

Downtown Roanoke Parking Study



Commissioned by
The City of Roanoke



Prepared by the
Roanoke Valley-Alleghany
Regional Commission



Roanoke Valley-Alleghany
REGIONAL
commission

October 2012

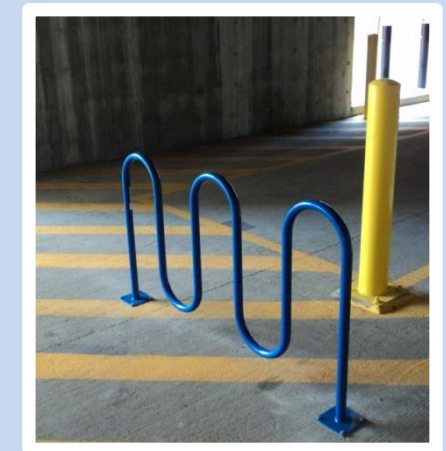
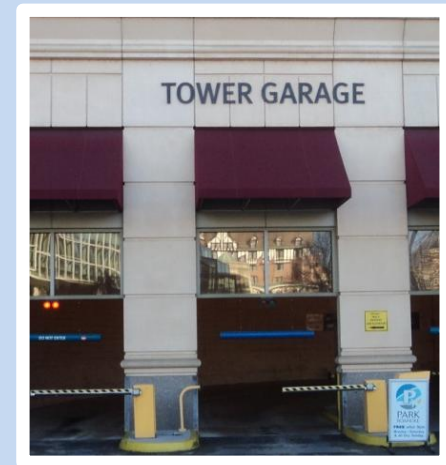


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Acknowledgements

This report was prepared by the RVAMPO in cooperation with the U.S. Department of Transportation (USDOT), the Federal Highway Administration (FHWA), the Federal Transit Administration (FTA), the Virginia Department of Transportation (VDOT) and the Virginia Department of Rail and Public Transportation (VDRPT). The contents do not necessarily reflect the official views or policies of the FHWA, FTA, VDOT, Department of Rail and Public Transportation (DRPT), RVAMPO or Roanoke Valley-Alleghany Regional Commission (RVARC). This report does not constitute a standard, specification, or regulation. FHWA, FTA or VDOT acceptance of this report as evidence of fulfillment of the objectives of this planning study does not constitute endorsement/approval of the need for any recommended improvements nor does it constitute approval of their location and design or a commitment to fund any such improvements. Additional project level environmental impact assessments and/or studies of alternatives may be necessary.

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1.1: Introduction

Effective downtown parking management is vital to the economic success, urban form, and cultural vibrancy of any downtown area and is an essential component to successful transportation systems. Vehicles need a parking space at each destination. Parking facilities, whether on-street or off-street, are significant types of land uses. Parking facility and infrastructure design both influence the physical character of each adjacent land use and greatly impact how a person views a building and how they interact with urban spaces. Parking is often one of the last interactions a resident or visitor has with a destination; this illustrates how parking management can greatly impact their overall experience. Addressing issues associated with downtown parking is crucial to continuing Roanoke's downtown revitalization. Effective parking management will help ensure that downtown Roanoke remains the economic and cultural hub for the region.

1.2: Purpose and Objectives

The Downtown Roanoke Parking Study will complement the work that the City of Roanoke has conducted in the pursuit of a comprehensive downtown parking strategy. The City of Roanoke and the Downtown Mobility Task Force engaged the Roanoke Valley-Alleghany Regional Commission to study and analyze downtown parking capacity, location, time limit restrictions, utilization, and to make recommendations. This study also inventoried downtown bicycle parking availability and incorporated downtown parking "best practices" research. Parking Study

findings will help decision makers develop the best parking management and mobility strategies for the downtown area.

1.3: Downtown Mobility Task Force Input

Roanoke's Downtown Mobility Task Force includes City of Roanoke planning, economic development, parking enforcement and management staff, and representatives from downtown businesses. The Mobility Task Force provided input and direction regarding the Downtown Roanoke Parking Study project scope and objectives. In addition, focus group discussions were held in July 2012 to identify parking problems and potential solutions.

The following statements represent a comprehensive list of issues and opportunities identified by the Mobility Task Force and served as the foundation for developing the project objectives:

- where are all the parking spaces located
- strategies aimed at improving user quality of service
- parking supply, is there a supply issue
- how can the existing parking supply be managed more effectively
- what parking meter options exist
- what payment options would be most cost effective
- how to fully utilize downtown parking garages and surface lots
- supply and demand of on-street parking spaces are not managed effectively
- what payment options would be most helpful

- how to incentivize downtown employers and employees to park off-street
- time-limited on-street parking is often occupied by long-term parkers who move their vehicles periodically throughout the day
- parking garages are perceived as inconvenient for short-term parking
- how to communicate downtown parking capacity and availability
- ways to improve mobility for nondrivers

1.4: Stakeholder Input

Focus group discussions, primarily focused on on-street parking, were held in July 18th, 2012 at the City of Roanoke Municipal Building. The discussions were part of a two day on-street parking workshop with City of Roanoke planning staff, downtown stakeholders, and the Downtown Mobility Taskforce. The discussions were led by planning staff from Nelson/Nygaard, a premier national transportation planning firm, and the United States Environmental Protection Agency (US EPA).

The workshop involved a presentation from Nelson/Nygaard reviewing the documented parking conditions data, an overview of what other cities have done to address their on-street parking, and their assessment of how Roanoke's approach to the management of curb parking compares to industry standards. The presentation was followed by breakout focus group discussions focused on parking management options, opportunities, barriers to making changes, and possible next steps. The workshop also involved a downtown parking walking tour and an in-depth discussion regarding downtown parking best practices. The workshop and focus group discussions were funded by the US EPA through their Building Blocks for Sustainable Communities grant program.



Individual focus group discussion

A summary of input received during the focus group discussions is outlined below. A more detailed summary can be found in Appendix C.

Parking Problems Identified

- there is not enough on-street parking downtown
- employees are moving their cars several times throughout the day to avoid tickets
- it is easy for parkers to move their car and rub off tire chalk mark
- garages do not accept credit cards, which discourages use
- business owners and employees occupy too many on-street spaces downtown
- restaurant employees feel unsafe using garages at night after work
- parking garages need more effective signage
- parking spaces in garages are small
- small spaces leave little room for vehicle maneuvering
- no parking enforcement during the evening hours and on weekends results in the same spaces being occupied all day
- parking in garages are intimidating
- on-street parking signage is confusing
- too many time restrictions per block
- fragmented parking restrictions downtown make it confusing to park with confidence
- Roanoke City Council needs to lead, not just react to negative comments received about parking

Potential Solutions Identified

- trolley service could be expanded, which could reduce parking demand
- require reserved parking to be on upper levels of parking garages. This would allow short-term parkers access to the most convenient spaces on the lower levels.
- incentivize business owners and employees to use garages so that the most convenient spaces can be used by customers
- explore the feasibility of implementing a special parking rate for downtown restaurant and retail employees
- if meters are necessary, only put them in the core of downtown
- parking garage spaces need to be larger
- on-street spaces are not marked, which makes it difficult to park

- any potential pricing strategy needs to ensure that the most convenient spaces are the most expensive
- electronic signage that communicates to drivers the number of spaces available in the lots and garages would be useful
- if meters were implemented, money collected should be used to improve downtown streetscapes (signage, lighting, sidewalks, etc.)
- media campaign could inform people of existing/future parking policy changes
- smart phone downtown parking application could be developed
- meter parking pilot program could be implemented
- promote trolley, transit, and bicycle use downtown
- parking garages need to provide more space for vehicles to maneuver
- 1-2 hour free in the garages and pay for on-street spaces

Miscellaneous Input Received

- the City of Roanoke needs to evaluate the impact a Market Street pedestrian could have on the existing parking supply
- Market Square pedestrian mall mentioned positively as well as more closing of streets in the market area for pedestrian use
- the potential Market Square pedestrian mall was mentioned positively
- the City could also evaluate the possibility of closing additional streets in the market area for pedestrian use
- some of the pay boxes are in poor condition
- people will pay to park in the most convenient spaces
- most downtown residents parking off-street
- people aren't frustrated with parking during events because they already expect to have to park at a distance.
- visitors during non-event time think they're the only ones interested in coming downtown
- need more on-street loading zones



Focus group presentation

2.1: Study Boundary and Districts

A study area was established based on input and guidance from the Downtown Mobility Task Force and the City of Roanoke planning and parking management staff. The study area includes the Central Business District (CBD), as defined consistent with the purposes of the study, the Market District, and outlying areas adjacent to the Kirk Family YMCA, Virginia Museum of Transportation, and the Roanoke Higher Education Center. The study area will be evaluated in its entirety and the CBD will be assessed separately. The study area is shown in Figure 2.1.

