PARKING MANAGEMENT

5

A comprehensive parking management plan is a key component to managing congestion and reducing the impacts of auto traffic in a vibrant multi-use downtown. The goal of the parking program is to manage parking supply and demand, ensure that a growing downtown does not impact residential neighborhoods, and secondarily, to generate revenue for downtown area improvements.

All the recommendations included in this chapter have been successfully tested in many communities similar to Glendale. Combined with strategies promoting alternative modes, they are a critical component to managing congestion downtown.

While on-street parking Downtown is often fully occupied (ABOVE), there are hundreds of empty spaces in public garages (BELOW).

5.1 PRINCIPLES

Historically, "solving the parking problem" almost always meant increasing supply. Unfortunately, constantly increasing parking supply simply encourages more auto use, as people are encouraged to drive to places that offer "plenty of free parking." While providing adequate parking is still important, it is only one tool available for managing both demand and supply. The goal of "parking demand management" is to provide the optimal amount of parking to meet parking needs while reducing traffic congestion and accommodating new development.

Managing parking has been shown to be the single most effective tool for managing congestion, even when densities are relatively low and major investments in other modes have not been made. Parking management can have a significant impact on commute mode choice, which translates directly to reductions in auto congestion and improved livability of downtown and downtown-adjacent neighborhoods.

Currently, Glendale has more than an adequate supply of parking downtown- the peak occupancy for all downtown public parking is 53%, meaning that even at the busiest times approximately 2,500 public parking spaces are available.[1] But while there's no shortage of parking in downtown Glendale, the current inverted price structure (in which the most convenient curb parking that short-term parkers value the most is free or low-priced while harder to find off-street parking is relatively costly) and limited wayfinding signage indicating where available parking is located creates the perception of a parking shortage. Downtown visitors drive along Brand and see that the curb parking is fully occupied throughout the day, and circle for a parking space either unwilling to pay for parking or not knowing that just a few blocks a way there are thousands of empty public parking spaces in underutilized garages and lots.

As Glendale continues to grow, its parking needs will change as well, and this *Downtown Mobility Study* recommends techniques to both address current needs and adjust to future needs. However, building too much parking, parking that is priced too low, or parking that is priced incorrectly (with on-street parking cheaper than off-street garages and lots) will attract more peak-hour automobile trips, as well as undermine the downtown's historic character, hamper mobility for transit, bicyclists, and pedestrians, and preclude more productive land uses.

1 Based on weekday 1-2 PM peak for all downtown parking. See Appendix 5A for more information.

In recognition of these considerations, the following principles informed the development of parking management recommendations for downtown Glendale:

- Set clear parking priorities based on downtown Glendale's strengths and vision for the future.
- Manage the entire parking supply as part of an integrated system.
- Manage parking facilities with a focus on maintaining availability, not simply increasing supply.
- Ensure that people know where to find available parking.
- Optimize investment in parking by making most efficient use of all public and private parking facilities, before constructing new parking.
- Implement demand-responsive pricing structures to meet different types of parking needs and promote parking goals.
- Use parking revenue to fund programs that increase transportation choices and reduce congestion, as well as maintaining adequate parking supply.
- Use residential parking benefit districts to address spillover concerns in neighborhoods adjacent to downtown, the Glendale Transportation Center, and other areas with higher-than-average parking demand.
- Encourage economic revitalization of downtown and remove barriers to development and adaptive reuse projects by adopting parking standards that are tailored to the unique parking demand of mixed-use, walkable downtowns.

5.2 SUMMARY OF RECOMMENDATIONS

COORDINATED MANAGEMENT OF TOTAL PUBLIC PARKING SUPPLY

Downtown On-Street and Off-Street Parking

Recommendation 5.1
Create a "Park Once" district in Downtown Glendale to manage all public parking as an integrated system.

Recommendation 5.2
Implement coordinated parking management policies for on- and off-street parking, using demand-responsive pricing to promote parking goals of 85% occupancy, matching demand with available supply, and promoting turnover of short-term spaces.

Glendale Transportation Center Parking

Recommendation 5.3
Implement parking pricing system for Glendale Transportation Center parking lots allowing Metrolink and Amtrak riders to park free all day but charging all other short-term and long-term parkers.

IMPROVE CUSTOMER-FRIENDLINESS FOR DOWNTOWN VISITORS

Recommendation 5.4
Implement a multi-modal transportation and parking wayfinding system, including information on parking location, pricing, and real-time parking occupancy.

Recommendation 5.5
Install networked multi-space pay stations and occupancy sensors to improve customer friendliness, revenue management, and occupancy monitoring of downtown parking.

Recommendation 5.6
Continue existing City protocols that dedicate adequate parking spaces throughout downtown for loading zones, taxi stands, and ADA-accessible parking.

CREATE TOOLS FOR FLEXIBLE AND EFFICIENT PARKING ADMINISTRATION

Recommendation 5.7

a. Create a Downtown Transportation and Parking Management District, managed by the Traffic and Transportation Administrator (or a newly-hired position to whom they may delegate this responsibility) in consultation with an advisory body of downtown merchants, property owners, and residents.

b. Dedicate all parking revenue to a Downtown Transportation Fund to be invested in transportation and streetscape improvements, including capacity enhancements, transit improvements, and pedestrian enhancements, as well as future parking needs.

Recommendation 5.8

Authorize Traffic and Transportation Administrator (or a newly-hired position to whom they may delegate this responsibility) to adjust downtown parking rates, hours, and time limits as needed to achieve 85% occupancy based on occupancy monitoring.[1]

Recommendation 5.9

Pursue a study of how the City could enter into contractual arrangements with one or more valet parking operators for all of downtown in order to improve parking management and customer-friendliness, streamline valet parking operations for private and public events with high parking demand, and increase City revenue for the private use of public right-of-way.[2]

[1] In order to provide the public and their elected representatives on City Councils assurance that prices will not increase indefinitely without any public discussion, the City Council can implement a price threshold at which time staff must return to Council for reauthorization of the authority to set prices based on demand. Within the same ordinance they can extend this authority up until a new price threshold is reached. This concept is discussed further in the discussion of Recommendation 5.8.

[2] In order to create a level playing field and not disadvantage smaller valet operators, such a study should be conducted with a full public process and in close consultation with businesses that currently offer (or would like to offer in the future) valet parking in downtown Glendale. This concept is discussed further in the discussion of Recommendation 5.9.

IMPLEMENT NEW PARKING STANDARDS FOR DOWNTOWN DEVELOPMENT

Recommendation 5.10

Require as a condition of approval for new downtown development that all non-residential parking be made available for public parking when not needed for its primary commercial use.

Recommendation 5.11

Require as a condition of approval for new downtown development that all non-residential parking be shared among other uses (as different parking demand patterns among these uses permit).

Recommendation 5.12

Consider implementing a "traffic congestion impact fee" based on downtown development projects' proposed number of parking spaces and/or estimated peak-hour vehicle trips. Use impact fee revenues to fund transportation programs and projects that benefit both the development project and downtown as a whole. Pursue a nexus study to determine most appropriate assessment methodology and fee structure.

Recommendation 5.13

Revise zoning code to legalize more efficient parking arrangements in new downtown development in order to facilitate better ground-floor urban design (i.e. allow development to reduce its "parking footprint" by right without reducing the total supply provided).

Recommendation 5.14

Expand existing provisions in zoning code that allow new downtown development to go below existing parking minimums by right, under very specific conditions.

IDENTIFY AND ADDRESS NEIGHBORHOOD PARKING PROBLEMS IMMEDIATELY

Recommendation 5.15

Prevent spillover parking in neighborhoods adjacent to downtown and the Glendale Transportation Center as needed by converting the City's existing neighborhood Preferential Parking Program into a Residential Parking Benefit Districts, where residents can park for free or at low annual permit costs but non-residents pay to park and the resulting revenue is invested in the neighborhood.

DEVELOP NEW PARKING SUPPLY AS NEEDED

Recommendation 5.16

If total downtown parking demand cannot be met with existing supply after *Downtown Mobility Study* recommendations have been fully implemented, build new public shared parking as needed.

5.3 DISCUSSION OF RECOMMENDATIONS

5.3.1 COORDINATED MANAGEMENT OF TOTAL PUBLIC PARKING SUPPLY

Downtown On-Street and Off-Street Parking

Park Once Policy

Glendale should officially adopt and implement a "Park Once" policy for Downtown Glendale, where all parking is managed as an integrated system. The key management strategies for a Park Once district will include:

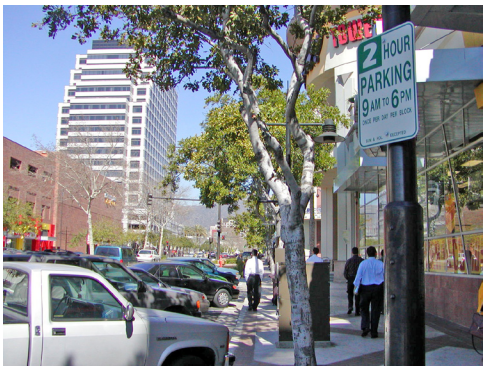
- Continue to encourage all existing and new private parking facilities to be made available to the public when not needed by its principal user (as discussed in Recommendation 5.10).
- Continue to encourage shared parking between uses in all existing and new private parking facilities wherever feasible (as discussed in Recommendation 5.11).
- Maximize the use of (and revenue from) existing public parking by new and existing development to ensure that existing supply is being used optimally before building additional supply (as discussed in Recommendation 5.13).
- If new parking supply is needed, first purchase or lease existing private parking lots or structures from willing sellers, and add this parking to the shared public supply before building expensive new garages (as discussed in Recommendation 5.16).

Key Park Once Strategies: Encourage Publicly-Available, Shared Parking to Maximize the Use of Private and Public Parking Supply

Key components of implementing the Park Once strategy will be to continue to maximize the utilization of the entire parking supply by encouraging existing and new private parking lots and garages to be made available to the public when they are not actively serving nearby commercial uses and to continue to encourage shared parking between different uses in all existing and new parking facilities. In downtown Glendale there are about 22,850 private off-street parking spaces, and many of these private lots and garages have significant surplus capacity in the evening and on weekends. However, some private lots and garages are currently unavailable for public parking. By adding these existing spaces to the public supply, the City will be able to inexpensively add a significant amount of parking capacity to the downtown.

In addition, the City should maximize use of and revenue from existing public parking for new and existing development. One way to do this is to expand provisions in the zoning code to legalize more efficient parking arrangements, so that new downtown development can lease empty parking spaces in downtown public parking garages rather than building dedicated on-site parking.

Recommendation 5.1
Create a "Park Once" district in Downtown Glendale to manage all public parking as an integrated system.



ABOVE: Parking on Brand Boulevard will be an integral part of Downtown Glendale's Park Once District.

These and other strategies discussed in Recommendation 5.13 will promote better urban design downtown (by allowing development to reduce its "parking footprint" without reducing the total supply provided) while also promoting fiscally-responsible management of taxpayer-funded public assets (by improving the utilization of and revenue from downtown public parking facilities).

By transforming motorists into pedestrians, who walk instead of drive to different downtown destinations, a "Park Once" strategy is an immediate generator of pedestrian life, creating crowds of people who animate public life on the streets and generate the patrons of street friendly retail businesses. In addition, a "Park Once" strategy will increase transit ridership downtown, especially on the free downtown circulator.

To support the "Park Once" strategy, implement the "Buzz," a free downtown bus circulator (transitioning to trolley as funding permits), so that downtown commuters and visitors can park where parking is available and conveniently get around downtown (as discussed in Chapter 4).

Recommendation 5.2
Implement coordinated parking management policies for on- and off-street parking, using demand-responsive pricing to promote parking goals of 85% occupancy, matching demand with available supply, and promoting turnover of short-term spaces.

Demand-Responsive Parking Prices

What is the right price for downtown parking? If prices are used to create vacancies and turnover in the prime parking spots, then what is the right price? An ideal occupancy rate is approximately 85%. At this level of occupancy, at even the busiest hour about one out of every seven spaces will be available, or approximately one empty space on each block face. This provides enough vacancies that visitors can easily find a spot near their destination when they first arrive. For each block and each parking lot in downtown, the right price is the price that will achieve this goal. This means that pricing need not be uniform: the most desirable spaces may need higher prices, while less convenient lots are less expensive. Prices should also vary by time of day and day of week: for example, higher at noon, and lower at midnight.

Ideally, parking occupancy for each block and lot should be monitored carefully, and prices adjusted regularly to keep enough spaces available. In short, prices should be set at market rate, according to demand, so that just enough spaces are always available. Professor Donald Shoup of UCLA advocates setting prices for parking according to the "Goldilocks Principle:"

> *The price is too high if many spaces are vacant, and too low if no spaces are vacant. Children learn that porridge shouldn't be too hot or too cold, and that beds shouldn't be too soft or too firm. Likewise, the price of curb parking shouldn't be too high or too low. When about 15*

percent of curb spaces are vacant, the price is just right. What alternative price could be better?[2]

If this principle is followed, then there need be no fear that pricing parking will drive customers away. After all, when the front-door parking spots at the curb are entirely full, under-pricing parking cannot create more curb parking spaces for customers. And, if the initial parking meter rate on a block is accidentally set too high, so that there are too many vacancies, then a policy goal of achieving an 85% occupancy rate will result in lowering the parking rate until the parking is once again well used (including making parking free, if need be).

For these reasons, the *second* key component of successfully implementing a Park Once district in downtown Glendale will be to transition to demand-responsive pricing to promote parking goals of:

- Achieving 85% occupancy at all on- and off-street public facilities.
- Matching demand with available supply.
- Promoting turnover of short-term spaces.

While time limits are sometimes necessary to encourage turnover, pricing – rather than simply limiting time – is key to achieving the desired 85% occupancy rate. As Figure 5-1 and Figure 5-2 show, peak parking occupancy rates vary considerably among different facilities downtown. For example, the public garages are never more than three-fourths occupied at peak demand periods (and usually much less so), while curb parking on Brand Boulevard is consistently over 90% full (a subsequent occupancy study of the Marketplace and Exchange garages found that many of the public garages were rarely over 50% full, even during the December 2006 holiday shopping season).[3] Rather than going into a nearby garage, drivers who don't find parking on Brand often circle around the block or double park waiting for someone to return to their car. While the garages are not overly expensive, it is difficult to justify going into a garage to pay for something that seems to be given away for free. For this reason, the following management policies that respond to the *actual* observed parking demand patterns in downtown Glendale are recommended:

- **Brand Boulevard:** From 7 am to 1 am, parking on Brand Blvd. should be metered at a rate of $1/hour and subject to 2-hour time limits from 7 am to 6 pm. Shorter time limits considered for blocks where high turnover is especially important, including a 30-minute limit on the east side of the 200 and 400 blocks of N. Brand Blvd. (there are health clubs at 240 and 450 N. Brand) and

2 Shoup, Donald. *The High Cost of Free Parking*. Chicago: APA Planners Press (2006).

3 City of Glendale Interdepartmental Communication, "Existing and Potential Near-Term Parking Utilization of the City's Marketplace Parking Garage and Exchange Parking Garage," 1/16/07.

