The High Cost of Free Parking

By Donald Shoup

Summarized by
Tri-State Transportation Campaign
350 W 31st Street, New York, NY 10001
p: (212) 268-7474 f: (212) 268-7333
www.tstc.org

The matter of parking is largely taken for granted, until you're circling the block looking for that elusive space. Even for many transportation professionals and urban planners, parking tends to be little more than an afterthought. But a major new treatise by UCLA professor **Donald Shoup** makes a strong case for more attention to parking. Shoup determines that in the United States, off-street parking consumes an area roughly the size of Connecticut. If global car ownership rates catch up with those in the U.S., and assuming just one off-street space per car, an area the size of England would need to be paved to house the world's car fleet (during the 95 percent of the day when it's not on the road).

Shoup contends that many of the woes associated with America's car culture can be linked directly to the lack of rational attention to parking. More specifically, he argues that the **oversupply of free parking** (he estimates 99 percent of parking in the U.S. is free) is an enormous public subsidy that makes driving less expensive than it should be, further skewing travel choices. In fact, transportation suffers from the same "tragedy of the commons" relative to parking observed with regard to fisheries and other free and un-owned resources. Zoning requirements for overly-abundant off-street parking and failure to charge appropriately for curb parking result in extra air pollution, higher oil consumption, traffic congestion, and sprawl.

Less obviously, **parking requirements increase the cost of housing, as well as goods and services**. For urban areas, Shoup summarizes these effects quoting Mumford: "The right to have access to every building in the city by private motorcar in an age when everyone possesses such a vehicle, is actually the right to destroy the city."

For those who don't have the time to read *The High Cost of Free Parking's* hefty 700 pages, we have summarized Shoup's major findings into three sections following the outline of his book: zoning codes' influence on the proliferation of free parking, the cruising-for-parking phenomenon, and Shoup's policy recommendations.

<u>The Problem With Zoning</u>

According to the American Planning Association, cities set parking requirements for at least 662 different land uses – everything from "adult entertainment" establishments to nunneries (e.g. 1 space per patron, plus 1 space per employee on the largest working shift for adult entertainment and 1 space per 10 nuns for the nunnery). Shoup says the requirements are often simply pulled

out of thin air. There are two primary sources for these requirements: the parking requirements of neighboring communities and the Institute of Transportation Engineers' (ITE) *Parking Generation* manual. Both sources are problematic, but the second is all the more troubling in its faults because it purports to be scientific.

Parking Generation recommends the exact number of parking spaces needed per square foot for dozens of different land uses, and supports those figures with scatter plots and studies. But Shoup shows that the recommendations are in fact derived from far too few studies to be reliable. Half of the parking generation rates are based on four or fewer studies and 22 percent are based on a single study. But even if an adequate number of studies had been analyzed, the rates would still be skewed high because nearly all of the studies examine the demand for *free* parking during times of peak demand in suburban locations with few, if any, alternatives to driving. Shoup compares this to the demand for free pizza. The slices go a lot more quickly if they are free than if they are sold at an appropriate price.

Shoup says "city planners sometimes mistake Pandora's box for a toolkit." With the best of intentions, planners have "cured" parking shortages with a tonic that has made matters worse. The practice of setting off-street parking requirements in city zoning codes has become fully entrenched. Even for low-income housing projects where a majority of residents can't afford a private vehicle, zoning codes require vast parking lots to meet a demand that will never materialize. Those lots not only add to the cost of a development, they also require that land which could otherwise be used for housing (or landscaping, etc). Overall, parking requirements increase the cost and diminish the supply of housing, and this effect is not limited just to low-income developments. A San Francisco study found that requirements for off-street parking increased housing prices by an average of $47,000 and increased the household income necessary to purchase a house from $67,000 annually to $76,000.

Shoup calculates that parking requirements impose a public subsidy for drivers that came to at least $127 billion in 2002 (total annual land, capital and operating costs of U.S. off-street parking) and may be closer to $374 billion. For comparison, in 2002 federal Medicare spending was $231 billion and for the military was $349 billion. Shoup calculates that the value of off-street parking, at approximately $12,000 per vehicle, roughly equals the total capital cost of all vehicles plus all roads in the U.S..

On a per-mile driven basis, the subsidy for parking amounts to between 5 and 14 cents. Shoup calculates that gasoline taxes would have to be raised by $1.27 to $3.74 per gallon to offset this subsidy, and notes that charging appropriately for parking may be as, or even more effective, not to mention technologically simpler, than other pricing techniques aimed at reducing driving. He cites a study of Boston finds that a $1 parking surcharge would roughly double the average traffic speed in the central business district, the same benefit that would result from a $1 congestion fee.