Figure 2.1: Study Area



2.2: Vehicle Parking Inventory

A comprehensive parking inventory was conducted during February and March of 2012 to identify all publically available on-street and off-street parking spaces within the study area. Time limit restrictions, parking type (lot or garage), location, user fees, and other pertinent parking details were also documented as part of the inventory process. The inventory did not include spaces that are only for private use. In all, the inventory identified a total 7,097 publically available spaces within the study, 4,096 of which are located within the CBD.

On-Street Inventory

On-street parking is the most valuable type of parking for several reasons. First, it creates a physical and psychological buffer between pedestrians on the sidewalks and moving traffic. Second, it presents the best access to the front doors of retail, residential, office, and commercial destinations. Third, it limits the need for off-street parking facilities. On a per-space basis, on street parking takes up less space than other forms of parking.

The on-street inventory of the study area identified a supply of 1,290 time restricted parking spaces. For the purposes of this study, on-street space length was defined as approximately 20 feet. 94 percent of all on-street spaces are parallel curb spaces. Parallel parking requires that vehicles be parked in line with other parked cars adjacent to the curb. Perpendicular spaces are provided in two locations: along Market Street between Campbell Avenue and Church Avenue and across from the City of Roanoke Municipal Building between Luck Avenue and Church Avenue. Perpendicular parking requires that vehicles be parked side to side, perpendicular to an aisle, curb,

Restrictions	Spaces	% Total
Unrestricted	273	21%
Some restrictions	55	4%
10 min	3	0%
15 min	33	3%
30 min	204	16%
1 hour	392	30%
2 hour	330	26%
Total	1,290	100%

Restrictions	Spaces	% Total
Unrestricted	0	0%
Some restrictions	0	0%
10 min	2	0%
15 min	18	3%
30 min	149	27%
1 hour	284	52%
2 hour	90	17%
Total	543	100%

or wall. In all, there are only 73 perpendicular spaces within the study area, accounting for 6 percent of the downtown supply. A total of 15 angled on-street parking spaces can be found along Bullitt Avenue adjacent to the Jefferson Street Public Library location. However, these particular spaces will soon be removed and additional spaces will be added along Bullitt and Day Avenues. Angled parking is similar to perpendicular parking except that cars are parked at an acute angle consistent with the direction of approach.

Currently, all on-street parking is provided free of charge. On-street time limit restrictions include the following: 10 minute, 15 minute, 30 minute, 1 hour, and 2 hour. Unrestricted on-street parallel parking spaces can be found primarily along neighborhood streets near the Roanoke Higher Education Center and near the Kirk Family YMCA. On-street parking with some restrictions can be found along Wells Avenue, also near the Roanoke Higher Education Center. Table 2.1 provides a summary of all on-street parking spaces by restriction type. An on-street time-limit restriction inventory was conducted to document existing on-street parking restrictions per block throughout the Study Area. This information is a fundamental planning tool that documents not only on-street usage but also facilitates the analysis of trends and allows future changes to be tracked and assessed.

On-street parking spaces within the Central Business District (CBD) were also assessed separately. Table 2.2 provides a summary of all on-street spaces within the CBD. There are 543 spaces within the CBD, which account for 42% of all study area on-street spaces. Figure 2.2 graphically displays the location and time restriction for all on-street parking segments within the study area and CBD. Time restriction segments were measured using a measuring wheel. No parking is allowed within 20 feet of intersections.



Perpendicular parking along Market Street



2 Hour parking on Saturdays

Figure 2.2: On-Street Parking Restrictions



Off-Street Inventory

Off-site parking facilities use valuable land, which require additional curb cuts through the pedestrian facilities for access, and present challenges to creating good urban design. Additionally, off-street parking facilities can be extremely expensive, especially parking garages in urban areas.

The off-street parking facilities inventory included an assessment of all publically available off-street parking lots and garages. Public parking is defined as parking facilities that are currently open for use by the general public, either for free or on a fee-paid basis. Private parking spaces are those that are owned or used by business firms for their customers or employees.

The Car Park, a private company, owns and operates several lots and garages throughout downtown Roanoke. The Car Park facilities are referred to simply as Car Park throughout this Study. Car Parks facilities primarily include lots and offer monthly, daily, and hourly parking options. The fee for a Car Park space depends largely on location and the amount of time the space will be occupied. The Market and Gas lots are the only Car Park parking facilities that accept cash and credit cards, the remainder only accept cash. Table 2.3 summarizes additional parking management and facility characteristics. Parking attendants are present throughout the daytime at the following locations:

- Center City lot
- Corned beef lot

Table 3: Car Park Characteristics

Garage/Lot	Spaces	Parking Rate		
		Monthly	Daily	Hourly
Amos Lot	20	\$100.00	\$5.00	\$2.00
Amy Lot	22	\$20.00	N/A	N/A
Center City Lot	50	NA	\$6.00	\$2.00
Corned Beef Lot	40	\$85.00	\$6.00	\$2.50
Day Lot	26	\$45.00	\$3.00	\$2.00
Elm Lot	40	\$35.00	\$2.00	N/A
Federal Lot	47	\$35.00	\$2.00	N/A
Fella Lot	79	\$50.00	\$3.00	N/A
Gale - Lower Lot	57	\$60.00	\$5.00	\$2.50
Gale - Upper Lot	27	\$0.00	\$6.00	\$3.75
Gas Lot	45	\$100.00	\$6.00	\$2.50
Goodyear Lot	118	\$65.00	\$5.00	\$2.00
Hot Dog Lot	71	\$50.00	\$3.00	N/A
Junior Lot	80	\$45.00	\$2.00	N/A
Kirk Lot	34	\$85.00	\$6.00	\$2.50
Knapsack Lot	165	\$65.00	\$5.00	\$2.00
Lamp Lot	41	\$30.00	\$2.00	N/A
Market Lot	46	\$75.00	\$6.00	\$2.00
Nickel Lot	90	\$75.00	\$6.00	\$2.50
Poff Lot	44	\$35.00	N/A	N/A
Pollard Lot	56	\$60.00	N/A	N/A
Salem Garage	285	\$64.00	N/A	N/A
Seven O Seven Lot	48	\$0.00	N/A	N/A
Sowers Lot	21	\$65.00	\$5.00	\$2.00
Sportsman Lot	60	\$80.00	\$6.00	\$2.50
Tire Lot	26	\$55.00	\$3.00	N/A
Vaco Lot	38	\$0.00	\$4.00	\$1.75
YMCA Lot	39	\$65.00	\$5.00	\$2.00

- Gale lot (upper)
- Kirk lot
- Salem lot
- Sportsman lot

PARK Roanoke facilities are owned by the City of Roanoke and are managed by Lanier Parking Solutions. PARK Roanoke facilities are comprised of lots and garages and are also available on a monthly, daily, and hourly basis. Parking rates vary widely and depend in large part on the duration, day of the week, and time of day. Currently, credit cards are not accepted for daily or hourly parking and parking attendants are present throughout the daytime at the majority of PARK Roanoke facilities. The location, type, owner, and number of spaces for all PARK Roanoke off-street facilities within the study area are shown in Table 2.5.

