as part of an overall downtown economic development strategy, should carry an expectation of a 5 to1 return on public funds invested. To achieve this level of return, projects that offer significant shared parking benefits are strongly encouraged.

To promote the effective management of existing and future public parking resources in the downtown area and in future TOD development areas, a parking district approach which can coordinate and management parking and access management related issues should be strongly supported. Parking districts offer a mechanism to invest and manage parking resources within a defined geographic area.

Often, the overriding goals of a district are actually more akin to a business or general improvement district that also manages parking as a tool for overall district management. As the district matures, and development intensifies, the role of the parking district and the types of management programs offered will evolve. In other communities, parking related revenues are often reinvested within the districts to support other strategic district development goals creating 'balanced and sustainable district access strategy'.

Another strategy would be to adopt the "Business Scorecard Development Approach" for TOD Overlay Zone in conjunction with the development of a parking infrastructure investment strategy that leverages shared parking to the maximum degree.

One approach to developing a downtown or area business strategy is to establish specific targets for housing, office, retail and hotel development within the district. This business strategy would ideally reflect the shared vision for the area and the community at large as defined in a city-wide strategic or master plan. This recommendation may be more appropriate as an element of the City's Urban Redevelopment Authority or similar agency given that these agencies typically oversee tax increment financing and related investment funds.

A model business score card can also incorporate several key parking elements. (See Appendix 4.b)

Identification of projects that support defined district master plan goals. Targeting specific development projects that move the forward the shared

vision of the district is especially important for helping the district achieve its desired goals. In the case of the City of Rochester, the downtown and DMC development areas stated goals include such elements as: increased development density (mid-rise developments of four to five stories), compact in-fill development, walkability and good urban design, limited sharable parking assets, etc. There are often many potential development projects to consider, but prioritizing those projects that help move the community forward in the desired direction deserve special consideration and can provide justification for providing reasonable incentives.

As part of the parking support policies being proposed, maximizing the benefits of shared parking is an important consideration. Because of the cost of investing in structured parking, it is in the City's interest to get the most benefit from these public fund investments.

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Additional Resources

The following documents will be provided to City staff on a CD as additional resources.

1. U.S. Parking Policies: An Overview of Management Strategies
2. Residential On-Site Carsharing and Off-Street Parking Policy in the San Francisco Bay Area
3. Alternatives to Minimum Parking Requirements – Forinash
4. City Carshare - Best-Practices
5. Effects of TOD on Housing, Parking and Travel
6. Parking Solutions - Examples and Case Studies
7. Exposed: America's Totally Inconsistent Minimum Parking Requirements
8. FHWA - Parking Pricing Primer
9. Integrating Demand Management into the Transportation Planning Process: A Desk Reference
10. How Flexible Parking Requirements Spur Economic Development: Lessons from Santa Monica
11. Parking Reforms for a Livable City - Centre for Science and Environment - New Delhi, India
12. Parking Guidelines for Downtown Kirkland, WA
13. Parking Mgmt. Strategies for Downtown Kirkland, WA
14. Montgomery County MD Parking Policy Study – Summary
15. Montgomery County Parking Policy Study – Spring 2011 – ZAP Summary
16. The Myth of Free Parking - Transit for Livable Communities
17. New Suburbanism: Reinventing Inner-Ring Suburbs
18. NYC Parking Best Practices
19. Parking Requirement Impacts on Housing Affordability – Litman – VTPI

20. Parking Management Tools - A Discussion of Time-Limits and Pay Parking
21. Westport Parking Study & Commercial Design Guidelines – City Council Presentation
22. Parking Best Practices – A Review of Zoning Policies and Regulations in Select US and International Cities
23. Parking Code Guidance: Case Studies and Model Provisions - MTC Smart Growth Technical Assistance: Parking Reform Campaign
24. Parking Management - Strategies, Evaluation and Planning – Litman – VTPI
25. Article: Yes, Parking Reform is Possible – Shoup
26. Policies for Shareable Cities: Transportation
27. Quantity versus Quality in Off-Street Parking Requirements - Vinit Mukhija and Donald Shoup
28. Parking Study for Dania Beach Parking - Implementation Plan – Kimley-Horn
29. Driving Urban Environments: Smart Growth Parking Best Practices - Governor's Office of Smart Growth, Annapolis, MD
30. Smart Growth Network Multimodal Incentives
31. Strategies and Tools to Implement Transportation-Efficient Development: A Reference Manual Phase 2 of Integrating Land Use and Transportation Investment Decision-Making
32. TOD and Transit Station Area Principles – Kimley-Horn
33. Tools for Mixed-Income TOD - Douglas Shoemaker/Center for Transit Oriented Development
34. The Transportation Prescription - Bold New Ideas for Healthy, Equitable Transportation Reform In America
35. Arlington County Residential Transportation Performance Monitoring Study - Sept-2013