Although part three of *The High Cost of Free Parking* is dedicated to Shoup's recommendations, in part one he discusses two solutions which could be implemented relatively easily in the near term: **fees in lieu of parking requirements**, and offering developers the option to **reduce travel demand** as an alternative to building a portion of required parking. Fees in lieu of parking

requirements allow cities to collect funds from developers to build shared parking facilities. The idea has significant benefits for urban design, largely because it would consolidate parking rather than requiring each establishment to provide a separate lot. Further, because different land uses require parking during different times of the day, a smaller amount of parking can be shared among several establishments.

The second solution, reducing demand, offers developers a cost-effective alternative to building more parking. Shoup suggests that employers or developers can offer "eco-passes" as a way to encourage transit use, walking, or bicycling instead of driving. Other demand reduction options are "cash-out parking" (a travel demand management technique which Shoup conceived of years ago) whereby employers offer workers cash in lieu of a free parking space (the employee can spend it to park, or pocket it if another commuting means is available) and car-sharing. Beyond the obvious benefit of diminishing the need for parking and freeing up land for higher end uses, this approach reduces vehicle trips, cutting air pollution, lowering oil consumption, and easing congestion.

Cruising for Parking

Parking has been getting attention recently in New York City. First was the July city council vote to make parking free on Sundays and Mayor Bloomberg's subsequent veto. In August, some city parking meters began accepting parking cards for payment. Meanwhile, the Tri-State Campaign and some Bronx groups have expressed concern over plans to build thousands of additional parking spaces around Yankee Stadium, a change which will encourage more fans to drive.

In Part 2 of his book, Professor Shoup explores the trials and tribulations of cruising for free curb parking. This is an experience car-owning New Yorkers, facing alternate-side-of-the-street rules, not to mention visitors to the city, are very familiar with. Shoup asserts that cruising for parking is much more than just run-of-the-mill aggravation. In fact, **cruising for parking results in a tremendous amount of excess driving** and all of its concomitant ills — air pollution, crashes and traffic congestion.

Because it is available to drivers on a "first-come, first-served" basis, free parking suffers the problem of communal ownership. Once drivers secure a space, they have no incentive to give it up in a timely fashion.

Based on review of 16 mostly American and European studies of cruising conducted between 1927 and 2001, Shoup concludes that cars searching for free parking contribute to **over 8% of total traffic**. The relevant New York City study was conducted in 1995 by John Falcocchio, Joe Darsin and Elena Prassas. They concluded the average time drivers took to find a curb space between 8 and 10 a.m. was 7.3 minutes, increasing to 10.6 minutes between 11a.m. and 2 p.m. According to their research, cruising for curb parking created about 8 percent of the total vehicle miles traveled in west Midtown.

Shoup has developed a model to explain why a driver would choose to cruise for free curb parking rather than pay for off-street parking (interested readers can turn to page 323 of his book

for the equation). He says the decision to seek free parking is based on the price of off-street parking, the amount of time a driver intends to park for, the time spent searching, the cost of gas burned while cruising, the number of people in the car, and the value of the driver and his passengers' time. If the cost of off-street parking outweighs all of those other variables, the driver will cruise for parking at the curb.

Some will likely disagree that all time-wasting, gridlock-contributing motorists indulge in such an involved calculus, but it at least provides a baseline for how some drivers may approach parking.

The most compelling chapter in this section examines the impacts of cruising for parking. Shoup uses UCLA's Westwood Village and its backwards pricing policy as his example. Westwood has plenty of moderately priced off-street parking available, but metered curb spaces are **free in the evening** when the district sees its highest traffic levels.

Shoup and his assistants conducted 160 park-and-visit tests by bicycle and found that the average search time for parking is 3.3 minutes for all times, but is **nearly 10 minutes during evening hours**. The average search time of 3.3 minutes may seem insignificant, but added up across all of Westwood's drivers, it amounts to 426 hours per day (a little more than 10 work weeks).

Shoup found that the average distance driven while cruising for a free parking space in Westwood was half a mile. Added across all cruising drivers, the behavior contributes 3,600 vehicle miles traveled in the district each day. Over the year, that totals 945,000 extra miles traveled, or **two round trips to the moon**, using 47,000 gallons of gasoline and producing 728 tons of CO2. The cumulative impact of cruising across all commercial districts in the U.S. is obviously far higher.