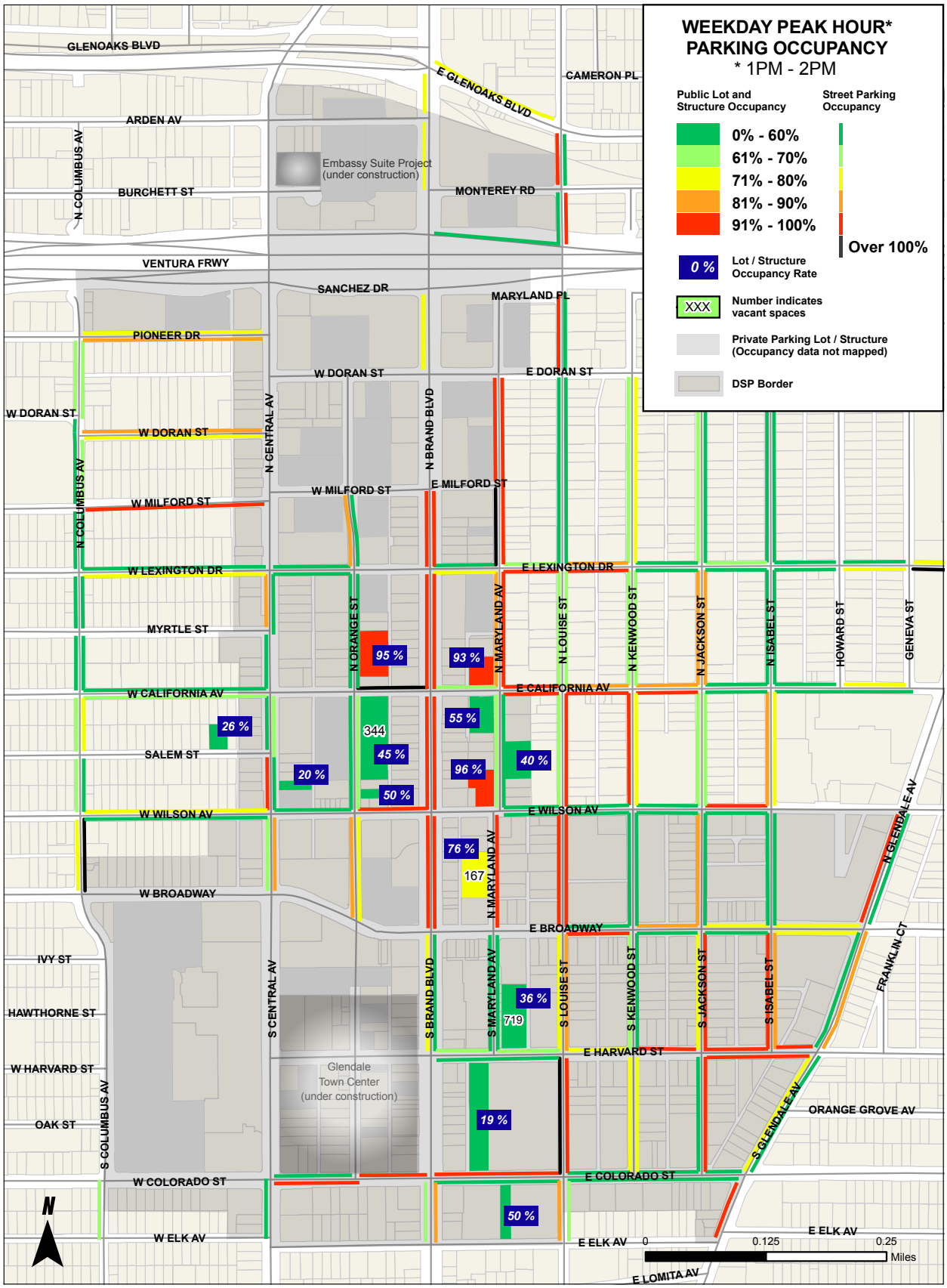
the west side of the 300 block of N. Brand Blvd. (Porto's Bakery is at 315 N Brand). After 6 pm, parking on Brand Blvd. will continue to be priced at $1/hour, but time limits will be eliminated. A "no parking" restriction from 3 am to 4 am should be implemented to prevent overnight parking (as is done in Pasadena).

- **All other streets:** Meter at $0.75/hour from 7 am to 10 pm with no time limits.
- **Lots:** Price at $0.75/hour from 7 am to 12 am with no time limits and no daily or monthly discount pricing offered. This *Downtown Mobility Study* recommends that time limits in all public parking lots be eliminated and demand-responsive prices be instituted. In rare cases (such as extremely high-demand lots), it may not be possible or desirable to implement demand-responsive prices immediately at high enough rates to promote adequate turnover. In these cases, time limits may be retained with the duration of time limits determined for each lot on a case-by-case basis. Even for those lots where time limits may be retained, parking rates should continue to be incrementally increased as needed to the point where prices alone are sufficient to promote adequate turnover, at which point the time limits may be removed. In order to encourage Glendale residents and employees to take transit for part of their trip, the City can offer a discounted monthly parking pass at any underutilized parking lots at the Glendale Transportation Center; such a pass would also allow for free shuttle connection to downtown.
- **Garages:** Offer the first 90 minutes free without validation. Thereafter price at $1.00/hour from 6 am to 1 am with no time limits. The price of a monthly parking pass should be increased slightly by $5 per month (to $50 to $60 per month depending on the facility) to account for the fact that there hasn't been an increase in monthly garage rates in 10 years and major maintenance needs are pending.[4] Even with this recommended increase, monthly rates in the City's public garages will be below-market rates charged by private parking facilities; for this reason, monthly rates at public facilities should be increased to market rates at any facilities where occupancy regularly exceeds 85%. Currently, occupancy in public garages is generally quite low, and in the interim the City should pursue implementation of program to provide downtown employees with discounted daily or monthly commuter parking passes on underutilized top floors of public garages.

Following the principle of using prices to manage parking demand will generally result in slight increases to parking prices in downtown Glendale; however, the City should reduce or waive parking prices during days and at facilities where parking

4 At current rates and occupancies, the City's public garages will soon be operating at a loss as pending maintenance needs become necessary (such as elevator replacement). In order for the garages to be self-sufficient, the City needs to optimize their use and revenue generation.

Figure 5-1 Downtown Glendale Parking: Weekday Peak Hour Parking Occupancy (1-2 PM)



Source: City of Glendale, Department of Transportation
Note: Occupancy data for lots and Brand Blvd. collected November 2004. Occupancy data for structures collected January - March 2005. Occupancy data for all other streets except Brand Blvd. collected August 2006 & November 2006. Hourly occupancy data was not available for lots 10 & 11, the occupancy mapped is an average. Those streets with no occupancy rate indicated are streets where curb parking is prohibited/restricted or streets where no occupancy data was provided.

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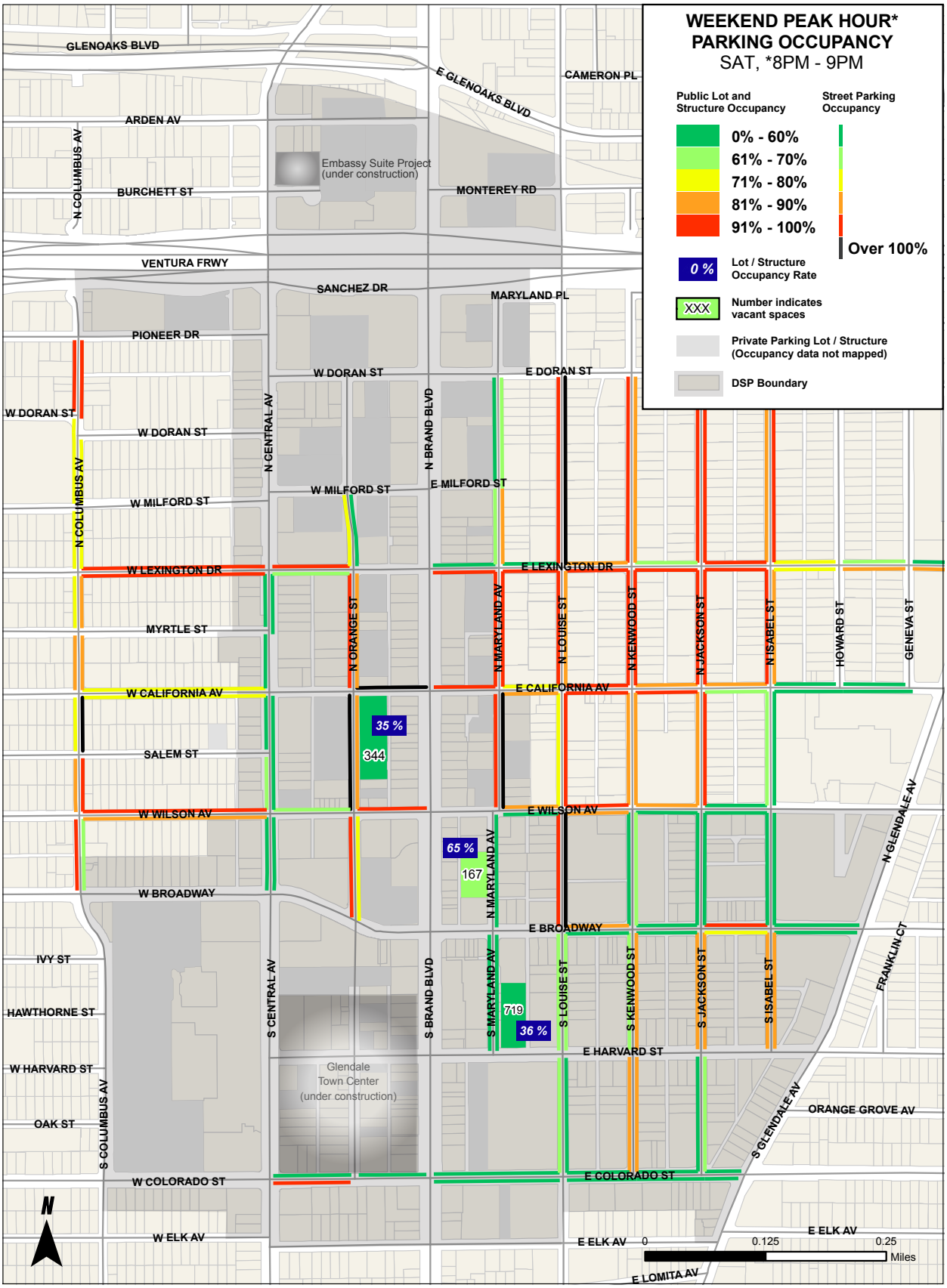
Figure 5-2 Downtown Glendale Parking: Weekend Peak Hour Parking Occupancy (8-9 PM)



***Source:** City of Glendale, Department of Transportation*

Note: Occupancy data for lots and Brand Blvd. collected November 2004. Occupancy data for structures collected January - March 2005. Occupancy data for all other streets except Brand Blvd. collected August 2006. Hourly occupancy data was not available for lots 10 & 11, the occupancy mapped is an average. Those streets with no occupancy rate indicated are streets where curb parking is prohibited/restricted or streets where no occupancy data was provided.

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demand is consistently and significantly lower than the ideal of 85%. For example, if occupancy surveys show that demand is consistently and significantly lower than 85% on Sundays, then the hourly price of parking can be reduced below the initial prices recommended here (or made free entirely if demand is so low to warrant it) until 85% occupancy is achieved. Or if demand is consistently and significantly lower than 85% on a particular block, parking prices can be reduced below the initial prices recommended here until 85% occupancy is achieved. As discussed in Recommendation 5.5, on-going monitoring of occupancy of all downtown and downtown-adjacent parking facilities (garages, lots, and on-street) will be necessary to guide the Traffic and Transportation Administrator (or their delegate) in making these pricing decisions.

As discussed in Recommendation 5.5, prior to and concurrent with the implementation of changes to downtown parking policies (such as priced parking, elimination of time limits at certain parking facilities, and installation of parking pay stations), the City should conduct extensive community outreach and education, install user-friendly signage to explain pay station operation, rates, and hours/days of operation, and deploy "Mobility Ambassadors" to assist with pay stations during first few weeks of implementation, and during peak visitor demand periods (these could either be existing City staff or temporary hires). A well-conceived and well-executed public outreach and media relations campaign is critical to ensuring the smooth implementation of the recommendations in this *Downtown Mobility Study.*

Time Limits

Without appropriate pricing policies, cities often rely on time limits to manage parking. Time limits, however, bring several disadvantages: enforcement of time limits is labor-intensive and difficult, and downtown employees, who quickly become familiar with enforcement patterns, often become adept at the "two hour shuffle," moving their cars regularly or swapping spaces with a co-worker several times during the workday. Even with strictly enforced time limits, if there is no price incentive to persuade employees to seek out less convenient, bargain-priced spots, employees will probably still park in prime spaces.

For customers, strict enforcement can bring "ticket anxiety," the fear of getting a ticket if one lingers a minute too long (for example, in order to have dessert after lunch). As Dan Zack, Downtown Development Manager for Redwood City (CA), puts it:

> *Even if a visitor is quick enough to avoid a ticket, they don't want to spend the evening watching the clock and moving their car around. If a customer is having a*

ABOVE: Ninety minutes of free parking would eliminate the need for the City of Glendale's parking validation program.

> *good time in a restaurant, and they are happy to pay the market price for their parking spot, do we want them to wrap up their evening early because their time limit wasn't long enough? Do we want them to skip dessert or that last cappuccino in order to avoid a ticket?*[5]

A recent report summarizes a survey that found similar results among visitors to downtown Burlingame (CA):

> *In a recent "intercept" survey, shoppers in downtown Burlingame were asked which factor made their parking experience less pleasant recently...The number one response was "difficulty in finding a space" followed by "chance of getting a ticket." "Need to carry change" was third, and the factor that least concerned the respondents was "cost of parking." It is interesting to note that Burlingame has the most expensive on-street parking on the [San Francisco] Peninsula ($0.75 per hour) and yet cost was the least troubling factor for most people.*[6]

This is not an isolated result. Repeatedly, surveys of downtown shoppers have shown that the availability of parking, rather than price, is of prime importance.

For these reasons, this *Downtown Mobility Study* recommends that – with the exception of Brand Boulevard where time limits will remain in place along with new metered parking – time limits be phased out in the DSP area once a policy goal of 85% is implemented and priced parking is implemented. This is because transportation research and practical experience shows that demand-responsive pricing is a far superior mechanism than time limits for promoting turnover of short-term spaces, optimizing efficient use of curb parking, and reducing enforcement costs.

Validation

Furthermore, this *Downtown Mobility Study* recommends that the City phase out its current validation program (when existing agreements expire). The current validation program results in the loss of $400,000 to $450,000 parking revenue annually.[7] This amounts to nearly a half-million dollar annual subsidy for driving downtown (with no subsidy provided to visitors who arrive downtown by other modes).[8] The validation program also carries with it an inherent administrative cost, and is counter to the City's goal for reducing the growth of traffic congestion as new downtown development moves forward. Offering 90

5 Zack, Dan. *Downtown Redwood City Parking Management Plan*, Community Development Department, Redevelopment Division (2005).

6 Ibid.

7 Data provided by the Jano Baghdanian, City of Glendale Traffic and Transportation Administrator, 1/17/07.

8 For example, motorists who drive downtown, park in a public garage, and attend a movie get $1 off their movie ticket with parking validation (in addition to 4 hours of parking for $1). Movie lovers who visit downtown theaters by transit, on-foot, or by bicycle receive no similar discount, providing financial incentive for people to drive downtown.

minutes free in the garages will accomplish the goal of incentivizing motorists to use the garages instead of cruising for on-street parking and will save the City the administrative costs of running the validation program. Combined with an improved signage and wayfinding system, people will be encouraged to go to the garage directly, avoiding congestion downtown.

Public Parking Leases

So long as peak occupancy in public parking facilities remains low, the City may continue its program of leasing surplus parking spaces at below-market rates. However, at any facility where total peak parking occupancy regularly exceeds 60% in the previous year and at any facility where peak parking occupancy ever exceeds 75% on any single occasion in the previous year, this plan recommends charging market rates for all parking lessees. Based on this recommendation, when current leases for public parking spaces expire, they should be renegotiated to be no less than market rates as needed. In fact, because the leases for auto storage are for assigned spaces that are typically used all day and all night, the City should consider negotiating leases for auto storage that charge a premium on market-rates. This premium is justified for two reasons:

1. Because the assigned parking is essentially a reserved and guaranteed space, and transient and monthly parkers paying market rates do not receive reserved guaranteed spaces.

2. Because any spaces assigned for auto storage become unavailable to the City for other parking uses, resulting in a potential loss of parking revenue to the City from multiple transient parkers that might have been able to use the space throughout the day.

The basic principle is that leases for public parking should never result in a loss of parking revenue for the City compared to the revenue potential if the leased spaces were sold to the public at hourly rates.

These prices are the initial recommendation that we believe will achieve 85% occupancy rate. After implementation, occupancy rates should be evaluated in 6 months (and thereafter annually), with prices readjusted to achieve the 85% occupancy rate. For example, parking prices should be increased and/or hours of paid parking operation should be expanded beyond current recommendation whenever and wherever demand exceeds 85%. To achieve the flexibility required to implement demand-responsive pricing, the City Council should authorize the Traffic and Transportation Administrator or their delegate to adjust downtown parking prices up to a certain price threshold, as discussed in Recommendation 5.8.

The Legal Basis for Setting Demand-responsive Parking Prices

The California Vehicle Code (CVC Sec. 200258) allows local jurisdictions to set parking meter prices at fair market rates necessary to achieve 85% occupancy (see Appendix 5B Redwood City Ordinance). California case law authorizes local jurisdictions to enact parking meter ordinances with fair market rates and that cities "may…justify a fee system intended and calculated to hasten the departure of parked vehicles in congested areas, as well as to defray the cost of installation and supervision." California case law also recognizes that parking meters ordinances are for the purpose of regulating and mitigating traffic and parking congestion in public rights-of-way, and not a tax for revenue purposes.