In all there are a total of 5,769 publically available off-street parking spaces within the study area. PARK Roanoke has a total of 12 lots and garages with a total of 4,098 spaces, which accounts for 59 percent of all off-street study area spaces. Car Park has 27 parking facilities totaling 1,671 spaces. These spaces are available for use by the general public for hourly, daylong, or monthly parking, although generally on a parking fee paid basis. Car Park and PARK Roanoke parking spaces within the CBD were assessed separately and account for 62 percent of all off-street spaces within the study area. Table 2.4 summarizes lots and garages within the CBD.

Figures 2.3 and 2.4 display the location and number of spaces for all Car Park and PARK Roanoke surface lots and garages.

Table 2.4: CBD Lots and Garages	
Park Roanoke	Spaces
Center in the Square Garage	203
Church Avenue Garage	857
Market Garage	506
Market Lot	52
Tower Garage	691
Warehouse Row Lot	44
Williamson Lot	123
Subtotal	2,476
Car Park	Spaces
Amos Lot	20
Corned Beef Lot	40
Gas Lot	45
Hot Dog Lot	71
Junior Lot	80
Kirk Lot	34
Knapsack Lot	165
Market Lot	46
Nickel Lot	90
Pollard Lot	56
Salem Garage	285
Sowers Lot	21
Sportsman Lot	60
Tire Lot	26
Vaco Lot	38
YMCA Lot	39
Subtotal	1,116
Total	3,592

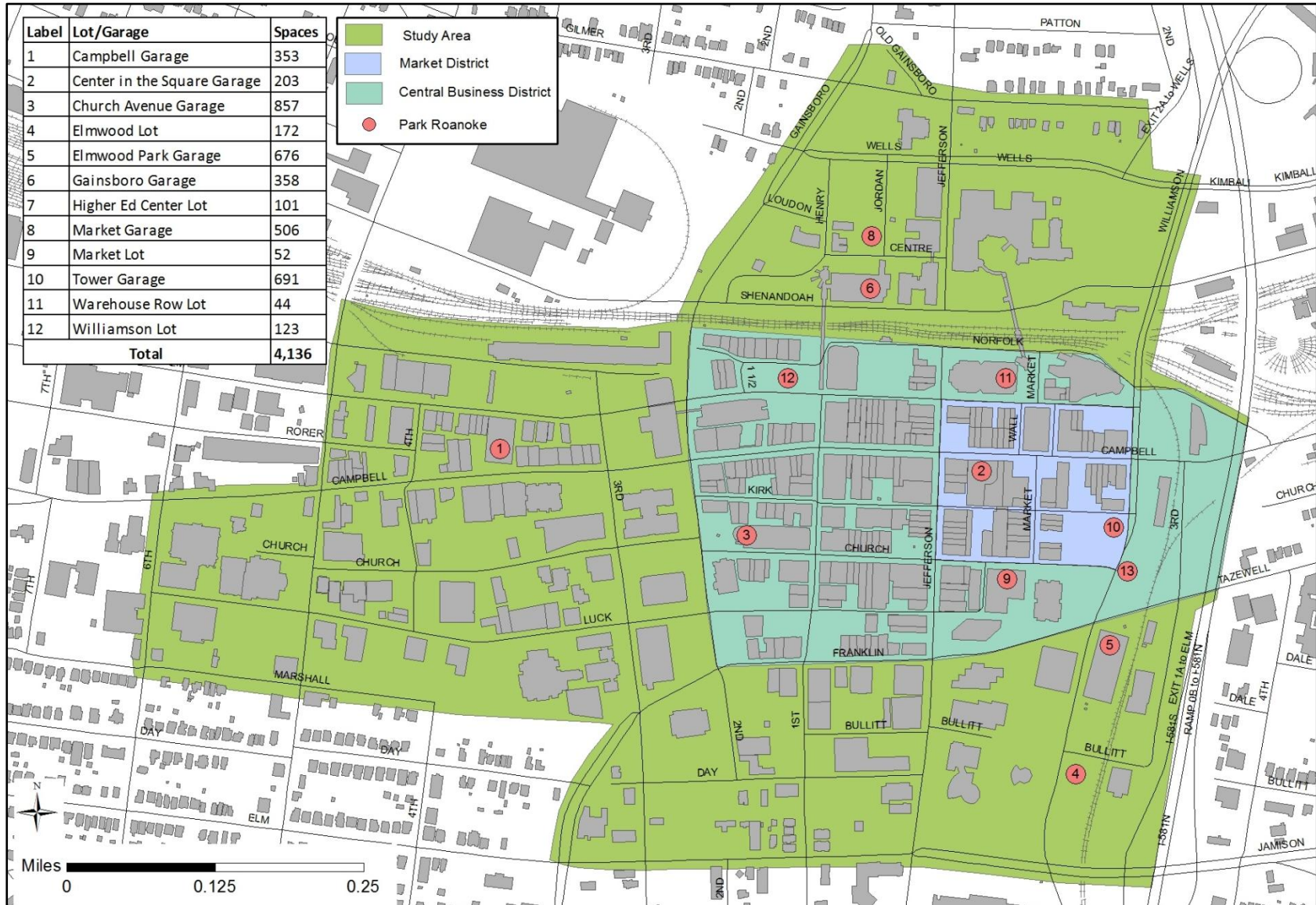
Table 2.5: Park Roanoke Facility Characteristics

Parking Facilities	Spaces	Long Term	Weekdays (8am - 4pm)	Weeknights (4pm - 9pm)	Weekends
Campbell Garage	353	<ul style="list-style-type: none"> General use: \$35/per month Residential: \$8.50/month 	<ul style="list-style-type: none"> \$1 per half hour \$6 maximum Park before 9am: \$3 all day 	<ul style="list-style-type: none"> \$2 flat rate Free after 9pm 	Free
Center in the Square	203	<ul style="list-style-type: none"> General use: reserved - \$90/month General use: unreserved - \$70/month Residential: \$17.50/month 	<ul style="list-style-type: none"> \$1/half hour \$6 maximum 	<ul style="list-style-type: none"> Monday-Thursday: \$3 flat rate After 9pm Monday - Thursday: Free 9pm-midnight: \$3 flat rate 	<ul style="list-style-type: none"> 8am-4pm Saturday: Free 4-midnight: \$3 flat rate Sunday: free
Church Avenue Garage	857	<ul style="list-style-type: none"> General use: unreserved - \$65/month Reserved: \$85/month Residential: \$16.25/month 	<ul style="list-style-type: none"> \$1/half hour \$6 maximum 	<ul style="list-style-type: none"> \$2 flat rate After 9pm: free 	Free
Elmwood Lot	172	<ul style="list-style-type: none"> General use: unreserved - \$50/month Residential: \$12.50/month 	Unavailable	<ul style="list-style-type: none"> After 5pm: free 	Free
Elmwood Park Garage	676	<ul style="list-style-type: none"> General use: unreserved - \$65/month Residential: \$16.25/month 	Unavailable	<ul style="list-style-type: none"> After 5pm: free 	Free
Gainsboro Garage	358	<ul style="list-style-type: none"> General use: unreserved - \$45/month Student unreserved: \$22.50/month Residential: \$11.25/month 	<ul style="list-style-type: none"> \$0.50/half hour \$5 maximum 	<ul style="list-style-type: none"> \$2 flat rate (\$1 for students) After 9pm: free 	Free
Roanoke Higher Education Center Lot	101	<ul style="list-style-type: none"> General use: unreserved - \$45/month Student unreserved: \$22.50/month Residential: \$11.25/month 	<ul style="list-style-type: none"> \$0.50/half hour \$5 maximum 	<ul style="list-style-type: none"> \$2 flat rate (\$1 for students) After 9pm: free 	Free
Market Garage	468	<ul style="list-style-type: none"> General use: reserved - \$85/month General use: unreserved - \$65/month Residential: \$16.25/month 	<ul style="list-style-type: none"> \$1/half hour \$6 maximum 	<ul style="list-style-type: none"> \$2 flat rate After 9pm: free 	<ul style="list-style-type: none"> 8am-4pm: free 4pm-9pm: \$2 flat rate Sunday: free
Market Lot	52	<ul style="list-style-type: none"> General use: unreserved - \$70/month Residential: \$17.50/month 	<ul style="list-style-type: none"> \$1/half hour \$6 maximum 	<ul style="list-style-type: none"> \$2 flat rate After 9pm: free 	<ul style="list-style-type: none"> 8am-4pm: free 4pm-9pm: \$2 flat rate After 9pm: free Sunday: free
Tower Garage	691	<ul style="list-style-type: none"> General use: reserved - \$85/month General use: unreserved - \$65/month Residential: \$16.25/month 	<ul style="list-style-type: none"> \$1/half hour \$6 maximum 	<ul style="list-style-type: none"> \$2 flat rate After 9pm: free 	<ul style="list-style-type: none"> 8am-4pm: free 4pm-9pm: \$2 flat rate Sunday: free
Warehouse Row Lot	44	<ul style="list-style-type: none"> General use: unreserved - \$60/month Residential: \$15.00/month 	Unavailable	<ul style="list-style-type: none"> After 5pm: free 	Free
Williamson Lot	123	<ul style="list-style-type: none"> General use: unreserved - \$60/month Residential: \$15.00/month 	Unavailable	<ul style="list-style-type: none"> After 5pm: free 	Free