Beyond zoning requirements that cause overbuilding of off-street parking, many areas deal with parking shortages by setting time limits. These are ineffective because drivers routinely violate the rules. (A Seattle survey found the average parking duration in 1-hour spots was 2.1 hours.) Some areas have explored providing information measures to broadcast locations of available parking.

But Shoup asserts that the most appropriate way for cities to address curbside parking shortages is to **price the spaces** – he says that would result in 14 percent (about 1 in 7) of spaces being open. Like congestion pricing schemes, rates could vary throughout the day depending on demand (enabled by new technology like NYC's muni-meters).

But pricing free curbside parking isn't rocket science. Indeed, the parking meter, first introduced in Oklahoma in 1935, is the obvious example. Shoup suggests political hurdles to introducing or hiking prices can be overcome by shifting responsibility for setting rates from politicians to bureaucrats, though this may seem to be a fairly ivory-tower, or at least Californian, point of view.

Shoup's Parking Policy Recommendations

In the third and final section of his opus, *The High Cost of Free Parking*, UCLA Professor Donald Shoup identifies ways to overcome technological and political barriers in the way of charging market-priced rates for parking.

The first obstacle is relatively easy to address. Shoup describes several new takes on the traditional parking meter, which was invented by a member of the Oklahoma City Chamber of Commerce in 1935. Most American parking meters haven't changed much in the 70 years since. But recent years have seen significant advances.

Pay-and-display and **pay-by-space meters** are used in New York City, Aspen and Berkeley and differ from traditional meters in that they control multiple spaces. They also have the benefit of allowing cash, credit card, smart card and even cell phone payments. Personal in-vehicle meters, also employed by Aspen and in Arlington, VA, allow parkers to pay without stepping out of their cars. Drivers key the appropriate parking zone, insert their parking smart card, and display the meter in the windshield. Payment is deducted until the driver returns and switches off the meter. In several European cities, drivers pay for parking with their cell phones by calling a city parking number and keying in license plate and parking zone (cell payment is also a popular way to pay London's congestion charge). An in-vehicle transponder allows control officers to determine if the car is paying and parked legally. The EU is also exploring using Global Positioning System satellites to pay for parking.

Beyond their convenience, the principal advantages of modern payment methods is that parking rates can be adjusted to respond to demand. During peak parking periods, rates can be adjusted upward to ensure a rough balance between supply and demand, reducing some trips and also cutting back on cruising for parking.

Of course the **bigger obstacle to charging for parking** (evident in the recent tempest over NYC metered Sunday parking) **is politics**. Resistance to increasing parking rates and putting a price on previously free parking is strong. Shoup says it can be overcome via **parking benefit districts**.

Under such a plan, the district would receive some or all of parking revenue, rather than see it disappear into a city's general fund coffers. The district would use the funds for transportation and community improvements such as sidewalk cleaning, landscaping, storefront facades, bicycle and walking paths, etc. The establishment of parking benefit districts helps make metered parking more palatable to curbside shop owners and residents. Both groups can see a clear link between the coins deposited in parking meters and improvements in their districts.

Two southern California cities currently employ parking benefit districts: **Old Pasadena** and **San Diego**. Old Pasadena's Parking Meter Zone (PMZ) brought in $1.3 million in 2001 and helped transform a dying commercial district into a vibrant and popular destination for shoppers and diners. The PMZ chair credits parking revenue for turning Old Pasadena around, saying, "This might seem silly to some people, but if not for our parking meters, it's hard to imagine that we'd have the kind of success we're enjoying. They've made a huge difference. At first it was a

struggle to get people to agree with the meters. But when we figured out that the money would stay here, that the money would be used to improve the amenities, it was an easy sell."

San Diego returns 45 percent of parking meter revenues (amounting to almost $2.2 million in 2002) to three Parking Meter Districts. An Uptown District uses its funds to revitalize commercial streets, improve the walking environment, establish focal points for transit services and increase off-street parking. San Diego's meters carry the mantra: "Small Change for Big Changes."

In residential areas, concerns about charging for curb parking can be ameliorated by giving residents the right to park for free. In this way, only "outsiders" are paying for parking, and their contributions go toward improving the neighborhood.

NYC recently introduced new parking meters which accept pre-paid smart cards for payment. This makes parking more convenient. But unfortunately, peak premiums seem a distant prospect while NYCDOT promotes **cheap and easy curb parking**. A new ad on its website invites Manhattan motoring: "Driving to the Theater District? Use On-Street Parking – Only $2.00 per hour."

That said, Mayor Bloomberg, in announcing the new meters, noted that the new technology could allow DOT to one day charge variable, demand-driven parking rates.