Hourly Meter Rates in Peer Downtowns	
$0.50	Culver City
	Hermosa Beach
	Oceanside
	Redwood City
	Seal Beach
$0.60	Glendale
$0.75	Arlington County, VA
	Berkeley
	Santa Monica
	Manhattan Beach
	Redondo Beach
$1.00	Boulder
	Laguna Beach
	Long Beach
	Newport Beach
	San Clemente
	West Hollywood
$1.25	Pasadena
$1.50	Del Mar
	Huntington Beach
$2.00	Long Beach Pike Area

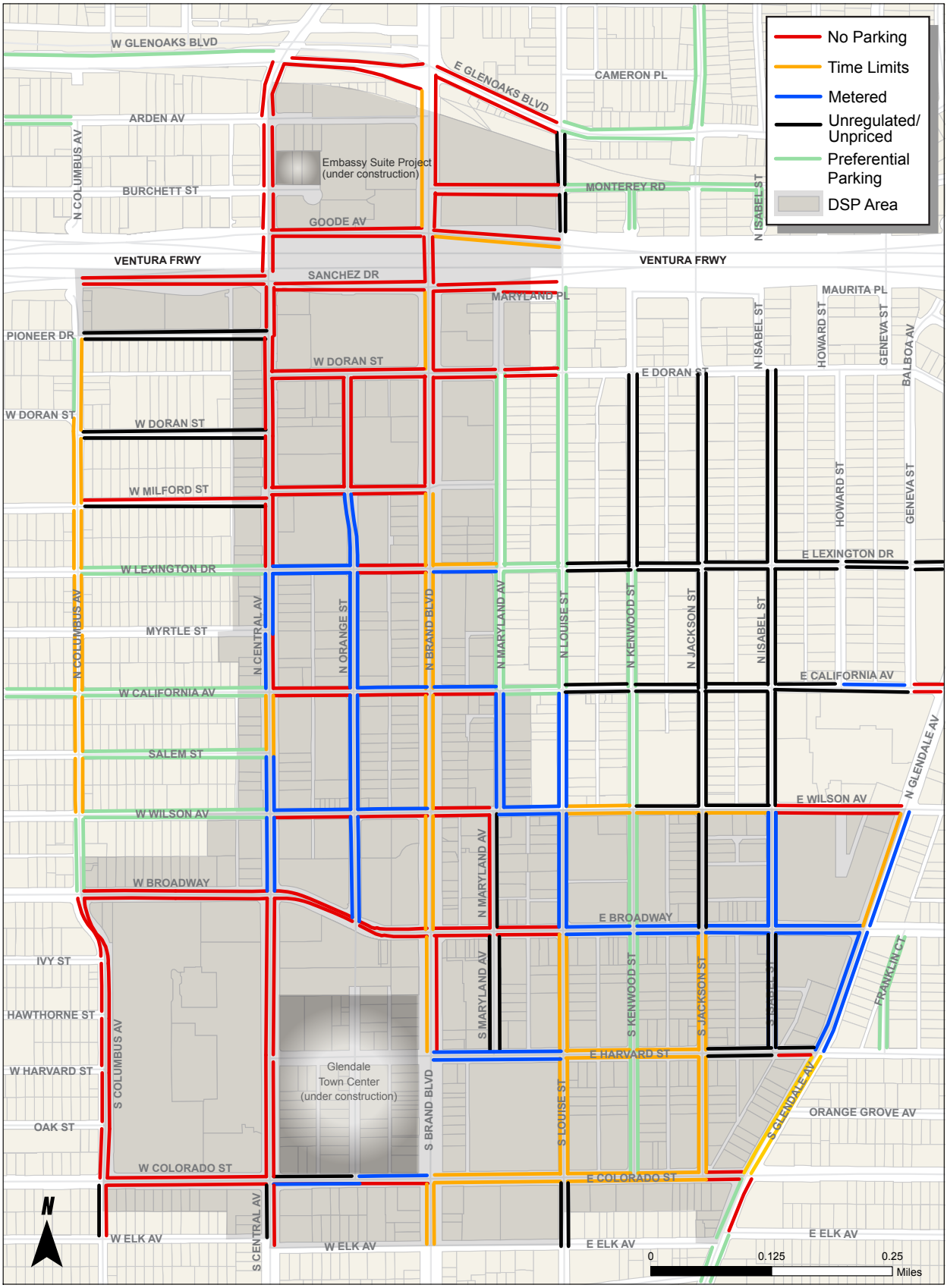
The recommended parking management policies and prices are summarized in Figures 5-3 through 5-6. Figure 5-4 is a map illustrating existing downtown parking regulations, which can be compared to the recommended regulations shown in Figure 5-5 and recommended prices shown in Figure 5-6. The table at left shows parking prices in select Glendale peer cities for comparison.

Recent advances in technology have made paying for parking and evaluation of parking occupancy rates more efficient, cost-effective, and customer-friendly, as discussed in Recommendation 5.5.

Figure 5-3 Initial Parking Policy Recommendations – Glendale *Downtown Mobility Study*

	Downtown On-Street Parking		Downtown Off-Street Parking		Transportation Center (GTC) Off-Street Parking
	Brand Boulevard	Non-Brand Boulevard	Lots	Garages	Lots
Price	$1/hour	$0.75/hour	$0.75/hour	1st 90 min. free $1.00/hr thereafter $50-$60/month	**Metrolink riders:** Free **All others:** $0.50/hour; $25/month
Hours of Operation	7am-1am	7am-10pm	7am-12am	6am-1am	24 hours
Time Limits	7am-6pm: 2 hours 6pm-1am: Unlimited	none	none	none	none

Figure 5-4 Downtown Glendale Parking Regulations - Existing



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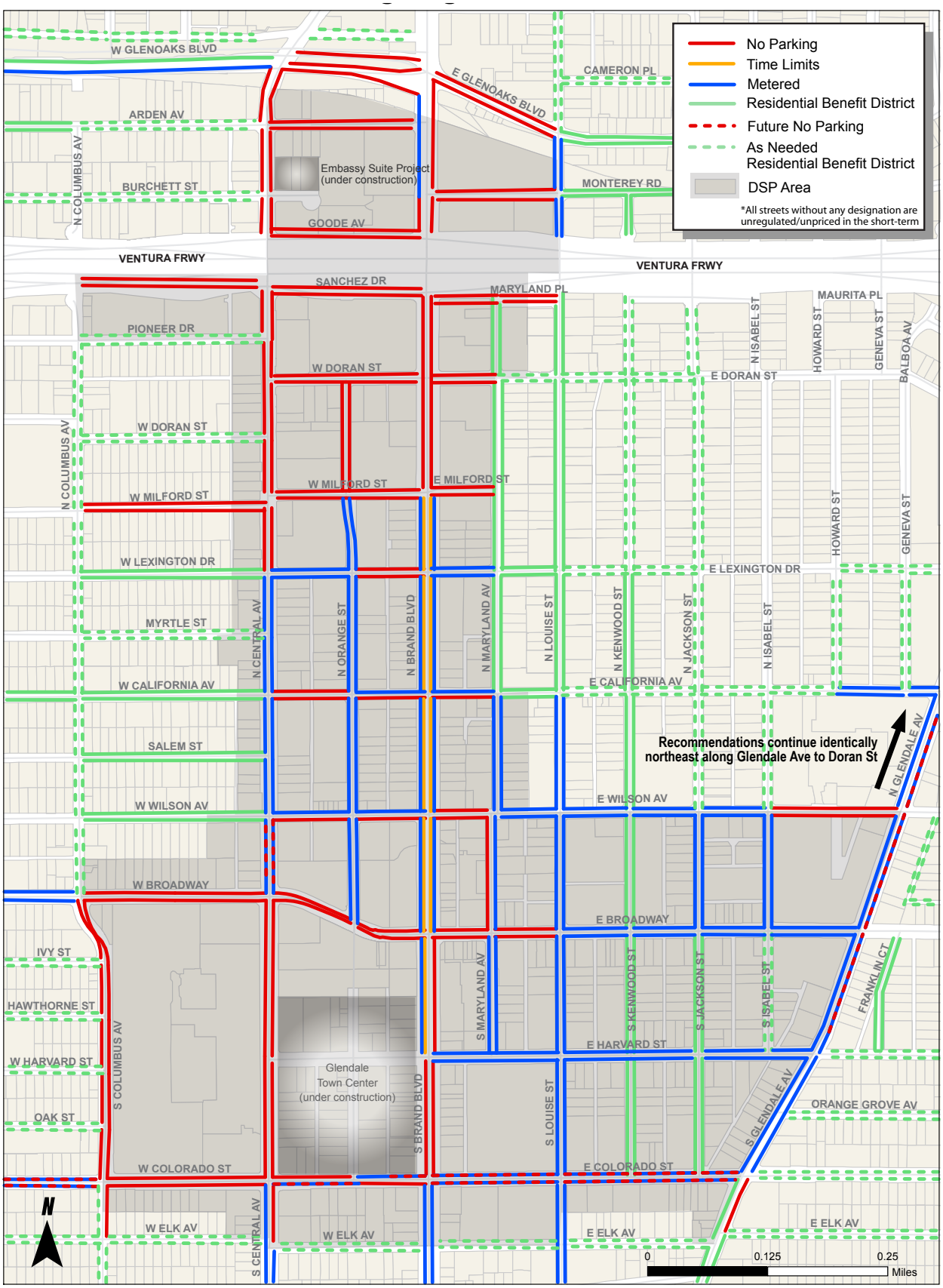
Source for No parking, time limits, metered: *(1) Summer 2006 "DSP Parking Occupancy Survey," provided by City of Glendale Aug & Nov 2006. (2) November 2004 "Brand Boulevard On-Street Parking Study," provided by City of Glendale Spring 2006. (3) Parking Regulations for South Glendale Avenue north of Harvard, and Harvard Street from Brand to Louise: "Glendale Parking Figures, January-December 2004: Downtown Area Metere [sic] Streets," provided by City of Glendale October 2006; and 2001 "Short Range Parking Plan," provided by City of Glendale Spring 2006, p.9*
Source for Preferential Parking: *Preferential Parking Master Location List" (undated), provided by City of Glendale Spring 2006*
Source for Unregulated / Unpriced: *Summer 2006 DSP Parking Occupancy Survey, provided by City of Glendale August & November 2006*
Note: *All streets with no designation are streets where no data was provided.*

Figure 5-5 Downtown Glendale Parking Regulations - Recommended



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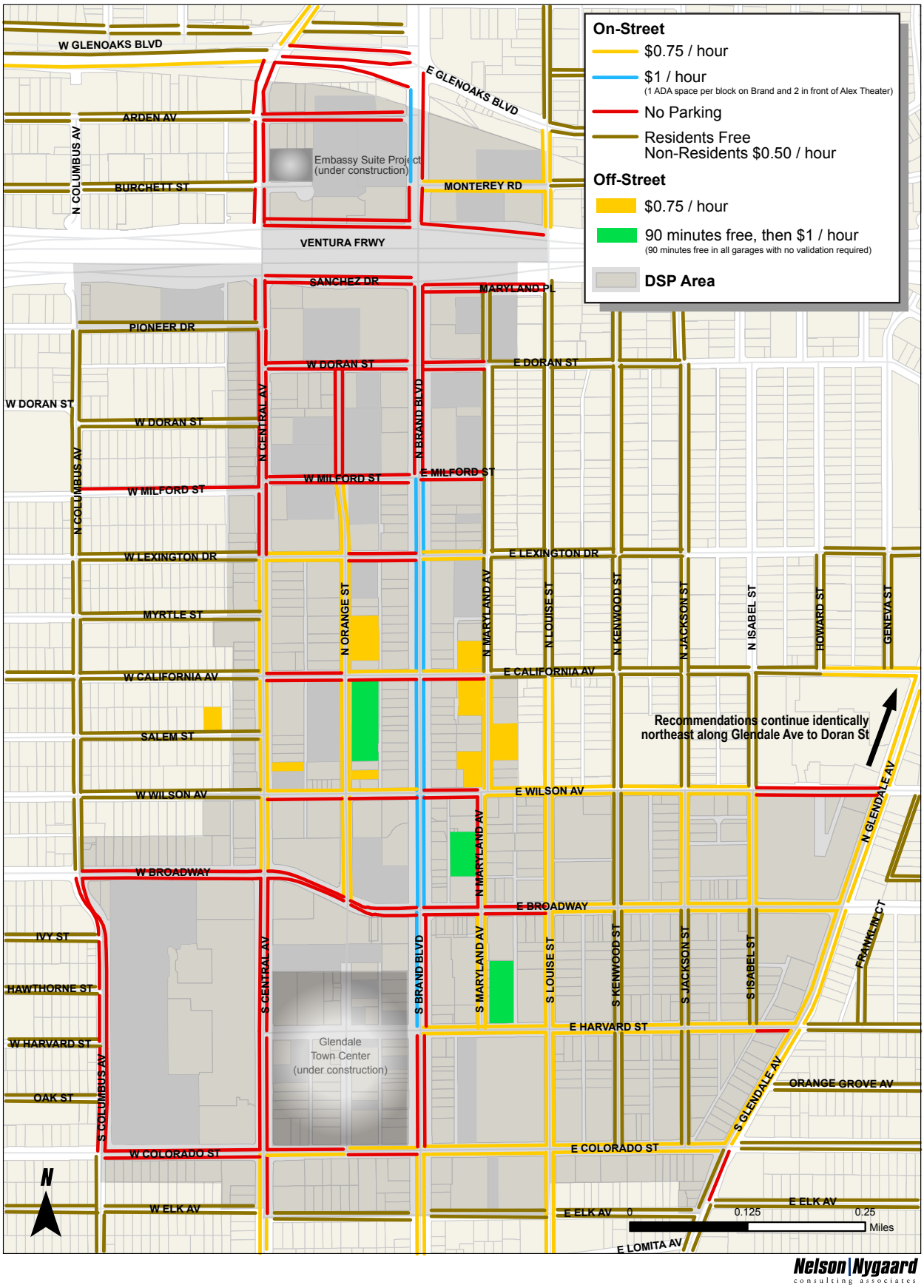
Note: *See Parking Section of Mobility Plan for specific information on recommended meter prices and time limits.*

Figure 5-6 Downtown Glendale Parking Prices - Recommended



Glendale Transportation Center Parking

There are approximately 465 parking spaces in 3 off-street public lots at the Glendale Transportation Center/Metrolink station. Currently this parking is unpriced with no time limits. These parking management policies are in place in order to encourage commuters who live in Glendale and the nearby vicinity to drive to the Transportation Center and take the train for the rest of their commute, thereby reducing peak-hour freeway congestion.

However, because these spaces are free and allow all-day parking, many of these spaces are used by employees of nearby businesses. According to City staff, only about 25% of spaces are occupied by Metrolink riders. Recently, staff has signed the lots to discourage parking from non-train riders, but violations continue to be an issue. This leads to high occupancy rates in the Transportation Center lots that occasionally limit their availability by Metrolink/Amtrak commuters.[9] In order to ensure that the off-street parking spaces at the Glendale Transportation Center are available for their intended users, the management polices should be changed as follows:

- Install automated revenue control system to allow for validated and priced parking at these lots.
- Allow Metrolink/Amtrak riders to park free all day simply by validating their parking ticket at the existing train ticket vending machines on the station platform.[10] If necessary, until that technology becomes available, Metrolink riders can validate their parking space at a separate pay station on the platform.
- Allocate remainder of spaces not needed by Metrolink/Amtrak riders for short- and long-term parking and price as follows: short term parking at $0.50/hour, long-term commuter parking at $25/month.
- To protect neighborhoods in the areas adjacent from spillover parking from employees who wish to avoid paying for parking, the City should implement a Residential Parking Benefit District or a Commercial Transportation and Parking Management District in the areas immediately adjacent to Glendale Transportation Center, as discussed in Recommendation 5.15.

These recommendations are summarized in Figure 5-3.

Recommendation 5.3
Implement parking pricing system for Glendale Transportation Center parking lots allowing Metrolink and Amtrak riders to park free all day but charging all other short-term and long-term parkers.

9 No data on overall parking occupancy or parking occupancy by user type (e.g. Metrolink rider, short-term parking, employee parking, etc) was provided for the Glendale Transportation Center but anecdotal information that this parking is used by employees of nearby businesses was provided by City Department of Transportation staff and the City's private parking management contractor.

10 In order to reduce clutter on the station platform, incorporating parking validation system into the existing ticket vending machines is the preferred option. However this recommendation requires coordination with outside agencies of Metrolink and Amtrak. If implementation is not possible within a reasonable time frame, then the City should arrange to install free-standing parking validation machines.

Parking Validation for Transit Riders

Similar parking management policies/systems for transit station parking have been implemented in the BART system in the San Francisco Bay area. The BART system offers a parking validation program at three of its high-volume stations to guarantee space availability for BART riders. Riders parking at these stations are required to obtain validation on weekdays by entering their parking stall number into a machine located inside the fare gates. The machine records the rider's parking location and issues a receipt. Those failing to validate their parking are subject to citation.

5.3.2 IMPROVE CUSTOMER-FRIENDLINESS FOR DOWNTOWN VISITORS

Recommendation 5.4
Implement a multi-modal transportation and parking wayfinding system, including information on parking direction/location, pricing, and real-time parking occupancy.

Downtown Wayfinding System

As previously discussed, downtown Glendale does not currently suffer from an overall shortage of parking, as even when Brand Blvd. is fully-occupied during the weekday peak (1-2 pm), there are approximately 2,500 public spaces available in nearby parking lots and garages. Thus, downtown visitors arriving by car may perceive a *lack of parking*, but in reality there is a *lack of information* about where available parking is located (coupled with a pricing structure that provides an incentive to motorists to cruise for cheap or free on-street parking rather than pay to park in underutilized garages). For this reason, downtown Glendale should implement a parking wayfinding signage system to direct motorists to available parking.