Map 2.3: Car Park Facilities



Figure 2.4: PARK Roanoke Facilities



3.1: On-Street Parking Utilization

On-street parking utilization was determined by conducting parking occupancy field observation surveys for all on-street parking segments within the study area. The primary focus of the utilization analysis was to monitor fluctuations in parking demand throughout the day and to identify when and where vehicles are parking. Parking occupancy surveys were conducted at 9am, 12pm, and 3pm on typical weekdays (Tuesday, Wednesday, or Thursday) in March and April. In addition, a Saturday utilization survey was conducted at 10am in June.

The on-street utilization data revealed the following:

- on-street parking supply is sufficient to meet existing demand
- demand is highest at 12pm. 57 percent of study area spaces are occupied at this time.
- 9am demand is greatest along Church Avenue between 1st Street and 4th Street and along Bullet Avenue south of Franklin Road

- 67 percent of all on-street spaces within the CBD are occupied at noon
- parking demand near the Roanoke Higher Education Center is greatest at 12pm
- 12pm demand is primarily concentrated in the Market District and along 1st Street, Campbell Avenue, and Franklin Road
- 79 percent of all 1 hour spaces within the CBD are occupied at 12pm
- 3pm parking demand is dispersed throughout the study area
- on-street spaces within the Market District are in high demand on Saturdays
- 55 percent of all CBD spaces are occupied on Saturday mornings

A more detailed analysis of study area and CBD spaces is provided in Table 3.1. Utilization data for weekday time periods and Saturday morning are displayed on Figures 3.1, 3.2, 3.3, and 3.4.

Table 3.1: On-Street Parking Occupancy

Restrictions	Spaces	9:00 AM		12:00 PM		3:00 PM	
		Occupied	% Occupied	Occupied	% Occupied	Occupied	% Occupied
Weekday Study Area							
Unrestricted	273	142	52%	139	51%	112	41%
Some restrictions	55	3	5%	34	62%	18	33%
10 min	3	0	0%	1	33%	0	0%
15 min	33	18	55%	14	42%	16	48%
30 min	204	97	48%	114	56%	91	45%
1 hour	392	168	43%	264	67%	213	54%
2 hour	330	150	45%	166	50%	153	46%
Total	1,290	578	45%	732	57%	603	47%
Weekday Central Business District							
Unrestricted	0	0	0%	0	0%	0	0%
Some restrictions	0	0	0%	0	0%	0	0%
10 min	2	0	0%	1	50%	0	0%
15 min	18	10	56%	10	56%	9	50%
30 min	149	60	40%	89	60%	68	46%
1 hour	284	125	44%	223	79%	169	60%
2 hour	90	30	33%	41	46%	45	50%
Total	543	225	41%	364	67%	291	54%
Saturday Central Business District							
Restrictions	Spaces	10:00 AM					
		Occupied	% Occupied				
Unrestricted	0	0	0%				
Some restrictions	0	0	0%				
10 min	2	2	100%				
15 min	18	5	28%				
30 min	149	68	46%				
1 hour	226	146	65%				
2 hour	90	46	51%				
Total	485	267	55%				