The parking wayfinding signage system should integrate directional information (e.g., signs that convey the message that "Parking is this way"), locational information (i.e., signs that convey the message that "You've arrived at Parking Facility X"), pricing information (i.e., signs that convey the message that "Parking here costs this much"), and real-time occupancy information (i.e., signs that convey the message that "Parking Facility X is currently full, but Parking Facility Y currently has 287 available spaces"). Best practices in parking wayfinding signage are shown in the sidebar on the following page.

The wayfinding system should also provide directional information for pedestrians. Incorporating pedestrian wayfinding signage into the parking wayfinding system is critical for both pedestrians who walked *to* downtown and those who are walking *through* downtown after first arriving by car, transit, or bicycle. Even visitors who arrive by car must be provided with adequate pedestrian wayfinding systems, because no one drives downtown just to park their car, but rather to park and then walk to their ultimate destination. An integrated parking and pedestrian wayfinding signage system will help direct all visitors, and will benefit motorists so that when "feet hit the street" after parking their car, they will know where to go next.[11]

An additional benefit of a wayfinding signage program is that it will to help "brand" downtown as unique, distinctive, and memorable for visitors.

ABOVE: The entrance to the Orange Street parking garage is on a back street and therefore not clearly visible from main streets. In addition, pedestrians exit from the garage onto alleys that can be disorienting.

11 Signage in alleys is particularly important to make them less disorienting. For example, how does a motorist who has just parked in the Orange Street garage and descended the alley-side stairs to the street-level know which way to walk to get to the front door of their ultimate destination?

Best Practices in Parking and Wayfinding Signage

Recent advances in parking technologies allow parking wayfinding signs to be enhanced with electronic messages, occupancy tracking systems, and user interface devices to provide real-time pricing and occupancy data to motorists. This information can be conveyed to motorists once they are at their parking destination (via pole signs, wall signs, or on parking pay stations/facilities), when motorists are on their way to the parking destination (via cell phone or roadside signs), or even before the motorist has left the house (via the Internet).

Such "smart" signage systems can help reduce traffic congestion and improve traffic safety by reducing conflicts and collisions between autos and other modes. For example, transportation researchers have found that an average of 30% of traffic congestion (with a range of 8 to 78%) on urban streets is due to drivers "cruising" for on-street parking.[1] In addition, transportation researchers have found that 15% to 20% of all vehicle collisions (and 40% to 60% of mid-block collisions) are associated with on-street parking movements.[2]

1 Shoup, Donald. *The High Cost of Free Parking*. Chicago: APA Planners Press (2006), pp. 279-91 and 358-61.

2 Ibid., pp. 361-2.

For these reasons, the City should build upon the strengths of the existing downtown parking wayfinding system by implementing an integrated wayfinding signage system downtown, as follows:

- Provide signage to help motorists find available parking quickly in order to improve visitors' experience and make the most efficient use of parking supply.
- Create a pedestrian-friendly environment that is easily navigated by downtown residents, employees, and visitors (especially first-time visitors).
- Improve circulation and safety for all users of all modes (autos, transit, bicycling, and walking) and reduce modal conflicts.
- Prioritize good design by developing aesthetically-pleasing signage that integrates simple, clear, legible, visible signs, kiosks, maps, wall graphics and other "landmark" elements such as public art that can achieve both a wayfinding and placemaking function.
- Parking wayfinding signage should incorporate essential info such as direction/location, price, and real-time occupancy; to display real-time occupancy, signage should be integrated with automated occupancy sensor technologies such as "loops" or "motes" (remote sensors) as described in Recommendation 5.5.
- Encourage private parking facilities to be incorporated into the wayfinding system, so long as they adhere to the City's pricing strategy.
- Develop signage standards for new development and require new private and public development to incorporate appropriate signage elements into new development projects to support and complement the overall wayfinding system.
- Conduct periodic "post-implementation" analyses and surveys to determine any changes that may need to be made to signage system over time as context conditions change.

For additional information, specific technical recommendations, best practices, and a select list of potential technology vendors, see Appendix 5D.

Recent advances in parking technology have made automation of payment, occupancy monitoring, and enforcement of paid parking possible. Modern multi-space parking pay stations are capable of instantly transmitting current information on the number of spaces in paid use on each block where the pay stations are installed, giving the Traffic and Transportation Administrator (or their delegate) the ability to constantly monitor parking usage in the system.

Evaluating Different Payment System Options: Pay-and-Display vs. Pay-by-Space

As the city considers implementation of multi-space pay station technology, *it must also consider what type of parking payment* system it wants to implement with the new meters.

The two major payment system options are:

- Pay-and-display, in which a motorist parks their car, pays for parking at a designated pay station, gets a receipt, and then returns to their car to affix the receipt to their vehicle as proof of payment for enforcement personnel.
- Pay-by-space, in which a motorist parks their car, enters their space number into a designated pay station, and then continues to their ultimate destination without needing to return to their vehicle. The pay station indicates proof of payment to enforcement personnel (either by a panel display or via wireless transmission).

There are pros and cons of each of these payment systems, and these are highlighted briefly below by focusing on the comparative advantages and disadvantages of a pay-by-space system:

Pay-by-Space Advantages:

- Park, pay, and go: No need to return to car after paying.
- Multiple interfaces: Depending on the vendor/model, motorists can add additional time from any meter, website, or cell phone.
- Only pay for the time you use:
  - ✧ Depending on the vendor/model, motorists can purchase as much time as needed, and get a refund for unused time.
  - ✧ Depending on vendor/model, users can select "pay maximum" and get a refund for unused time.
- Customer-friendly: A grace period can be pre-programmed into the pay stations to provide a better customer experience.
- Ease of enforcement: Officers check one pay station instead of multiple meters (with single-space pay stations) or multiple vehicles (with pay-and-display systems).[1]
- Reduced litter: Does not require printing and display of receipts which can contribute to litter (although receipts can be issued for those that want them).

Pay-by-Space Disadvantages:

- Individual spaces have to be marked, resulting in a 10% to 15% loss of parking efficiency (and some corresponding loss in revenue) compared to pay-and-display.
- With no required receipt, it can be more difficult to resolve disputes over paid (or unpaid) time.
- Motorists sometimes forget their space, leading them to punch in the wrong space number or requiring them to return to their car.
- Inclement weather or vandalism can make it difficult to read space numbers.
- Pay-and-display systems allow motorists to pay once and move their car anywhere in the area covered by the meters, so long as their receipt is displayed (although this eliminates the ability of using remote sensors to assist with identifying and alerting enforcement personnel to parking violations).

The City's Traffic and Transportation Division has applied for a federal grant to conduct a pilot test of multi-space pay stations in downtown Glendale. If that grant application is successful, the City will issue an RFP to various pay station vendors, and will ask them to install pay stations with both types of payment systems so that City staff and downtown employees and visitors can evaluate the advantages and disadvantages of each system.

[1] Studies suggest that enforcement time, labor costs, and injuries are higher with manual enforcement required with a pay-and-display system, resulting in less robust enforcement regime at a higher cost.

Multi-Space Parking Pay Stations

The Traffic and Transportation Division is currently applying for a federal grant to conduct a pilot test of multi-space parking pay stations in downtown Glendale. There are several meter technologies and payment systems that Glendale could use (see sidebar on the previous page), but a review of best practices in cities comparable to Glendale and a review of the capabilities of existing metering technologies found that the preferred approach would balance the following goals:

- Maximize ease of use in order to increase customer convenience and reduce uncertainty and anxiety.
- Minimize capital and operations costs (administration, maintenance, and enforcement).
- Promote turnover of curb parking spaces (so that visitors can always find a space).
- Achieve other downtown revitalization goals (good urban design, cleanliness, etc.).

Benefits of implementing multi-space pay stations (along with pricing parking at fair market rates and eliminating time limits) include the following:

- Maximizes ease of use and customer convenience.
- Allows multiple payment options: Pay with cash, debit/credit cards, cell phone, so no need to carry exact meter change.
- Can reduce "ticket anxiety": Eliminating time limits and installing certain types of multi-space pay station can reduce or eliminate "ticket anxiety." The City of Glendale issues an extremely high number of parking citations every year (approximately 200,000), and most of these are for "overstay of time limits." Many of those ticketed – if not all – would likely be happy to have the option to purchase as much time as they need at fair-market rates rather than receive an expensive parking ticket. Depending on the pay station vendor/model the City selects and if the City chooses to implement a pay-by-space payment system (as discussed in the sidebar on the previous page, "Evaluating Different Payment System Options: Pay-and-Display vs. Pay-by-Space"), users who pay with a debit or credit card can add time at any pay station downtown, online, or even via their cell phone.
- Better user interface: Large, interactive display screens can convey more information (instructions, promotions for local businesses, etc.).
- Minimizes taxpayer costs: Multi-space meters can reduce administration, maintenance, and enforcement costs, as detailed below.
  - Reduced capital costs: One meter controls several spaces, so initial capital and ongoing replacement costs are reduced.

Recommendation 5.5
Install networked multi-space pay stations and occupancy sensors to improve customer friendliness, revenue management, and occupancy monitoring of downtown parking.

- ✧ Reduced operating costs: If the city chooses meters that are solar-powered with battery back-up, there will be no need for electrical hook-ups and no electricity costs.
- ✧ Reduced downtime and maintenance costs: Harder to vandalize; if failure occurs, service alerts sent wirelessly by e-mail, cell phone, or text message to multiple responsible parties (maintenance worker, parking enforcement dispatcher, etc) to reduce downtime and help resolve customer service issues.

◆ Automated audit trail, reduced revenue loss: Fully automated audit trail of all service actions, cash transactions, and parking purchases helps reduce operations costs and revenue loss.

◆ Enhanced data collection, better planning decisions: Depending on the vendor, many multi-space pay stations can provide real time data on parking occupancy and revenue collections transmitted wirelessly and available anytime from any internet connection for monitoring and auditing; allows City to make future changes to parking rates and hours of operations based on actual parking demand data.

◆ Allow parking managers to set parking prices at the lowest possible price necessary to manage demand and optimize parking revenue, as detailed below:

- ✧ Demand-responsive pricing: Prices can be easily adjusted from a central terminal, using the wireless network features, to promote turnover and 85% occupancy; higher rates can be charged in areas and times when demand is higher, so downtown visitors can always find a parking space.
- ✧ Tiered pricing: Allows "tiered" prices (e.g., $0.50 for the first two hours, $1 per hour thereafter) in various combinations, allowing rate structures that encourage long-term parkers to use off-street lots and garages while leaving more convenient "front door" curb spaces available for short-term parkers.
- ✧ No free lunch: Multi-space pay stations can collect more revenue per space even with no change in parking pricing, because they "zero out" after every use so that each motorist only pays for the amount of parking that they use.

◆ Achieve other downtown revitalization goals: Promotes better streetscape design, sidewalk cleanliness, etc.

◆ Better urban design: 1 or 2 pay stations per block instead of 10 or 20, so doesn't obstruct sidewalks with a "picket fence" of single-space meters.

While the "per unit" costs of modern multi-space pay stations are greater than the unit costs for traditional single-space meters, the "per space" costs are comparable, since each multi-space meter can cover multiple parking spaces (one meter for 10 spaces is recommended). These technologies will allow the City to optimize parking revenue and decrease parking enforcement costs, as better parking information leads to better parking management decisions.

Parking Occupancy Monitoring with Remote Sensors

There are several different technologies currently available for monitoring parking occupancy. These include:

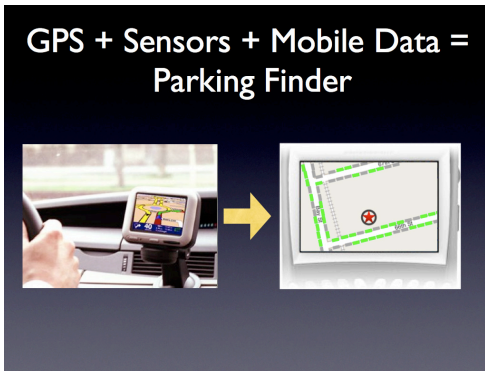
- Remote sensors that adhere to the pavement and electromagnetically sense a "parking event" and then wirelessly transmit real-time occupancy data to parking managers.
- Loop sensors embedded in the pavement that detect a vehicle electromagnetically but transmit this information through a wired connection.
- Automatic vehicle identification (AVI) cameras which photograph car's license plates and then identify unique parking events by detecting vehicles that have moved from one space to another within the same district.
- Traditional pen-and-clipboard surveys done manually.

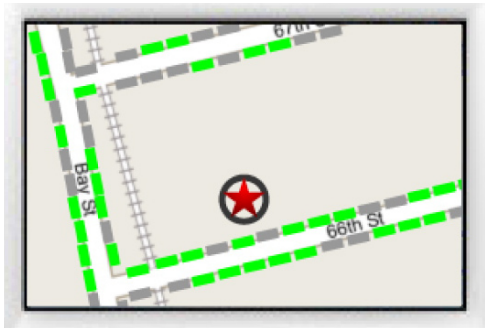
Each of the latter three has disadvantages compared to remote sensors that provide "always on" real-time occupancy data and adhere directly to the pavement. These relative disadvantages include:

- Loop sensors have the advantage of providing always-on occupancy monitoring like remote sensors, but must be embedded under the pavement, leading to higher implementation and maintenance costs.
- AVI cameras have lower upfront capital costs (especially newer, more portable "mobile" units) than remote sensors, but they have higher labor costs and only provide an occupancy "snap-shot" of one point in time (this can be improved with additional surveys, but repetition increases labor costs).
- Finally, traditional pen-and-clipboard surveys have extremely low capital costs, but very high labor costs (and error rates due to the "human factor"), and must be repeated frequently in order to provide up-to-date information necessary to allow parking managers to adjust parking policies to manage current demand patterns.

For these reasons, this *Downtown Mobility Study* recommend that the City implement a parking occupancy monitoring system using remote sensors. Remote sensors can be installed with or without multi-space pay stations discussed above. Remote sensors can monitor occupancy for all parking that is unmetered, such as off-street parking lots and garages and unpriced on-street parking. In addition, remote sensors can be installed if the City desires to supplement the "revenue-derived" occupancy information supplied by the pay stations with more accurate "use-derived" occupancy information, as illustrated in the images on the right.[12]

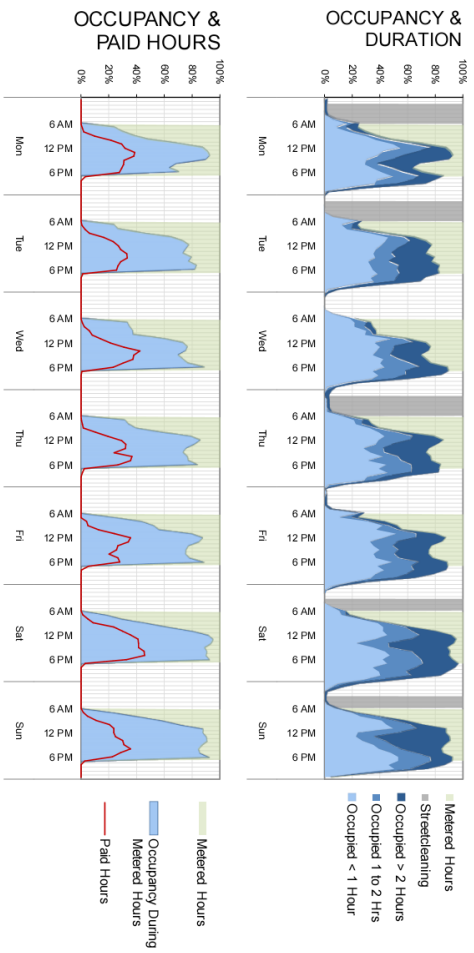
ABOVE: Remote sensors that adhere to the pavement and electromagnetically sense a "parking event" and then wirelessly transmit real-time occupancy data to parking managers. *Photos courtesy of Streetline Networks.*





ABOVE: Remote sensors can be programmed to communicate with end-user interfaces such as websites, cell phones, and GPS (Geographic Positioning System) units. *Photos courtesy of Spark Parking.*

12 Whereas current meter technology is only able to calculate a "revenue-based" occupancy of those who paid to park during those hours when parking is priced, remote sensors provide a more accurate and comprehensive occupancy data by recording each and every parking "event" whether paid or unpaid. In a metered environment, remote sensors would allow the City to capture more accurate occupancy rates during



ABOVE: Most vendors will set up a management interface (such as an online website capable of generating queries and reports) as part of a turn-key contract, or generate reports at the City's request as part of a build-operate-transfer contract. *Image courtesy of Streetline Networks.*

These sensor-based occupancy monitoring systems also allow reports to be generated to track occupancy by the hour over the course of a day, weeks, or months (such as the image at left).

In conjunction with implementation of the occupancy monitoring system, it is advisable that the City use solar-powered (with a battery back-up), wirelessly-networked pay stations in places that are not already designed to support electricity, to expedite the implementation process, decrease installation costs, and allow for more long-term flexibility in the placement of priced parking.[13] It should be noted that the recent Brand Boulevard improvements included installation of conduit that could provide electrical power if needed for a future parking management system on that street.

As discussed above, if the City's Traffic and Transportation Division federal grant application to do a pilot test of multi-space pay stations is successful, the City will issue an RFP to various pay station vendors, and will ask them to install pay stations with various capabilities (including different payment systems and potential compatibility with various occupancy monitoring systems). This pilot will allow the City to evaluate the advantages and disadvantages of different pay station vendors and models to determine the package of features that will help the City achieve its goals for downtown. At this time and based on best practices in parking management, this *Downtown Mobility Study* recommends the following:

- Install multi-space pay stations (not single-space meters) that:
  - Can control multiple parking spaces, resulting in just one or two pay stations per block face (10 spaces per pay station recommended in this *Study*).
  - Accept multiple forms of payment (coins, credit cards, pay by phone, etc.).
  - Allow the user to extend time without returning to their vehicle from any other pay station, online, or by cell phone, to provide ease of use (only a pay-by-space payment system can accomplish this recommendation).
  - Are centrally networked with wireless technology, to reduce operations costs and improve parking management and pricing decisions; in those locations where electrical conduits have

revenue hours by also counting cars who parked free, either legally (e.g. an ADA space) or illegally. In addition, remote sensors would allow the City to track occupancy during non-revenue hours. Remote sensors have the added advantage of being able to transmit a violation alert, allowing the City to dispatch parking enforcement personnel to the location of a parking violation (overstay of time limits, parking in a bus zone, etc.).

13 Meters that are not solar-powered must be connected to the electric grid; meters that are not networked wirelessly must be networked via fiber optic cable or copper-based (DSL or RS 485 long distance) cable. Both require overhead wires and/or underground conduits, thereby slowing implementation, increasing cost, and reducing locational flexibility.

not already been installed in anticipation of the multi-space pay stations, the City should consider specifying solar-powered meters to reduce capital and operation costs.

- Implement an automated parking occupancy monitoring system as follows:
  - Implement remote sensors to automate monitoring of parking occupancy.
  - Integrate payment and occupancy monitoring systems with new enforcement technologies to reduce enforcement costs and optimize violation "capture" rates.
  - Integrate payment and occupancy monitoring systems with parking wayfinding signage to provide real-time occupancy information to downtown visitors (as discussed in Recommendation 5.4).

Multi-space pay stations should initially be installed on Brand Blvd. where parking demand is highest and subsequently installed throughout downtown where ever peak occupancy for on-street parking regularly and consistently exceeds 85%.

Loop sensor systems can be more cost-effective for off-street parking facilities (especially larger facilities) than installation of remote sensor units for every single space. For parking lots and garages with limited ingress and egress points, loop sensors installed at the entrances and exits of the facility can provide real-time occupancy simply by tracking the number of cars coming and going relative to the total number of spaces in the facility. (See the sidebar at right, "Santa Monica's Online Real-Time Occupancy System," for an example of this type of system that provides benefits to both parking managers and parking users.) But for on-street parking, remote sensors provide the most cost-effective solution because they are currently the only technology that can provide "always-on" real-time parking occupancy information necessary for making improved parking management decisions.

Regardless of whether or not the City chooses to implement the occupancy monitoring system recommended in this *Downtown Mobility Study*, the City should monitor daytime and nighttime parking occupancy concurrent with implementation of any significant changes to parking management (e.g. rates, hours of operation, time limits, etc.) In addition, the City should monitor parking occupancy on downtown-adjacent and Glendale Transportation Center-adjacent residential neighborhoods, in order to identify and immediately address any spillover parking problems (per Recommendation 5.15).

Additional technical details and a select list of potential parking technology vendors are included in Appendix 5D.

Santa Monica's Online Real-Time Occupancy System

Recently, the City of Santa Monica launched a real-time parking occupancy website that lets visitors check on-line, and perhaps soon by Blackberry, to find out where parking spaces are available before venturing downtown. The site updates every 5 seconds to display the number of available parking spaces in garages and beach lots in Central Santa Monica. Sensors at the entrances and exits to every parking facility keep track of how many cars come and go, then send the data to a City server which posts the information online. In addition, the data is posted on electronic signs outside each facility. This technology, developed by Hitech Software Inc., takes existing, widely-used electronic occupancy sign technology to another level by posting the information online.

Through providing a faster, easier, more convenient visitor experience, this system is intended to improve the attractiveness of Santa Monica's downtown in a highly competitive Los Angeles shopping environment. It should also reduce traffic and air pollution caused by cars circling looking for parking. The City of Brea expects to have a similar system up and running by January.

Sources: Santa Monica's real-time parking occupancy website. Accessed at http://parkingspacenow.smgov.net in January 2007; Martha Groves, "Santa Monica revs up parking space website: Officials hope a website with updates on spaces will ease traffic problems," *Los Angeles Times*, 1/22/06.

Recommendation 5.6
Continue existing City protocols that dedicate adequate parking spaces throughout downtown for loading zones, taxi stands, and ADA-accessible parking.

ABOVE: Mechanically retractable bollards (either hydraulic or pneumatic) could be installed on alleyways that serve as major pedestrian thoroughfares to limit vehicle access during most times of days, with commercial delivery and life safety vehicles using an electronic transponder to lower the bollards as needed. Photo courtesy of Image Bollard.

BELOW: The City should expand upon its existing downtown taxi stand locations (such as the one at the Hilton Hotel) by developing a network of taxi stands dispersed throughout downtown.

Dedicated Parking Spaces

One critical component of improving the customer-friendliness for downtown visitors is to dedicate adequate parking spaces throughout downtown for loading zones, taxi stands, and ADA-accessible parking. This *Downtown Mobility Study* recommends that the City continue its existing City protocols to dedicate adequate parking spaces throughout downtown for the following critical users.

Loading Zones. Having an adequate number of loading zones downtown so that business can receive deliveries is critical for the operation of downtown business and the continued economic vitality of downtown as a whole. Currently, there are a limited number of dedicated on-street loading zones and some loading and unloading occurs in the alleys. In order to facilitate smooth operation of downtown business, reduce traffic congestion, and begin to improve the quality of the pedestrian environment in the alleys (particularly those that are major pedestrian thoroughfares to and from downtown parking lots and garages), this *Study* recommends that the City expand on the existing number of dedicated on-street loading zones and restrict both on-street and alleyway loading and unloading to the hours of 3 am and 11 am.

Mechanically retractable bollards (either hydraulic or pneumatic) could be installed on alleyways that serve as major pedestrian thoroughfares to limit vehicle access during most times of days, with commercial delivery and life safety vehicles using an electronic transponder to lower the bollards as needed (select vendors of mechanically-retractable bollards are listed in Appendix 5D). Additional recommendations to improve the pedestrian environment of downtown alleys - such as lighting, signage, and landscaping – are discussed in Chapter 2 (Street Typology).

Taxi Stands. Taxi stands are an important part of the downtown transportation network: they provide an alternative to renting a car for business and leisure travelers, a "second car" for single-car households, and a back-up option for transit riders. For this reason, the City should expand upon its existing downtown taxi stand locations (such as the one at the Hilton Hotel) by developing a network of taxi stands dispersed throughout downtown incorporated into appropriate land uses. One of the most feasible locations for expanding a taxi stand network is to incorporate on-street taxi stands into the plans for new downtown hotels. In addition, locations of taxi stands should be incorporated into future wayfinding signage system and visitor and transit maps.

ADA-accessible Parking. Providing adequate parking for persons with disabilities is important to ensure equal access for all to downtown and to comply with the federal Americans with Disabilities Act (ADA). The City is currently in full compliance with ADA guidelines for public and private parking, and will continue to remain in full compliance.[14] In all public and private parking lots and garages, ADA-accessible spaces shall continue to be provided in the ratios specified by the most current ADA guidelines.

ABOVE: This Downtown Mobility Study recommends the maintenance of one ADA-accessible parking space per block on Brand Blvd. (to be located mid-block wherever possible and at corners where mid-block locations are not feasible) and the maintenance of two ADA-accessible spaces in front of the Alex Theater (in order to accommodate their high number of guests with mobility impairments).

14 Essentially, ADA guidelines for parking require that a portion of the parking supply be accessible to the disabled. For example, if the parking supply for a typical facility has 401 to 500 parking spaces, the guidelines require that a minimum of nine of the spaces must be accessible to the disabled. ADA also requires accessible parking spaces serving a particular building to be located on the shortest accessible route of travel from adjacent parking to an accessible entrance. Under state law, vehicles with state-issued disabled placards are exempt from parking meters (California Vehicle Code Section 22511.5), although all other parking regulations such as time limits still apply.

Recommendation 5.7

a. Create a Downtown Transportation and Parking Management District, managed by the Traffic and Transportation Administrator (or a newly-hired position to whom they may delegate this responsibility) in consultation with an advisory body of downtown merchants, property owners, and residents.

b, Dedicate all parking revenue to a Downtown Transportation Fund to be invested in transportation and streetscape improvements, including capacity enhancements, transit improvements, and pedestrian enhancements, as well as future parking needs.

5.3.3 CREATE TOOLS FOR FLEXIBLE AND EFFICIENT PARKING ADMINISTRATION

Downtown Transportation and Parking Management District

Revenues from paid parking in downtown should fund public improvements that benefit the *Downtown Specific Plan* area.[15] If downtown parking revenues seem to disappear into the General Fund or Parking Enterprise Fund, they may appear to produce no direct benefit for downtown, and there will be little support for installing parking pay stations, or for raising rates when needed to maintain decent vacancy rates. But when downtown merchants and property owners can clearly see that the monies collected are being spent for the benefit of their downtown blocks, on projects they help to choose, they become willing to support market rate pricing – and if experience from other cities is any guide, many will become active advocates for the concept.

For this reason, the City should create a Downtown Transportation and Parking Management District for the DSP area. The Downtown District would be similar in concept to the Parking Benefit District for neighborhoods adjacent to downtown (described in Recommendation 5.15), with demand-responsive prices being charged for all parking and all resulting revenues being used to fund investments in the area where the parking revenue was generated.

To ensure such continuing support for such a District, and for continuing to charge fair market rates for parking, it is crucial to give downtown stakeholders a strong voice in setting policies for the District, deciding how downtown parking revenues should be spent, and overseeing the operation of the District to ensure that the monies collected from their customers are spent wisely.

To accomplish this, the Traffic and Transportation Administrator or a newly-hired staff position acting as their delegate (see sidebar on the following page, "Creating a Single Point of Accountability: The Downtown Mobility Coordinator") should work with existing downtown resident and merchant organizations, or create a new parking advisory board similar to the City of Pasadena's Parking Meter Revenue Advisory Board, which advises the City on policies, rates and expenditures of meter revenue in the Old Pasadena Parking Meter Zone. While the public can advise the Traffic and Transportation Administrator and the City Council how the community would like the pay station revenue spent

15 "Revenues" means total parking revenues from the area, less revenue collection costs, such as purchase and operation of the meters, enforcement and the administration of the district.

Creating a Single Point of Accountability: The Downtown Mobility Coordinator

As discussed in this chapter and Chapter 6 (Transportation Demand Management), the City's Traffic and Transportation Administrator (or their delegate) would be responsible for coordinating the implementation of many of the parking and TDM recommendations in the *Downtown Mobility Study*. In addition, the Traffic and Transportation Coordinator would be responsible for coordinating with other City departments, partner regional and state agencies, the TMA, and the private sector to monitor and enforce compliance with many of the recommendations in the *Downtown Mobility Study*.

The Traffic and Transportation Administrator may choose to delegate some or all of these responsibilities to a newly-hired staff position. This staff position would directly report to the Traffic and Transportation Administrator. At this time, the Traffic and Transportation Division is in the hiring process to fill a new "Parking Manager" position and a new "Transit Manager" position. It is possible that one of these new hires will be tasked with these responsibilities. Alternately, these responsibilities may be divided between these two new hires. The Traffic and Transportation Administrator may also need to hire an additional position that fulfills the role of a "Downtown Mobility Coordinator," with a specific focus on downtown transportation and parking issues.

Regardless of the specific division of labor that is ultimately deemed appropriate, it is critical that there be a single person that is responsible for coordinating the implementation of the recommendations of the *Downtown Mobility Study*.

Parking Zone or Parking Benefit District Ordinances

Under State law, California Vehicle Code Section 22508, parking meter zones and parking meter rates can only be established by ordinance. In an ordinance to create a zone that will establish a parking benefit district, a city need only specify the boundaries of the zone, the rates within the zone, and how the funds will be used. This action could be implemented relatively quickly, as initial input on the parking zone is being gathered as part of the *Downtown Mobility Study*. Some cities, such as San Diego, have established ordinances that require a set percentage of revenues (45% in San Diego's case) to be returned to the zone. Others, like Redwood City and Pasadena, return all net revenue after city administration and enforcement costs.

in downtown, City Council should retain final approval over all expenditures.

Based on these considerations, the City should:

- Implement a Downtown Transportation and Parking Management District with metered on-street parking wherever peak occupancy regularly and consistently exceeds 85%.
- Task the Traffic and Transportation Administrator or a newly-hired staff position acting as their delegate with managing the District.
- Dedicate all parking revenue to a Downtown Transportation Fund to be invested in transportation and streetscape improvements.
- Conduct extensive community and media outreach and education prior to launch of pay stations in the District.
- Install user-friendly signage to explain pay station operation, rates, and hours/days of operation.
- Use "Mobility Ambassadors" to assist with pay stations during first few weeks/months of implementation & during peak visitor demand periods.
- Use existing (or create new) outreach mechanisms (such as regular advisory board meetings, surveys, etc.) for soliciting ongoing input from downtown businesses, visitors, and other key stakeholders and for resolving customer service issues and stakeholder concerns.

A review of best practices in cities comparable to Glendale, suggests that the boundaries of the Downtown Transportation and Parking Management District should initially be established in the areas shown in Figure 5-5, with recommended prices shown in Figure 5-6. This recommended pay station zone boundary closely mirrors stakeholder input on the appropriate areas for pay stations and closely corresponds to the current downtown parking enforcement area. In the future, as areas zoned for commercial use transition to their zoned uses, these initial boundaries should be extended where peak hour occupancy reaches 85% or higher. In predominantly residential areas, however, Residential Parking Benefit Districts should be implemented (see Recommendation 5.15 for more information).

Preliminary Estimate of Meter Revenue the District

To calculate a precise estimate or revenue from the District would require more current information on the timing of future downtown development and estimates of responsiveness to parking price changes (price elasticities) in Glendale. However, our preliminary estimate, based upon the proposed initial prices for the District, and the number of cars parked at various hours, suggests that it would be reasonable to expect gross revenues of approximately $3 million annually, which is about $1 million more than

the current parking revenue. See Appendix 7A for a full explanation of this revenue projection. This revenue estimate is conservative because it does not include potential additional revenue from the parking lots at the Glendale Transportation Center.[16] Bonding against future revenue (i.e. issuing revenue bonds) as was done in Pasadena, will enable the City to fund larger capital projects (including the cost of the pay stations) in the early stages of implementing the District.

Potential Uses of District Parking Revenue

In general, revenue from the District should be invested in:

1. A full spectrum of transportation demand management strategies for downtown employees and residents, including transit, carpool, vanpool, bicycle and pedestrian programs, as discussed in the Chapter 6 (Transportation Demand Management).
2. Transit improvements.
3. Streetscape improvements and other downtown beautification projects as prioritized by downtown stakeholders.

Specifically, District revenue could be used for any of the following, as established in the parking zone ordinance:

- Transit service improvements
- Landscaping and other streetscape greening
- More frequent trash collection
- More street cleaning, power-washing of sidewalks, and graffiti removal
- Pedestrian-scaled lighting
- Multi-modal wayfinding signage
- Transit, pedestrian, and bicycle infrastructure and amenities
- Additional oversight and management of downtown infrastructure and amenities
- Additional police patrols
- Additional parking enforcement
- Marketing and promotion of downtown
- Purchase and installation of pay stations (or use revenue bond or "build-operate-transfer" capital leasing financing with a vendor)
- Enhancing efficiency of existing parking facilities (through tandem and valet operations or via retrofit with mechanical stackers)
- Defraying costs for additional parking facilities as needed

16 No occupancy data was available for the Glendale Transportation Center parking lots. Therefore making a revenue estimate is not possible.