Figure 3.1: Weekday On-Street Parking Occupancy: 9am



Figure 3.2: Weekday On-Street Parking Occupancy: 12pm

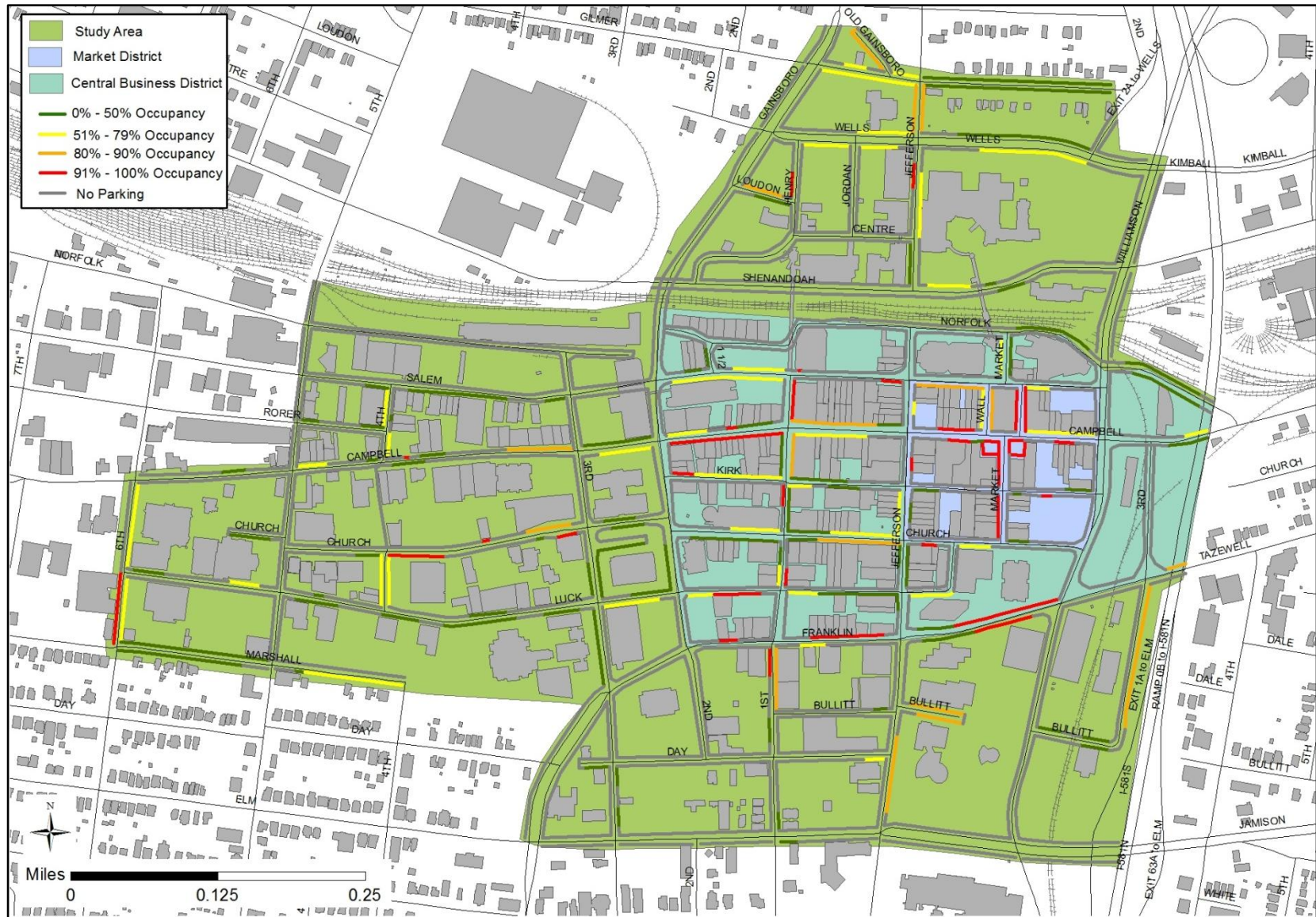


Figure 3.3: Weekday On-Street Parking Occupancy: 3pm

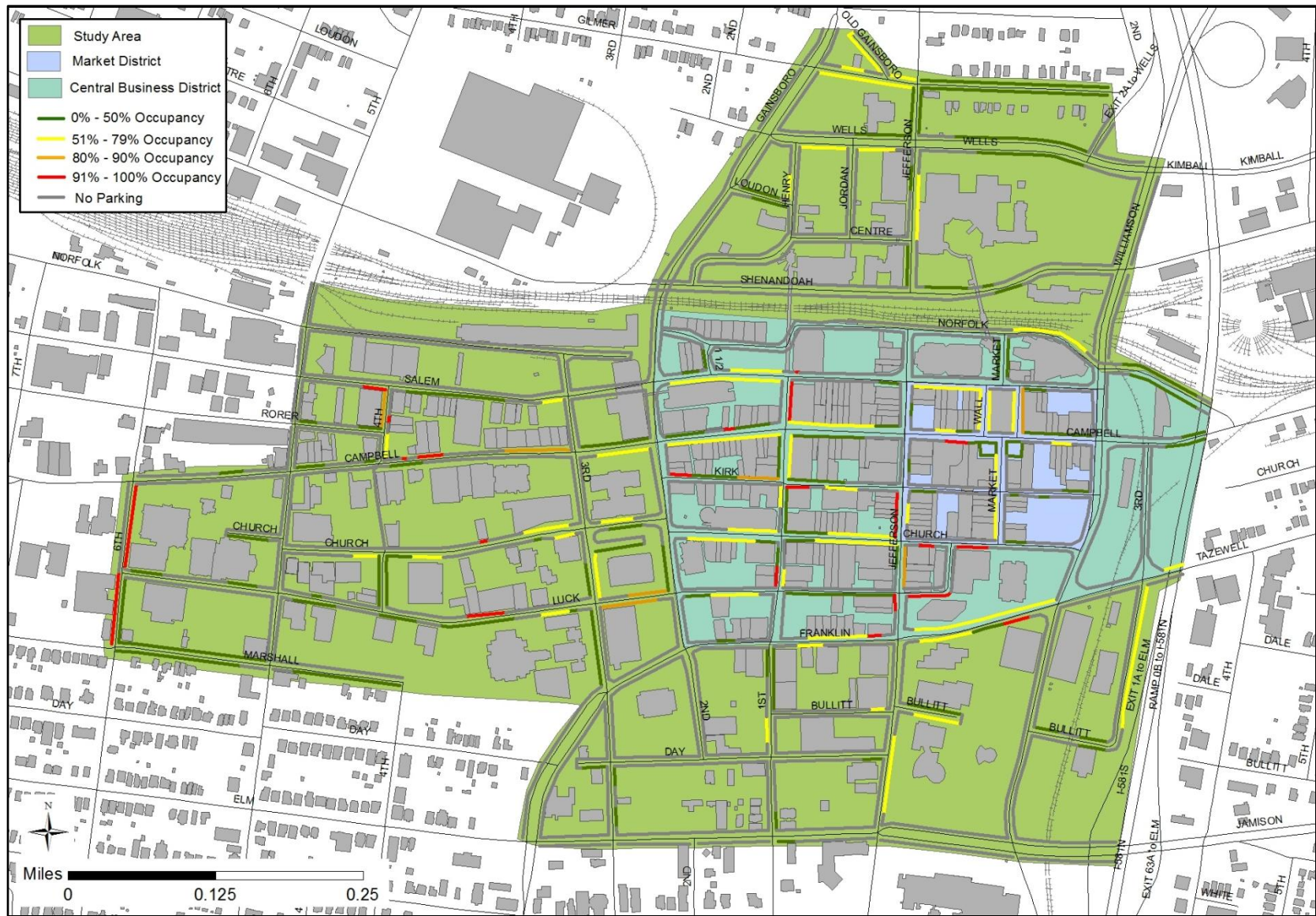
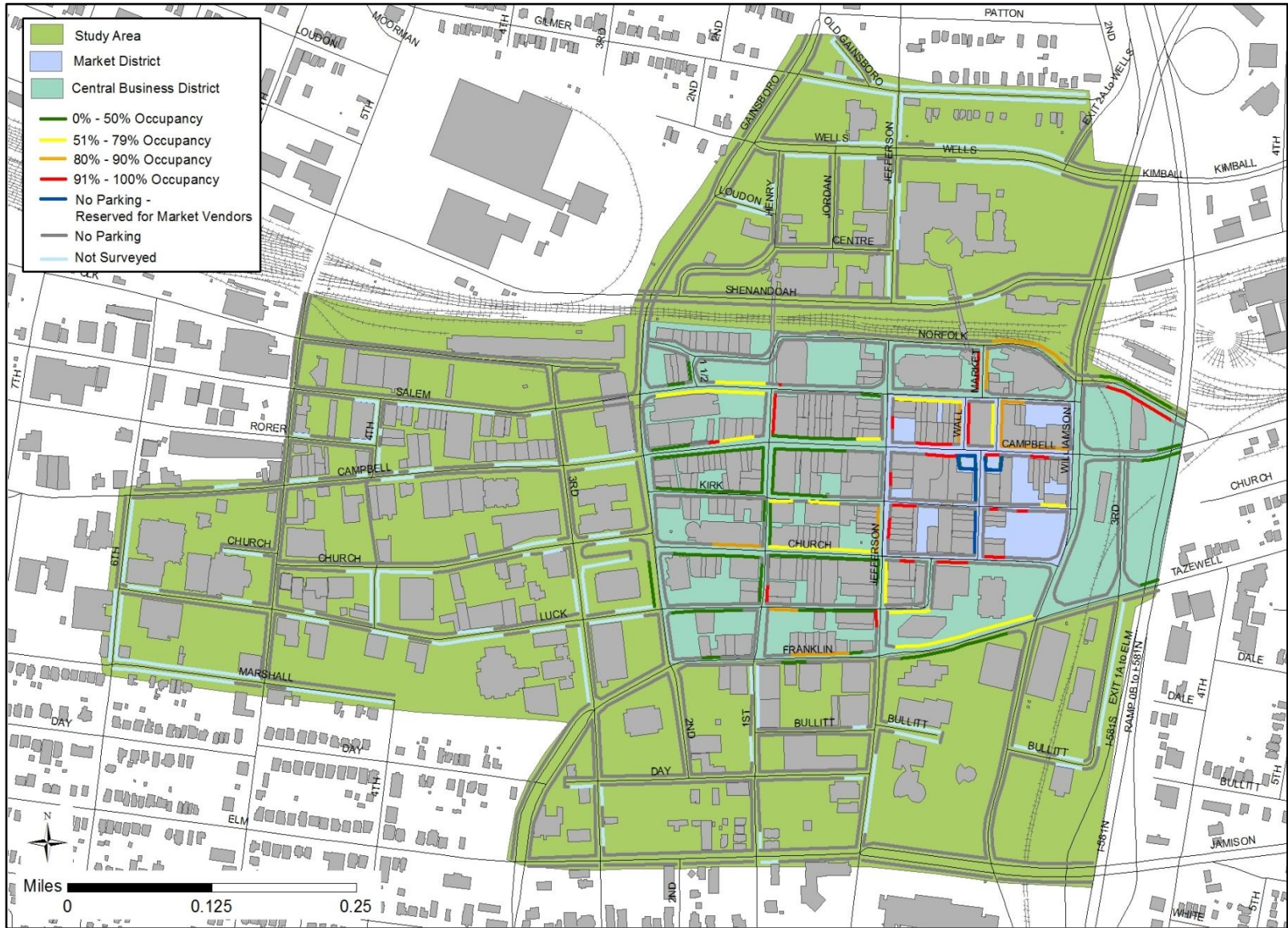