Summary of Benefits from All District Recommendations

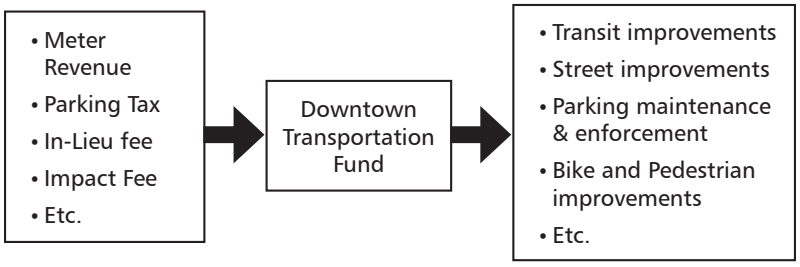
The recommendations for metered parking and the creation of a Downtown Transportation and Parking Management District will result in the following benefits:

- ✧ Ensure that there is always a short-term parking space available in high demand areas (such as Brand Boulevard). Approximately 1 in 7 spaces will always be available for customers and visitors.
- ✧ Eliminate "cruising" for parking, thereby reducing traffic congestion.
- ✧ Encourage long-term parkers and daily commuters to park in currently underused off-street garages and lots.
- ✧ Eliminate the "2-hour shuffle" of downtown employees moving cars from one curb parking space to another every few hours.
- ✧ Be more convenient to use than single-space meters (no need for a pocketful of quarters, etc.).
- ✧ Eliminate (if a pay-by-space system is implemented) "ticket anxiety" of short-term parkers worried about overstaying time limits.
- ✧ Reduce capital, operations, maintenance, and enforcement costs compared to single-space meters.
- ✧ Be easier to enforce and audit compared to single-space meters or time limits.
- ✧ Reduce downtime and revenue loss compared to single-space meters.
- ✧ Prevent rows of single-space meters from cluttering downtown streetscape (no parking meter "picket fences").
- ✧ Generate significant revenue to help pay for downtown improvements (for cleaning, security, pedestrian and bicycle infrastructure, lighting, etc.).

- Additional programs and projects as recommended by community and approved by City Council.

Figure 5-7 illustrates how parking revenue and other revenue sources discussed in this chapter and in Chapters 6 (Transportation Demand Management) and 7 (Funding and Finance) would be dedicated to a Downtown Transportation Fund to be used to implement the recommendations of this *Downtown Mobility Study*.

Figure 5-7 Sources and Uses of Downtown Transportation Fund



Recommendation 5.8
Authorize Traffic and Transportation Administrator (or a newly-hired position to whom they may delegate this responsibility) to adjust downtown parking rates, hours, and time limits as needed to achieve 85% occupancy based on occupancy monitoring.

Procedure for Adjusting Pay Station Prices and Policies

After an initial trial period, occupancy rates for each block in each parking facility (block, lot, or structure) should be reviewed and then adjusted down or up to achieve the 85% occupancy goal, as described earlier. To ensure that this happens on a regular schedule, promptly, and with clear assurance to policymakers, citizens, and the downtown community that the goal of parking prices is to achieve the desired vacancy rate, the following procedure for adjusting parking meter rates and hours is recommended:

- **Set policy:** By ordinance, City Council should establish that the primary goal in setting parking meter rates and hours for each block and each lot is to achieve an 85% occupancy rate. Additionally, the ordinance should both require and authorize the Traffic and Transportation Administrator (or their delegate) to raise or lower parking prices to meet this goal, without requiring further action by the City Council. Appendix 5B, the recently adopted Redwood City Downtown Parking Ordinance, provides an example of the recommended approach.
- **Monitor occupancy:** Use networked modern multi-space parking pay stations and remote parking occupancy sensors (as described in Recommendation 5.5) to monitor current and historical parking occupancy.
- **Adjust rates:** Armed with good information on recent parking occupancy rates and historic trends, the Traffic and Transportation Administrator (or their delegate) should adjust the rates (and hours of operation) up or down on each block, to achieve the

policy goal (an 85% occupancy rate) set by City Council. Rates should be adjusted based on occupancy rates within 5-8 weeks of implementing these pricing recommendations in this *Downtown Mobility Study*, and thereafter no more than quarterly (four times per year) and no less than annually. In the case of major changes in downtown (such as the opening of a new development) it may be advisable to adjust rates in response to particular events or peak demand periods like winter holidays. In order to provide the public and their elected representatives on City Councils assurance that prices will not increase indefinitely without any public discussion, the City Council – in the same ordinance previously described – can implement a price threshold (e.g. an upper limit on parking prices) at which time staff must return to Council for reauthorization of the authority to set prices based on demand, thereby giving the Traffic and Transportation Administrator (or their delegate) the authority needed to manage changing parking demand patterns in the best interest of downtown stakeholders. This *Downtown Mobility Study* recommends that the Traffic and Transportation Administrator be authorized to increase parking prices up or down in $0.25 increments up to a price threshold of $2.50 per hour. If and when the Traffic and Transportation Administrator deems that it is necessary to increase the price further on certain blocks or in certain parking facilities in order to manage higher parking demand in those locations, he or she must return to City Council to request authorization to do so, at which time a new price threshold (upper limit) on parking prices can be also be established by City Council based on the Traffic and Transportation Administrator's recommendation.

Single Valet Contract for Downtown

Downtown Glendale hosts numerous special events and banquets that generate peaks in parking demand. Currently, the sponsors of these events individually contract with valet parking operators. As the new development envisioned by the *Downtown Specific Plan* comes online, this arrangement may no longer be feasible for a number of reasons. First and foremost, the current valet operators are parking vehicles for free in curb parking spaces that this *Downtown Mobility Study* recommends will be priced parking in the future. In addition, the *Downtown Mobility Study* recommends that the City attempt to optimize the use of and revenue generated by the underutilized downtown parking garages.

In order to improve parking management and customer-friendliness, streamline valet parking operations for those private and public events with high parking demand, and increase City revenue for the private use of public right-of-way, the *Downtown Mobility Study* recommends that the City's current valet policies be modified in two phases:

Recommendation 5.9
Pursue a study of how the City could enter into contractual arrangements with one or more valet parking operators for all of downtown in order to improve parking management and customer-friendliness, streamline valet parking operations for private and public events with high parking demand, and increase City revenue for the private use of public right-of-way.

Case Study: Pasadena's "Universal Valet" Program

Pasadena currently has a Universal Valet program that could provide a model for Glendale. There are several "Unified Parking Validation Stands" located throughout Old Pasadena that participate in the universal valet parking program. Downtown visitors can drop their car off at any of the locations in Old Pasadena, and ask to have their car waiting for them at a different stand. The current cost is $10 without validation, and the City does not regulate the price of valet parking.

Source: Old Pasadena Visitor Information + Parking Website. Accessed at www.oldpasadena.org/info.asp#valet on 1/15/07.

Phase 1:

- Designate areas be set aside for valet operations in public garages.
- Require that all valet operators pay no less than market rates for the parking spaces.
- Establish standards for valet operators to be permitted to operate in the city of Glendale, such as maintaining adequate insurance and requiring attendants to wear recognizable uniforms.
- Maintain a single list of eligible valet operators that have met the City's permitting standards.

Phase 2:

- Initiate a study to determine the feasibility of the City pursuing a limited number of contracts with one or more valet operators to provide a universal valet service (which would allow anyone to drop off their car at any downtown valet stand and pick their car up at another downtown valet stand).[17]
- If a universal valet program is determined to be appropriate and desirable for downtown Glendale, issue a competitively-bid RFP for one or more contracts to provide valet service. For example, one operator could provide all valet services, or multiple operators could each be assigned designated locations (such as Marketplace, Exchange, Orange, and Brand Blvd.)
- Require consistent branding of the universal valet services so that it appears as a single, seamless operation to downtown motorists (including consistent signage and uniforms) and position the valet stands near key destinations (such as the Alex Theater, high-demand garages, and areas with concentrated nightlife, restaurants, and clubs).

The City of Pasadena has a universal valet program that could be a model for implementation in downtown Glendale in the long-term (see sidebar at left "Case Study: Pasadena's "Universal Valet" Program).

17 In order to create a level playing field and not disadvantage smaller valet operators, such a study should be conducted with a full public process and in close consultation with businesses that currently offer (or would like to offer in the future) valet parking in downtown Glendale.

5.3.4 IMPLEMENT NEW PARKING STANDARDS FOR DOWNTOWN DEVELOPMENT

Implementation of the recommendations in this section will fall under the purview of the Planning Department and Redevelopment Agency as part of their approvals process for new development, adaptive reuse, and redevelopment projects. However, implementation by these departments should be undertaken in close coordination with the Traffic and Transportation Administrator (or their delegate) in order to ensure that they are structured in such a way as to achieve the goals of the *Downtown Specific Plan* and this *Downtown Mobility Study.*

Encourage New and Existing Private Parking be made Publicly Available

As discussed in Recommendation 5.1, there is a significant amount of private parking in downtown Glendale. In order to add to the downtown parking supply in a cost-effective way, the City should:

- Work through the TMA to continue to encourage its members' private parking in existing development to be made available to the public when not needed for its primary commercial use.
- Work with the TMA and its membership of downtown employer members to develop mutually-agreeable operating and liability arrangements for public use of private parking facilities.
- Require as a condition of approval that private parking in new downtown development and adaptive reuse projects be made available to the public when not needed for its primary commercial use.

Recommendation 5.10
Require as a condition of approval for new downtown development that all non-residential parking be made available for public parking when not needed for its primary commercial use.

Require Shared Parking among Different Land Uses

Different land uses have different periods of parking demand. For example a bank adjacent to a night club can quite easily share a common parking facility. This principle is widely accepted in transportation planning, and in fact the City's existing zoning code allows parking to be shared among different uses but requires additional approvals, permits and public hearings to receive permission to share parking among compatible uses. In order to make the process of securing approval for shared parking less onerous for new downtown development and adaptive reuse projects, the City should:

- Allow parking to be shared among different uses within a single mixed-use building by right upon staff approval.
- Allow parking to be shared among different buildings or an off-site parking facility anywhere within the DSP area or within 1,000 feet of DSP boundaries by right upon staff approval.

Recommendation 5.11
Require as a condition of approval for new downtown development that all non-residential parking be shared among other uses (as different parking demand patterns among these uses permit).

- Off–site shared parking located further than 1,000 feet of the DSP boundaries should be allowed at the discretion of staff so long as there is documentation that reasonable provision has been made to allow off-site parkers to access the principal use (e.g. a shuttle bus, valet parking service, free Beeline passes, etc.).
- Allow parking for downtown development and adaptive reuse projects to be provided off-site anywhere within the DSP or within 1,000 feet of DSP boundaries by right upon staff approval.
- Shared on-site or off-site parking should be allowed to satisfy 100% of the minimum parking requirement for each use, so long as documentation can be provided that the existing or anticipated land use(s) will have different periods of peak parking demand, that the shared parking can accommodate the parking demand for both uses, and – for off-site parking – reasonable provision has been made to allow off-site parkers to access the principal use (e.g. shuttle bus, valet parking, free Beeline transit passes, etc..).
- When public parking is leased as shared and/or off-site parking for private development and adaptive reuse projects, the City should charge market rates. The City should monitor occupancy rates for individual facilities and increase parking rates when occupancy exceeds 85%.

Traffic Congestion Impact Fee

Recommendation 5.12
Consider implementing a "traffic congestion impact fee" based on downtown development projects' proposed number of parking spaces and/or estimated peak-hour vehicle trips. Use impact fee revenues to fund transportation programs and projects that benefit both the development project and downtown as a whole. Pursue a nexus study to determine most appropriate assessment methodology and fee structure.

Every new parking space constructed downtown will facilitate and accommodate new vehicle trips, and these vehicle trips have quantifiable impacts, such as increasing auto congestion (that requires expensive capacity enhancements), increased travel times and schedule variability for transit (increasing transit operating costs), and negative safety impacts of pedestrian and bike safety (increasing public safety and public health costs), among others.

The City may consider a broad array of development impact fees as part of the DSP. But in order to achieve the transportation goals of reducing the growth of congestion in the *Downtown Specific Plan* area, the City should prioritize implementation of a "traffic congestion impact fee," to be calculated and assessed based on the anticipated number of project parking spaces and/or peak-hour vehicle trips. This fee should be implemented as follows:

- Conduct a nexus study to determine fee structure and amount, in consultation with developers of major pipeline projects.
- Assess a fee on all new development downtown based on number of parking spaces proposed and/or estimated number of peak-hour auto trips.
- Provide developers the ability to reduce the impact fee amount in exchange for providing financial incentives and programs that reduce auto trips and parking demand.

- Dedicate impact fee revenues to the Downtown Transportation Fund to pay for project-specific or downtown-wide transportation programs that reduce parking demand.

By implementing such a "traffic congestion impact fee," the City will be creating a financial incentive for new development to reduce its traffic impacts on downtown streets. In addition, it will be giving developers the flexibility to implement a wide variety of transportation demand management programs (such as free universal transit-passes and car-sharing services) that will reduce the project's parking and traffic impacts.

For more information, on transportation-related development impact fees see Chapter 7 (Funding and Finance). For more information on the types of programs that the "traffic congestion impact fee" could fund to reduce traffic downtown, see Chapter 6 (Transportation Demand Management). Fee amounts of transportation-related development impact fees in several California cities and counties are illustrated in Appendix 7C.

Legalize Parking Efficiency

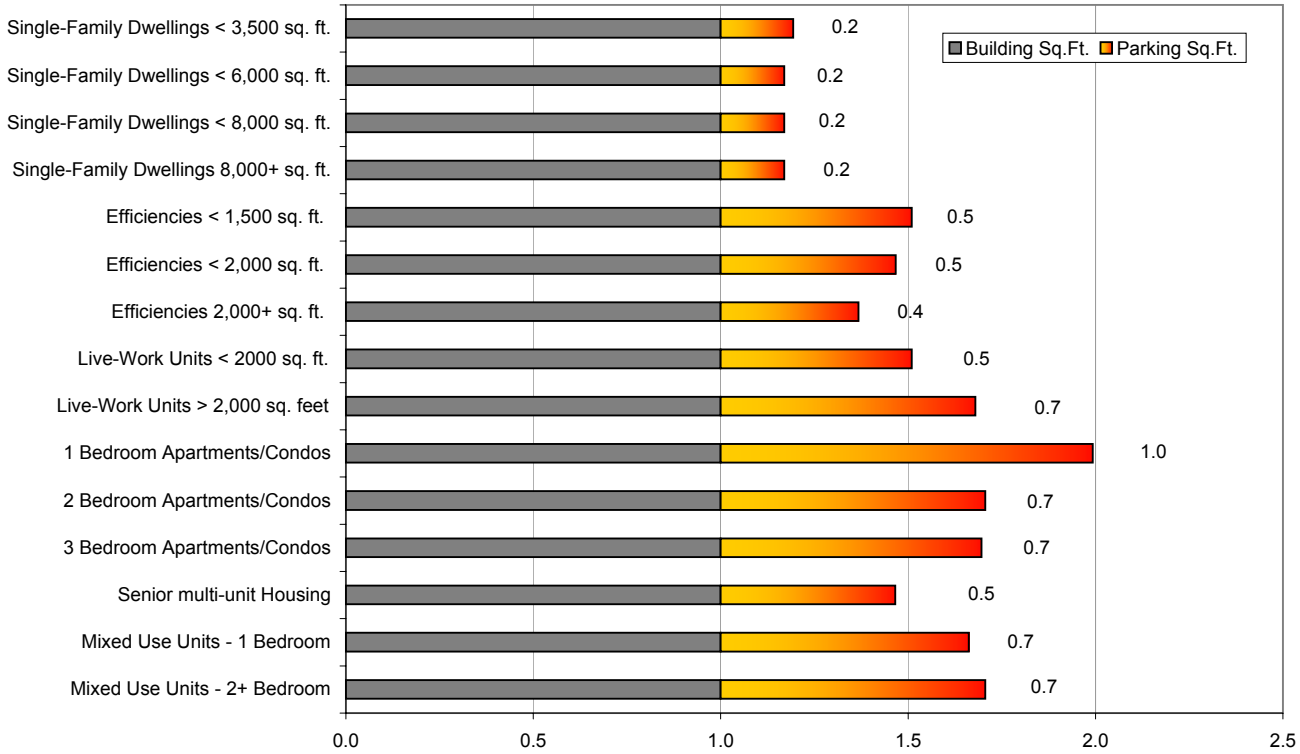
As illustrated in Figure 5-8 and Figure 5-9, Glendale's minimum (residential and commercial) parking requirements, coupled with the current code requirement that all parking be independently-accessible, means that often more than one square foot of parking area is required for every square foot of building. Figure 5-9 shows that this is especially true for uses that help create vibrancy and life downtown, such as restaurants, night clubs, etc.).

These requirements add significant additional expense to development – especially when parking is provided underground – and can act as a barrier to new development and adaptive reuse projects necessary to add vitality to downtown Glendale. In addition, when site conditions or financial constraints prompt developers to provide the required independently-available parking on-site, the result is often monolithic parking podiums that present a "blank wall" to the pedestrian realm.