Figure 3.4: Saturday On-Street Parking Occupancy: 10:00 am



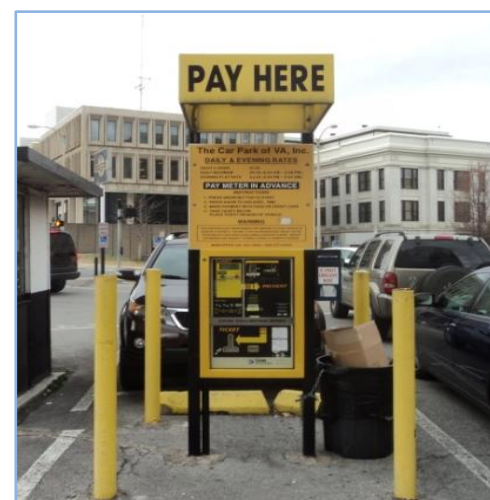
4.1: Off-Street Parking Utilization

Off-street parking utilization was determined by conducting parking occupancy surveys for all Car Park parking lots and garages. Surveys were conducted during at 9am, 12pm, and 3pm on typical weekdays (Tuesday, Wednesday, or Thursday) in March and April. Once surveyed, the percent occupancy of Car Park lots and garages was determined. PARK Roanoke lots and garages were not surveyed through field observations; rather parking activities are monitored electronically on a daily basis. All PARK Roanoke facilities record the number of vehicles in each lot and garage at any given time, which makes it easy to determine occupancy. These data were collected by PARK Roanoke during March.

Car Park Utilization

Car Park utilization data revealed the following:

- within the Study Area, 48, 54, and 54 percent of spaces are occupied at 9am, 12pm, and 3pm respectively
- within the CBD, 51, 58, and 60 percent of spaces are occupied at 9am, 12pm, and 3pm respectively
- 64 percent of Car Park spaces are within the CBD
- the majority of Car Park lots are significantly underutilized, especially the Elm, Seven O Seven, and Lamp lots
- the Pollard, Sportsman, Vaco, and Fella lots are the most utilized Car Park facilities throughout the day
- the Sportsman lot exceeds capacity at 12pm by 17 percent
- despite its prime location, the Market lot only reaches 41 percent occupancy at 12pm
- the percent occupancy for the majority of lots and garages is consistent throughout the day



Car Park payment kiosk

Table 4.1 and Figures 4.1, 4.2, and 4.3 provide detailed occupancy information for Car Park lots and garages.

Table 4.1: Car Park Occupancy: Study Area and Central Business District

Lot/Garage	Spaces	9:00 AM		12:00 PM		3:00 PM	
		Occupied	% Occupied	Occupied	% Occupied	Occupied	% Occupied
Amos Lot	20	5	25%	7	35%	11	55%
Amy Lot	22	13	59%	16	73%	12	55%
Center City Lot	50	10	20%	25	50%	13	26%
Corned Beef Lot	40	22	55%	35	88%	27	68%
Day Lot	26	8	31%	9	35%	7	27%
Elm Lot	40	1	3%	1	3%	3	8%
Federal Lot	47	15	32%	17	36%	16	34%
Fella Lot	79	63	80%	63	80%	58	73%
Gale - Lower Lot	57	34	60%	43	75%	38	67%
Gale - Upper Lot	27	18	67%	6	22%	7	26%
Gas Lot	45	18	40%	26	58%	30	67%
Goodyear Lot	118	53	45%	67	57%	50	42%
Hot Dog Lot	71	18	25%	38	54%	38	54%
Junior Lot	80	23	29%	26	33%	32	40%
Kirk Lot	34	25	74%	24	71%	26	76%
Knapsack Lot	165	103	62%	103	62%	100	61%
Lamp Lot	41	8	20%	8	20%	7	17%
Market Lot	46	4	9%	19	41%	28	61%
Nickel Lot	90	45	50%	52	58%	54	60%
Pollard Lot	56	52	93%	42	75%	53	95%
Salem Garage	285	125	44%	132	46%	137	48%
Seven O Seven Lot	48	6	13%	3	6%	3	6%
Sowers Lot	21	5	24%	9	43%	9	43%
Sportsman Lot	60	57	95%	70	117%	55	92%
Tire Lot	26	17	65%	15	58%	17	65%
Vaco Lot	38	32	84%	31	82%	31	82%
YMCA Lot	39	18	46%	22	56%	20	51%
Study Area Total	1,671	798	48%	909	54%	882	53%
CBD Total	1,077	551	51%	629	58%	648	60%