To complement the *Downtown Specific Plan's* requirements that above-ground parking be "lined" or "wrapped" with active, pedestrian-friendly uses or design treatments, the City should change its parking-related development standards in order to facilitate better ground-floor urban design. To accomplish this goal, the City needs to legalize more efficient parking arrangements for new downtown development and adaptive reuse projects to allow future development projects to reduce their overall "parking footprint" without reducing the overall parking supply provided.

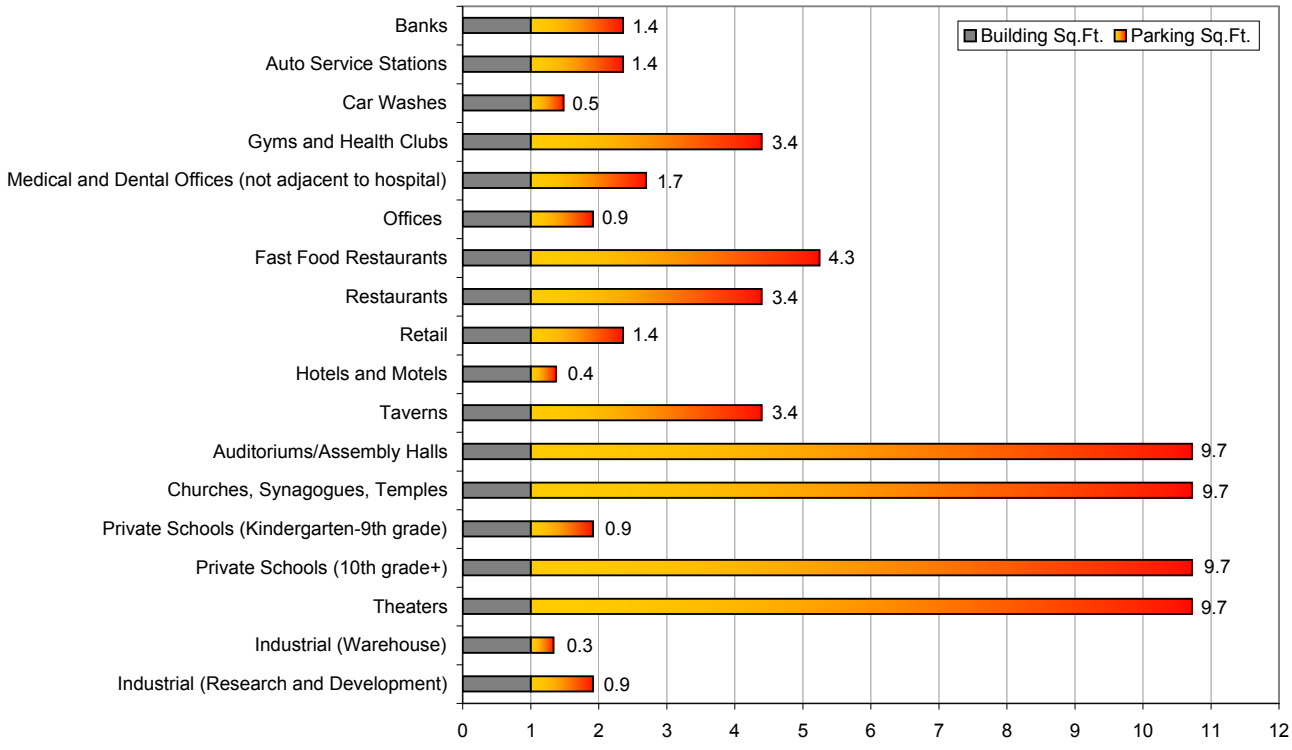
Recommendation 5.13
Revise zoning code to legalize more efficient parking arrangements in new downtown development and adaptive reuse projects in order to facilitate better ground-floor urban design (i.e. allow development to reduce its "parking footprint" by right without reducing the total supply provided).

Figure 5-8 Glendale's Existing Residential Minimum Parking Requirements



Source: Glendale Municipal Code- Title 30, Zoning Code, April 2005, Table 30-32 -- A

Figure 5-9 Glendale's Existing Commercial Minimum Parking Requirements



Source: Glendale Municipal Code- Title 30, Zoning Code, April 2005, Table 30-32 -- A

In essence, the City should revise its zoning code to allow parking requirements to be calculated on the basis of "total cars parked" rather than the current space-inefficient requirement of "total spaces marked." This can be accomplished as follows:

- Remove the current independently-accessible requirement, except for designated disabled parking spaces which are required by federal ADA law to be independently accessible.
- Allow tandem parking operations to satisfy parking requirements in all parking facilities by right.
- Allow valet parking to satisfy parking requirements in all parking facilities by right.
- Allow stacked parking to satisfy parking requirements in all parking facilities by right.
- Allow off-site parking arrangements to satisfy parking requirements by right within DSP area and within 1,000 feet of DSP boundaries (as discussed in Recommendation 5.11)

Tailor "One-Size-Fits-All" Parking Standards to Encourage Downtown Revitalization and High-Quality Development

Recommendation 5.14
Expand existing provisions in zoning code that allow new downtown development and adaptive reuse projects to go below existing parking minimums by right, under very specific conditions.

The City's existing parking standards for new downtown development and adaptive reuse projects already recognize that existing parking minimums are a "one-size-fits" all prescription that are not appropriate for all types of development.[18] Without changing existing parking minimums for downtown development at this time, the City should expand existing provisions in zoning code that allow new downtown development and adaptive reuse projects to go below existing parking minimums wherever appropriate, as follows:

- Increase existing exemption from parking requirements for adaptive reuse of existing buildings from uses up to 2,000 square feet to uses up to 5,000 square feet.
- Payment of an annual in-lieu of parking fee into the Downtown Transportation Fund. Set in-lieu fee as reasonably as possible to encourage its use and ensure the provision of only enough parking demanded by market. For more information on the recommended in-lieu fee program, see the sidebar "A New In-Lieu

18 Existing provisions that allow for exemptions include: Redevelopment Agency projects with findings, changes of use in a historic building, changes of use for buildings less than 2,000 square feet, intensification of an existing use with reasonable distance of an off-site parking facility, projects adjacent to transit corridors with documentation of transit usage, shared parking arrangements in a mixed-use building or amongst different buildings in a mixed-use district up to 1,000 feet (or greater with special approval), off-site parking up to 1,000 feet (or greater with special approval), and general reductions allowed through a Zoning Administrator finding that the parking requirements are not appropriate for the project's actual parking demand and that "sufficient" parking will be provided by other means.

Parking Fee Program to Support Downtown Revitalization" on the following page.

- Staff-level administrative approval of transportation programs and incentives to reduce parking demand in exchange for deeded commitment to monitor and report to City regarding the project's parking and transportation impacts.
- Staff-level administrative approval of transportation analysis proving lower parking demand than requirements mandate in exchange for deeded commitment to monitor and report to City regarding the project's parking and transportation impacts.
- Staff-level administrative authority to reduce or completely waive the number of parking spaces required based on quantitative information provided by the project applicant that documents the need for fewer parking spaces, such as:
  - A market profile of existing or anticipated project users documenting below average vehicle ownership rates (for residential development) or below average vehicle trip generation rates (for commercial development).
  - Documentation of the expected reduction of vehicle trips and/or car ownership rates associated with the project due to the incorporation of transportation and parking demand management strategies into the project.
  - Documentation that the proposed land use will operate exclusively when the existing public parking supply within the DSP area or 1,000 feet of DSP boundaries is adequate to accommodate the parking for the proposed use (e.g. a restaurant or club that operates only during evening hours).
  - Documentation of the experience of other cities comparable to Glendale that have a lower parking requirement for the proposed land use.

A New In-Lieu Parking Fee Program to Support Downtown Revitalization

As of this writing, several adaptive reuse redevelopment projects (including one that proposes to bring a new use to a long-vacant historic building) have been proposed for downtown that will not be financially or architecturally feasible if the project is forced to provide all the City's minimum parking standards on-site.

In order to encourage new development of the highest architectural and urban design quality as well as the redevelopment of vacant, underutilized, historic, and/or dilapidated buildings downtown, the City should create a new in-lieu parking fee program to allow current and future development and adaptive reuse projects to reduce or eliminate some of their on-site parking. Such a program should allow a fee to be paid "in-lieu" of each on-site parking space not constructed, either by:

> **Option A:** A fixed one-time fee per space of $10,000 PLUS charging market rate for any lost public parking revenue from leased replacement parking in City-owned parking facilities.
>
> **Option B:** A $500 annual fee per space PLUS charging market rate for any lost public parking revenue from leased replacement parking in City-owned parking facilities.

The amount of the in-lieu fee will differ based on which option is appropriate for each individual project and the variable market rates in public garages over time (for example, annual foregone revenue in one garage might be less than in another, and the revenue potential in both may change over time). For this reason, the City should regularly evaluate the equivalent costs of potential lost public parking revenue, and periodically update the in-lieu fee amounts for both options as needed.

With either option, the in-lieu fee should be assessed on a 1:1 replacement basis for each foregone on-site parking space. The only exception should be in those cases where the project sponsor can demonstrate (using any method discussed in Recommendations 5.13 and 5.14) that the project will generate fewer auto trips and parking demand than conventional projects of a similar nature, in which case the in-lieu fee can be based on the reduced number of parking spaces that will actually be demanded by the project occupants. The amount of off-site parking leased could be reviewed annually and would be based on demand, so that a successful TDM program could reduce the number of off-site parking spaces leased (and the amount of in-lieu fee paid).

Wherever possible, the in-lieu fee should also be assessed on an annual, rather than one-time basis. Such a fee structure provides an on-going funding source for necessary site-specific TDM programs or construction and maintenance of parking spaces in public parking facilities. It also provides both the project developer/owner and the City with maximum flexibility necessary to tailor funded programs or off-site parking leases over time in response to changing conditions. For an annual fee, the City should require that the commitment to pay the annual in-lieu fee (either by the current developer and/or future project owners) be deeded with the property as a condition of approval.

Examples of per-space in-lieu fees in California cities are shown below:

One-time fees:

- Hermosa Beach: $6,000
- Mill Valley: $6,751
- Davis: $8,000
- Concord: $8,500
- Claremont: $9,000
- Berkeley: $10,000

Per-year fees:

- Pasadena: $134.67

Recommendation 5.15

Prevent spillover parking in neighborhoods adjacent to downtown and the Glendale Transportation Center as needed by converting the City's existing neighborhood Preferential Parking Program into a Residential Parking Benefit Districts, where residents can park for free or at low annual permit costs but non-residents pay to park and the resulting revenue is invested in the neighborhood.

5.3.5 IDENTIFY AND ADDRESS NEIGHBORHOOD PARKING PROBLEMS IMMEDIATELY

Glendale has some residential neighborhoods very close to downtown and consequently, these residential streets sometimes experience parking spillover due to motorists looking for available parking near their downtown destinations. This is particularly a problem with part-time workers who may work a three- or four- hour shift and may be willing to "test" parking enforcement in the neighborhoods, or to do the "two-hour shuffle," moving their car when the time expires.

These problems could get worse as new parking management strategies are implemented downtown– such as pricing all on-street parking – and as new downtown development is fully occupied. But current parking spillover problems are occurring at the same time that hundreds of spaces in nearby public garages sit empty. Thus, any current or future spillover problems are not the result of too few spaces, but a lack of coordinated parking pricing and management.

Currently, the City of Glendale has a Preferential Parking Permit program[19] that is implemented by request in neighborhoods with a demonstrated problem of spillover parking (the City's current threshold is that at least 25% of cars parked on the street belong to non-residents). 75% of the residents on a street are required to "sign up" for neighborhood parking to implement the program.

Under this program, non-residents are allowed to park for free on residential streets, but are subject to time limits which vary by district. Residents are allowed to purchase permits for a nominal fee that allow them to park on streets within the same permit district for free and not subject to time limits.[20] In addition, residents are given up to 2 free guest permits for every car permitted in the household. There is no limit to the number of cars that can be permitted, either in a given household or neighborhood. In 2005 Glendale issued approximately 1,500 resident permits, in addition to multiple guest permits, which brings the total to 5,500. Locations of existing Preferential Parking Permit Districts are shown in Figure 5-10.

19 Glendale Municipal Code, Vehicles and Traffic, Section 10.36.030 "Preferential parking district program established."

20 The $6 annual permit fee is likely well below the market value of an on-street parking space in most areas of Glendale and certainly in the *Downtown Specific Plan* area and downtown-adjacent neighborhoods. The approximately $11,600 generated annually from the permit fees does not even cover the City's full costs for administering and enforcing the program.

The structure of Glendale's existing Preferential Parking Program contributes to parking management problems, rather than solving them:

- Allowing 2 hours free parking for non-residents results in overused parking in the neighborhoods while expensive downtown garages sit empty.
- Downtown employees can move their cars when they become concerned about enforcement, doing the "2- hour shuffle." Downtown visitors can park in the neighborhoods to avoid meters and garage fees.
- The City issues an unlimited number of resident permits for a limited number of spaces.
- With a mere $6 annual fee, demand exceeds supply, and the program does not cover costs as is required by City Code.

Residential Parking Benefit Districts are a tool to address parking spillover problems. Residential Parking Benefit Districts should be implemented in residential areas adjacent to downtown and the Glendale Transportation Center if parking spillover problems occur after the implementation of changes to parking management policies (e.g. rates, hours of paid operation, enforcement levels, time limits, and the like).

Residential Parking Benefit Districts are similar to the City's Preferential Parking Program districts. The main differences are that Residential Parking Benefit Districts:

- Link the number of parking permits issued to the actual on-street parking supply.
- If surplus capacity exists after residential permits are issues, allow for a limited number of non-residents to pay to use on-street parking spaces.
- Return parking revenues directly to the neighborhood where the revenue was generated to fund public improvements that residents want.[21]

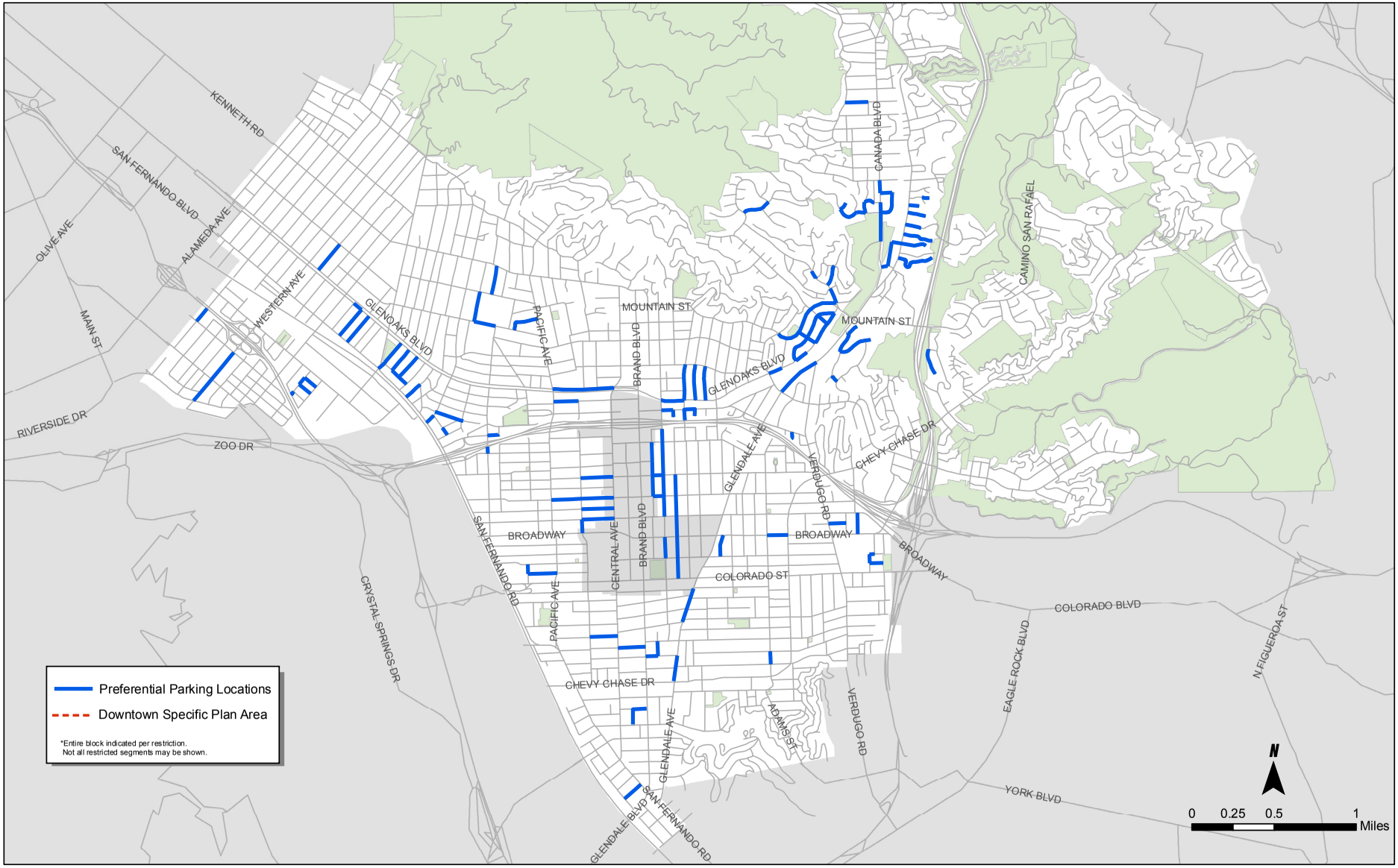
If spillover parking problems occur in residential neighborhoods adjacent to downtown and the Glendale Transportation Center, the City should address these problems immediately by converting its existing neighborhood Preferential Parking Program into a Residential Parking Benefit District, as follows:

Phase I: Revise pricing structure and rates of current Preferential Parking Program

- Lower approval threshold for implementation of Preferential Parking District from 75% of households to a simple majority (50% +1) of property owners on a block.