Indicates Car Park lots and garages that are within the CBD

Figure 4.1: Weekday Car Park Occupancy: 9am

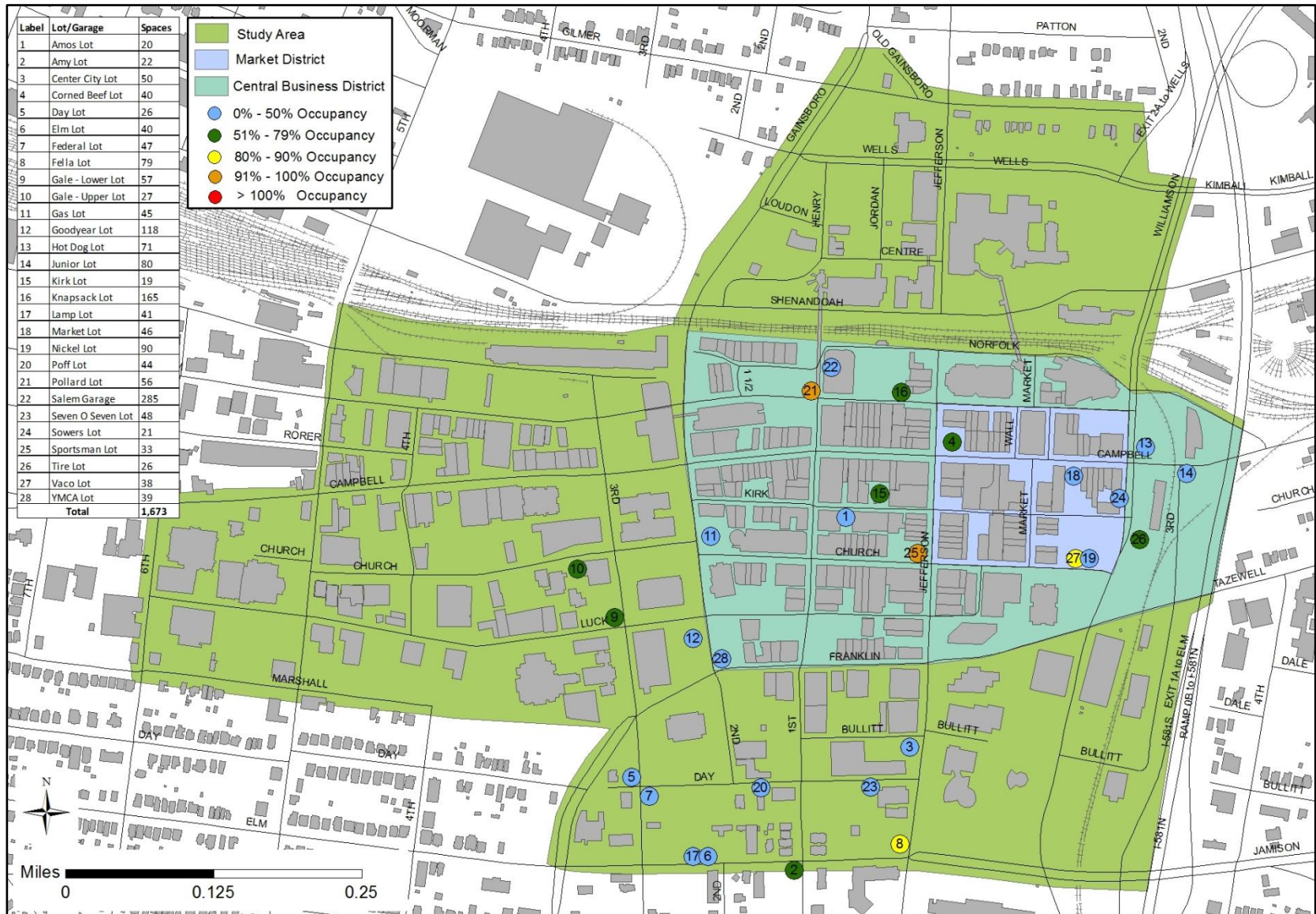


Figure 4.2: Weekday Car Park Occupancy: 12pm

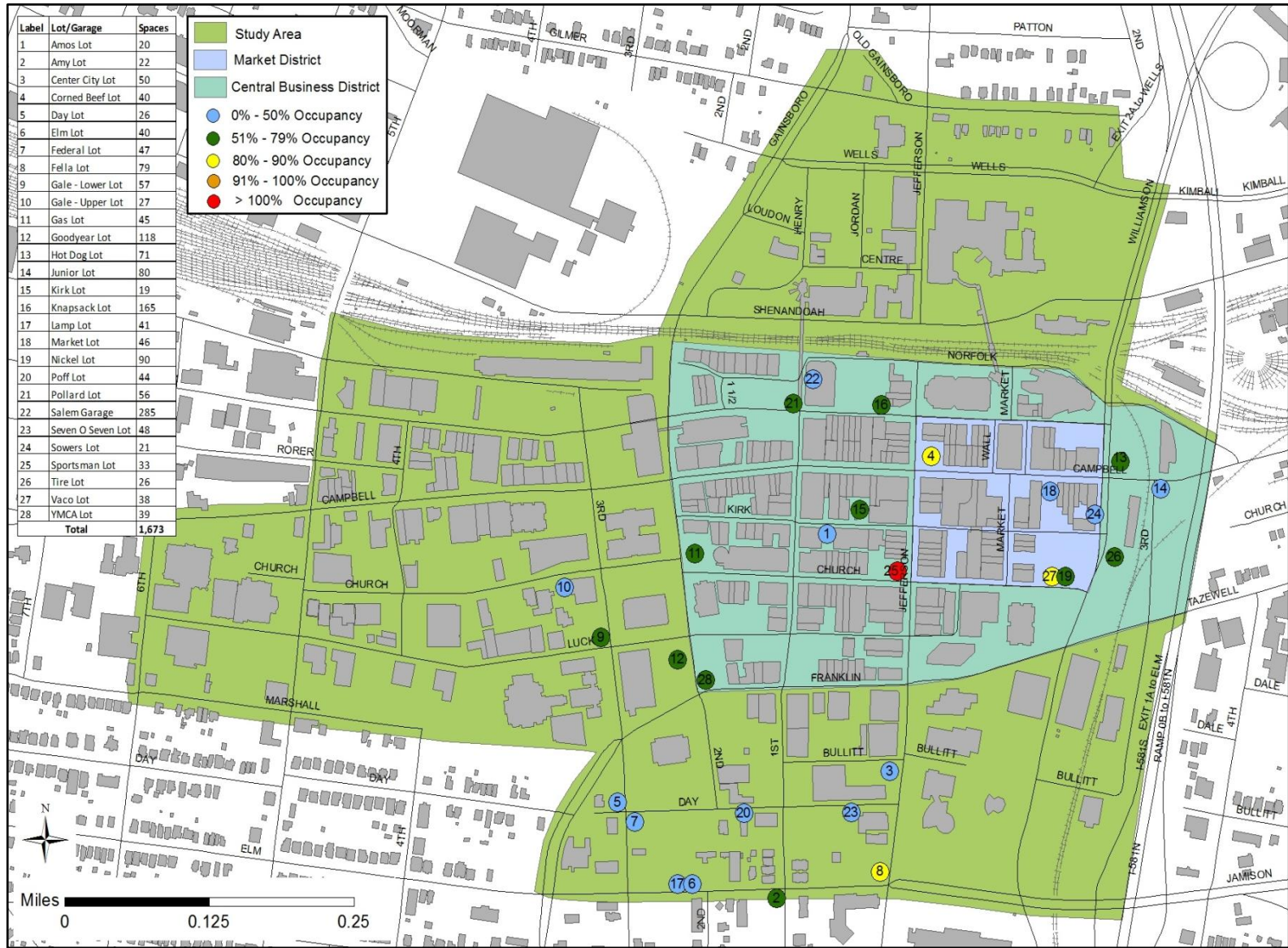
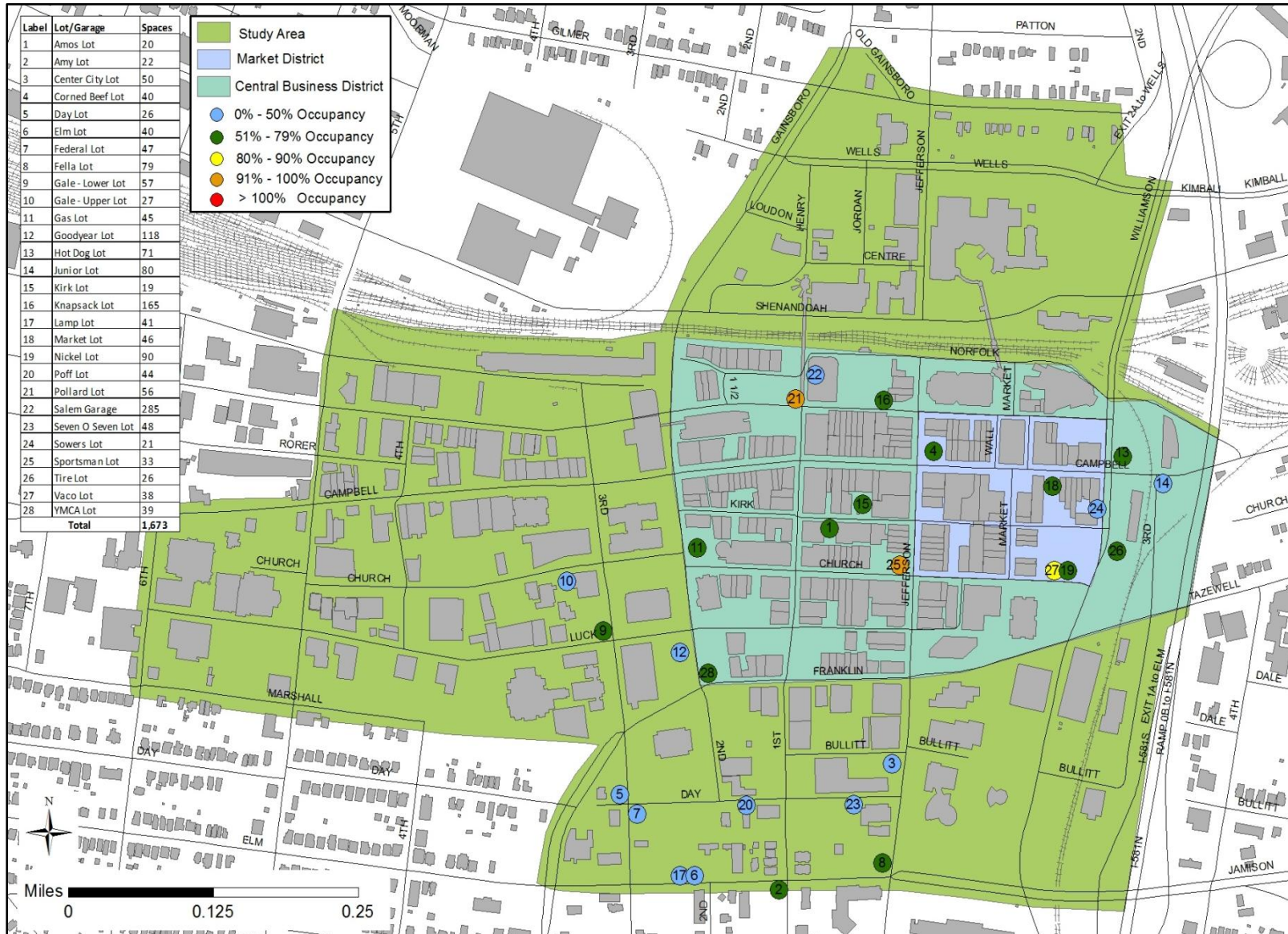