21 A similar concept to Parking Benefit Districts is also recommended for the *Downtown Specific Plan* Area itself, in the form of a Downtown Transportation and Parking Management District, as discussed in Recommendation 5.7.

Figure 5-10 Existing Preferential Parking Permit Districts



Nelson|Nygaard consulting associates

Source: City of Glendale

- Residents receive 1 free annual permit for unrestricted/unpriced on-street parking; the permit is transferable and/or sellable.
- Subsequent resident permits are sold at tiered prices ($25 per year for the second permit, $50 per year for the third permit, and $100 per year for the fourth permit, etc.).
- On streets with mixed-uses (such as a street like Maryland that has a combination of residential and office uses) and that are slated for installation of multi-space pay stations, residents will be allowed to park for free at any space in the Preferential Parking District, even those that are controlled by pay stations.

Phase 2: Convert to partial Residential Parking Benefit District

- Install well-designed multi-space pay stations in neighborhoods experiencing parking spillover problems (about 1 or 2 per block).
- Residents' permits allow them to park for free at any space in the Residential Parking Benefit District, even those that are controlled by multi-space pay stations.
- Residents also receive a fixed number of hours allowing free guest parking; this is facilitated via a household-specific PIN number that is mailed to them with their permits; guests enter the PIN number into multi-space parking pay stations (the capabilities of multi-space pay stations are discussed in Recommendation 5.5).
- If available curb spaces remain after resident permits are issued, non-residents that are not using free guest parking will be allowed to pay $0.50/hour using multi-space pay stations, with no daily or monthly discount permits allowed. If occupancy exceeds 85%, hourly prices for non-residents should be increased until 85% occupancy is achieved.
- The resulting revenue should be invested in the neighborhoods where the revenue is generated to pay for increased services or transportation and streetscape improvements that residents' desire.
- Existing neighborhood organizations can advise the Traffic and Transportation Administrator (or their delegate) how the parking revenue from their district should be spent, who will then make a recommendation to City Council.

Phase 3: Convert to full Residential Parking Benefit District

If spillover parking continues to be a problem in areas that have partial Residential Parking Benefit Districts, the Traffic and Transportation Administrator, or their delegate, should take one or more of the following actions:

- Raise permit prices for residents, especially for multiple permits.

- Raise hourly parking prices for non-residents.
- Limit the total number of permits issued in a particular district based on one of the following:
  - The available number of curb spaces within the district boundaries.
  - A cap on number of permits issued per household in the district.
  - A cap on the number of permits issued per address in the district, based on property's curb frontage.

In neighborhoods that have not been able to secure the necessary approval threshold to implement a Residential Parking Benefit District, but where the Traffic and Transportation Administer (or their delegate) determine that parking spillover problems are severe enough to compromise neighborhood quality of life, traffic circulation, and/or public safety, the Traffic and Transportation Administrator (or their delegate) should be authorized to implement a mandatory Residential Parking Benefit District as described above.

The key to success of conversion to Residential Parking Benefit Districts is that net revenues above the cost of administering the program should be dedicated to pay for public improvements in the neighborhood where the revenue was generated. Once implemented, residents, property owners, and business owners in the district will continue to have a voice in advising City Council on how they want new parking revenue spent in their neighborhood. This could occur via existing neighborhood organizations or the Glendale Homeowners Council, mail-in surveys, or public workshops, and public hearings. In areas with Parking Benefit Districts where neighborhood organizations do not exist, another option is to appoint a Parking Benefit District Advisory Committee, tasked with advising City Council on how the surplus revenue should be spent in their neighborhood.

These recommendations will help Glendale prevent "spillover" parking in neighborhoods adjacent to Downtown and the Transportation Center. Additional benefits of implementing Residential Parking Benefit Districts in Glendale include the following:

- Excessive parking spillover into neighborhoods will be prevented.
- Scarce curb parking spaces are used as efficiently as possible.
- Residents will always be able to find a parking space at the curb.
- Non-residents can pay fair market prices for any spaces not needed by residents, and the revenues can fund neighborhood services and improvements.
- Residents will clean out garages now used for storage and park cars in them.

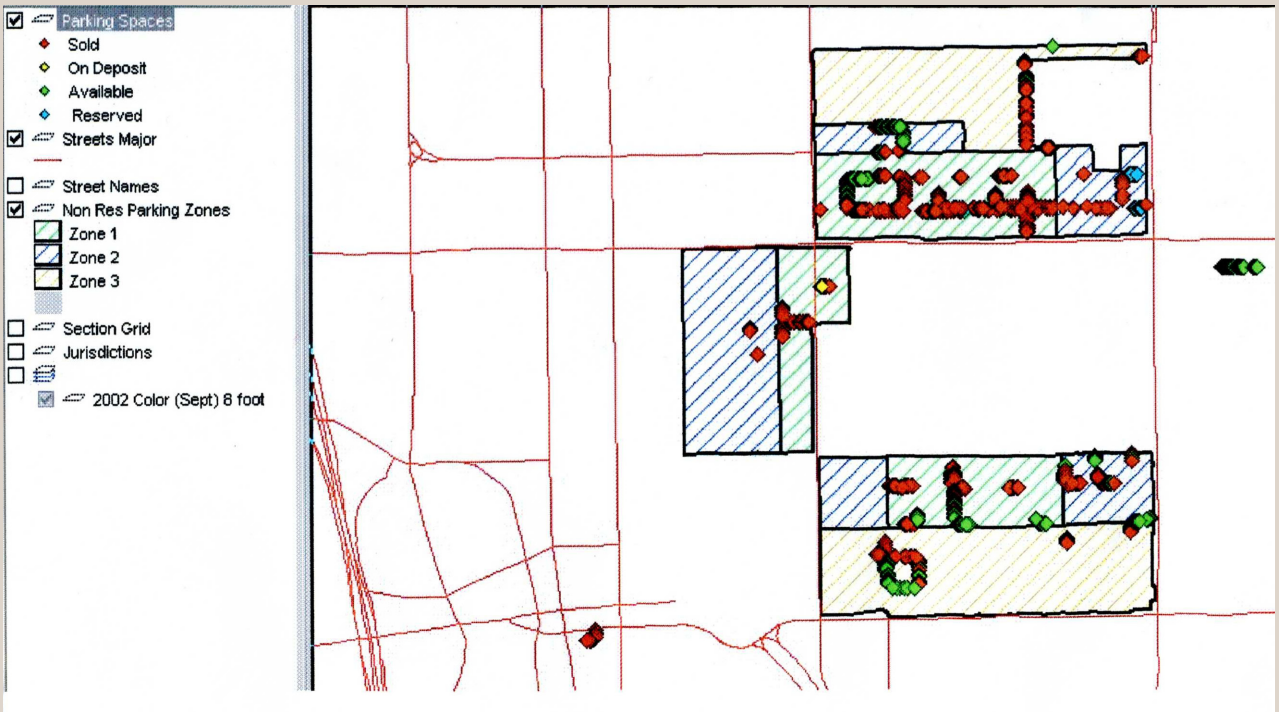
- Residents will sell clunkers now parked on the street, or store them at storage yards.
- Renters with many cars will choose apartments with ample off-street parking; renters with one or no car will choose apartments with little off-street parking.
- Residents will rent excess spaces in underused nearby garages if they need more spaces (e.g. Orange & Marketplace garages, office garages, modern apartment garages).
- Neighborhood quality of life and parking impacts will be improved.
- Program will provide additional revenue to fund neighborhood services and improvements.
- Program will support Glendale's goals for downtown by using parking in the DSP and environs more efficiently.

Recommended locations for conversion of existing Preferential Parking Districts to Residential Parking *Benefit* Districts as needed (as well as potential locations for new Districts as needed) are shown on Figure 5-5 ("Downtown Glendale Parking Regulations – Recommended"). Examples of select US cities that have implemented some version of a Residential Parking District are illustrated in the sidebar on the opposite page.

Cities with Parking Benefit Districts

Several cities have implemented some form of a Parking Benefit District, including:

- West Hollywood: Residents of neighborhoods near major commercial corridors or employment centers pay a low $9 annual permit rate, while non-residents can pay to park on streets with surplus capacity for the equivalent of $360 per year.
- Santa Cruz: Residents in downtown-adjacent neighborhoods pay $20 per year for a parking permit, while non-residents can pay to park on streets with surplus parking for the equivalent of $240 per year.
- Tucson: To manage demand, prices are graduated in three "zones" based on distance from the University of Arizona so that closer, more convenient spaces that are in higher demand cost more (see map of this system below).
- Several cities dedicate some or all of the parking revenue to pay for additional services and improvements in the neighborhood where the revenue was generated. These include cities such as San Diego (45% local return of parking meter revenue) and Pasadena (100% local return of parking meter revenue). Cities as diverse as Ventura, San Francisco, and Portland are all currently studying this concept.
- This *Downtown Mobility Study* recommends that the city of Glendale combine the ideas of limiting permits to the available supply of on-street parking, charging non-residents market rates to park in residential areas where surplus on-street parking capacity exists, and returning some or all the parking revenue to pay for neighborhood improvements that residents want.



ABOVE: Students, faculty, and staff at the University of Arizona can purchase permits in nearby residential neighborhoods with surplus on-street parking capacity. Source: University of Arizona.

5.3.6 DEVELOP NEW PARKING SUPPLY AS NEEDED

Recommendation 5.16
If total downtown parking demand cannot be met with existing supply after *Downtown Mobility Study* recommendations have been fully implemented, build new public shared parking as needed.

The costs of constructing new parking spaces in Glendale are significant when compared to investing in more cost-effective measures to reduce parking demand. As Figure 5-11 and the sidebar at the end of this chapter indicate, each net new, structured public parking space added in downtown Glendale costs approximately $43,985 (exclusive of debt service, operation and maintenance, insurance, and enforcement costs).

While costly, new public parking structures could be necessary to meet future parking demand once substantial new development has taken place, many existing surface lots have been redeveloped, and all of the lower-cost transportation demand management measures and shared parking strategies recommended in this *Downtown Mobility Study* have been exhausted. For this reason Glendale should:

- Pursue implementation of all cost-effective strategies to a) reduce parking demand and b) make the most efficient use of existing supply, while preparing for the future need to provide new downtown public parking garages as needed. It must be emphasized that it is prudent, from both a fiduciary and congestion management perspective, to optimize the use of existing public parking facilities before constructing costly new garages. For example, the City should take steps to maximize the use of existing public parking garages, through such measures as converting to valet operations to handle peak demand loads. The City's current contractual parking management firm – Parking Concepts International – has experience with valet operations in other jurisdictions and has expressed their willingness to convert to valet operations in downtown Glendale as needed if the City requests.[22]
- As discussed in Recommendation 5.1, if new public parking supply is needed, first purchase or lease existing private parking lots or structures from willing sellers, and add this parking to the shared public supply before building expensive new garages. For example, in Pasadena, a major engineering firm, Parsons, shares their parking spaces at their major employment site, located on the northern edge of old Pasadena. Valet parking firms have agreements with Parsons to store cars in the company's lots and garages. In addition, Parsons opens its lots in the evenings to the general public, and allows people to park for a fee.
- Identify one or more placeholder "opportunity" sites for locating new public garages when needed.
- Prioritize and aggressively implement all feasible strategies for reducing parking demand by shifting peak hour trips to other modes, especially those that are more cost-effective at accommo-

22 City of Glendale Interdepartmental Communication, "Existing and Potential Near-Term Parking Utilization of the City's Marketplace Parking Garage and Exchange Parking Garage," 1/16/07.

dating a new downtown trip (via carpool, transit, etc.) than the cost of adding a net new parking space in a public garage.

- Monitor the effectiveness of strategies to reduce parking demand and initiate pre-development process for new parking garage when overall downtown peak parking occupancy regularly and consistently exceeds 80%.

Figure 5-11 Estimated Costs for Each Net New Downtown Public Parking Space Added in Downtown Glendale

Capital Costs													
	Structured Spaces Built	Surface Spaces Displaced	Net Spaces Gained	Year Completed	Land Cost / Value Current $	Direct Cost Current $	Project Cost (Land + Soft) Current $	Construction Cost Inflation Adjusted $	Project Cost Inflation Adjusted $	Gross Cost Per Space		Cost Per Space Gained	
										Current $ Direct	Project	Current $ Direct	Project
New downtown garage ($0/sf land costs)	480	100	380	n/a	$0	$6,467,979	$8,214,333	n/a	n/a	$13,475	$17,113	$17,021	$21,617
New downtown garage ($250/sf land costs)	480	100	380	n/a	$8,500,000	$6,467,979	$16,714,333	n/a	n/a	$13,475	$34,822	$17,021	$43,985

Resulting Costs Per Space Per Year								
	Project Cost Per Space Gained	ANNUAL COSTS PER SPACE GAINED				TOTAL COST PER SPACE GAINED		
		Debt Service	Operation & Maintenance	Insurance	Enforcement	Per Year	Per Month	Per Workday
New downtown garage ($0/sf land costs)	$21,617	$1,320	$350	$43	$54	$1,767	$147	$6.58
New downtown garage ($250/sf land costs)	$43,985	$2,686	$350	$88	$54	$3,178	$265	$11.82

Note: All inputs, sources, and assumptions are listed in full in Appendix 5C.

How Much Does It Cost To Add A New Parking Space In Downtown Glendale?

An analysis of the annualized costs of building parking was conducted in order to provide a reference point for the cost-effectiveness of many of the transportation and parking management strategies recommended in this *Study*.

The assumptions made for this analysis were as follows (all inputs, sources, and assumptions are listed in full in Appendix 5C):

- A 5-story parking garage with 6 parking levels (parking on roof level)
- A structured garage displaces a 100-space surface parking lot on a 34,000 s.f. (0.78 acre) site
- 80 spaces on each parking level for a total of 480 spaces
- Parking space size 340 s.f. per space (or 128.1 spaces per acre)
- "Capacity loss" factor: 20% loss of spaces per level due to additional vehicle circulation, columns, stairwells/elevators needed for structures
- 5% interest (tax-free municipal bonds)
- 35-year useful life
- All costs are in 2005 dollars for the Los Angeles metropolitan region
- Operation/maintenance and enforcement costs are based on the City's current operation and maintenance costs for the Marketplace Garage

The analysis considered two scenarios:

- Land costs nothing (e.g. a hypothetical, conservative scenario that assumes land downtown has no value)
- Land costs $250 per s.f. (based on the current average assessed value of land in downtown)

Under this scenario, the total project costs if land costs $250 per square foot are $16.7 million or $43,985 per space gained (in 2005 $), as illustrated in Figure 5-11. This is in line with the cost per space added for several recent downtown public parking garages in California:

- UCLA (2001): $21,000
- Mountain View (2000): $26,000
- Walnut Creek (1994): $32,400
- Palo Alto (2002): $50,994
- San Jose (2002): $57,000

On an annualized basis, this results in a cost of $265 per space per month or $3,178 per space per year, as illustrated in Figure 5-11. It should be noted that this is a conservative estimate. Several costs are excluded, such as externalized public costs, which have been estimated at $117/space for traffic congestion and air pollution costs.[1]

The bottom line is that the costs of building new structured parking spaces can be significant, and it is often cheaper to reduce demand rather than increase supply. Considering the significant cost per new vehicle trip accommodated in a new parking space, it is important to exhaust all other cost-effective strategies to reduce parking demand.

Additional structured parking is eventually likely to be needed in downtown Glendale in the long-term, but given current occupancy rates for downtown public parking (53% occupancy at the weekday peak hour of 1-2 pm), and the availability of untapped transportation demand management strategies, parking pricing and shared parking opportunities, it is important to think carefully, and manage existing parking resources effectively, before simply building more.

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1 Externalized costs are those costs that accrue to the public as a result of a) the vehicle trips accommodated by the parking and b) the development of the parcels as parking vs. another use. External costs here are estimated as $117 per car per month (in 2001 dollars. Source: *The High Cost of Free Parking*, p194-199, 2005. This estimate only accounts for externalized congestion and emissions costs. Many other externalized costs that the City and taxpayers must pay for are not included in the estimate (e.g. greenhouse gases, noise, air and water pollution, public health and safety costs from traffic accidents).