Figure 4.3: Weekday Car Park Occupancy: 3pm



PARK Roanoke Utilization

PARK Roanoke occupancy data revealed the following observations:

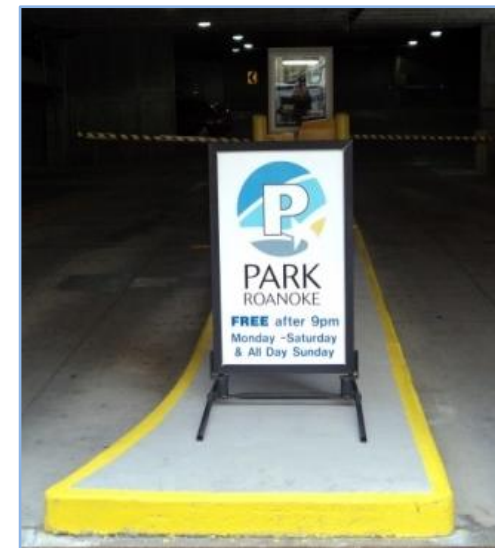
- within the Study Area, 83, 84, and 76 percent of spaces are occupied at 9am, 12pm, and 3pm respectively
- within the CBD, 83, 85, and 72 percent of spaces are occupied at 9am, 12pm, and 3pm respectively
- 60 percent of all PARK Roanoke spaces are within the CBD
- the Market lot and the Tower Garage are the most underutilized PARK Roanoke facilities.
- the Williamson lot exceeds capacity by 4 percent at 9am and 12pm
- the occupancy percentages for the majority of lots and garages are consistent throughout the day

A total of 5,807 publicly available off-street parking spaces currently exist downtown. PARK Roanoke is responsible for 4,136 spaces and Car Park owns and operates an additional 1,671 spaces. Occupancy data reveals that the PARK Roanoke lots are more frequently utilized throughout the day. Both entities have underutilized parking facilities within the Market District, which is the most frequented area of downtown.

Table 4.2 provides detailed information regarding vehicle occupancy for PARK Roanoke lots and garages. A series of maps are also provided to display occupancy for all off-street parking facilities.



Center in the Square Garage



Market Garage – free after 9:00PM

Table 4.2: PARK Roanoke Occupancy: Study Area and Central Business District

Lot/Garage	Spaces	9:00 AM		12:00 PM		3:00 PM	
		Occupied	% Occupied	Occupied	% Occupied	Occupied	% Occupied
Campbell Garage	353	300	85%	280	79%	290	82%
Center in the Square Garage	203	190	94%	200	99%	200	99%
Church Avenue Garage	857	795	93%	802	94%	641	75%
Elmwood Lot	172	152	88%	152	88%	148	86%
Elmwood Park Garage	676	601	89%	598	88%	555	82%
Gainsboro Garage	358	247	69%	251	70%	299	84%
Higher Ed Center Lot	101	81	80%	83	82%	71	70%
Market Garage	506	499	99%	500	99%	475	94%
Market Lot	52	18	35%	26	50%	21	40%
Tower Garage	691	391	57%	402	58%	298	43%
Warehouse Row Lot	44	43	98%	43	98%	43	98%
Williamson Lot	123	128	104%	128	104%	117	95%
Study Area Total	4,136	3,445	83%	3,465	84%	3,158	76%
CBD Total	2,476	2,064	83%	2,101	85%	1,795	72%

Indicates CBD lots and garages

Figure 4.4: Weekday PARK Roanoke Occupancy: 9am

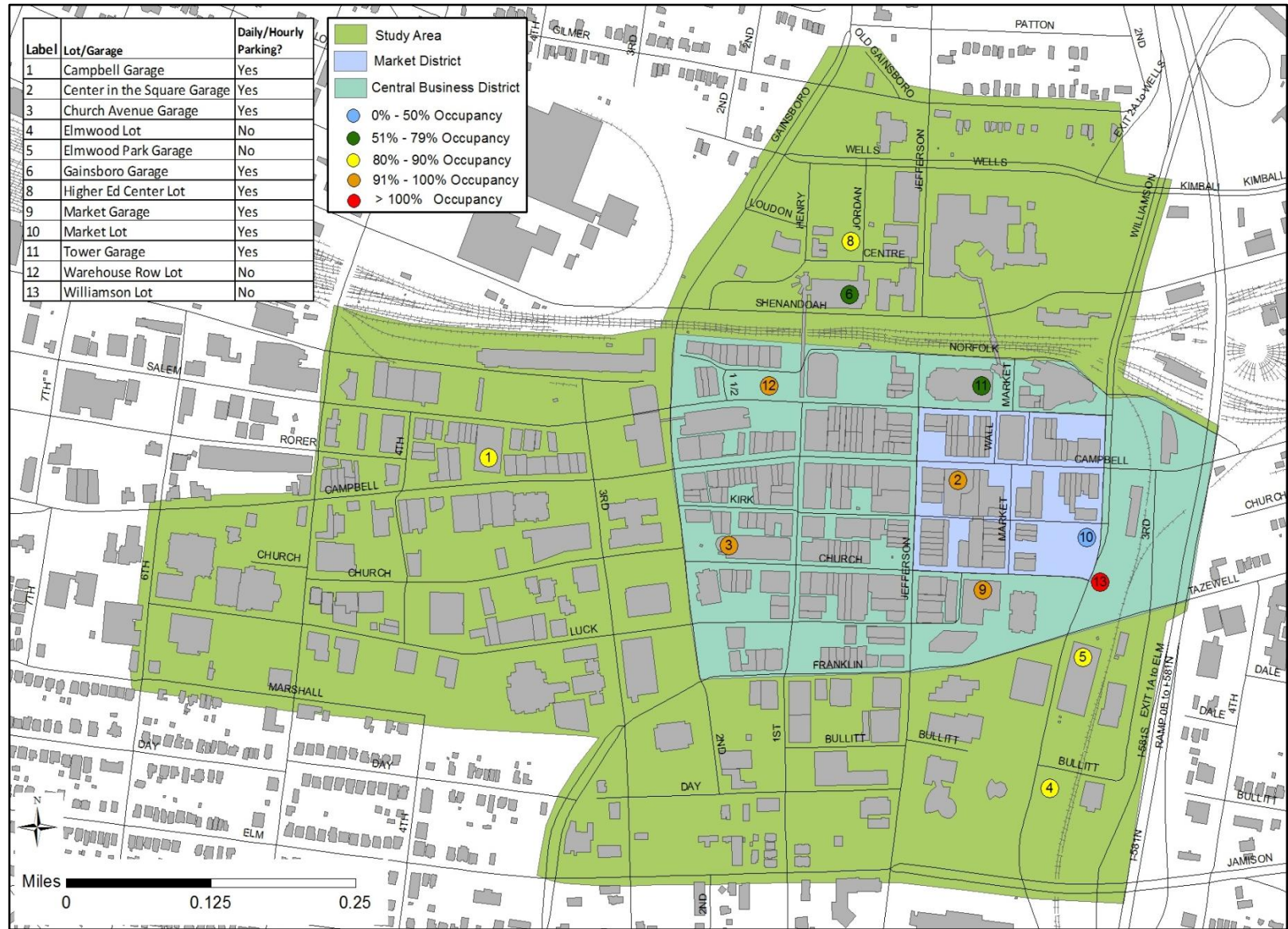


Figure 4.6: Weekday PARK Roanoke Occupancy: 3pm



5.1: Bicycle Parking Inventory

Typically, parking is thought of as “car parking”, but adequate and secure bicycle parking is also an important transportation accommodation. Bicycle parking is provided at 32 locations within the study area, the vast majority of which are located within the CBD, in the form of grid, wave, and inverted U racks. While many types of bicycle racks are available, the inverted U, or similar style that sufficiently supports a bicycle and allows it to be secured to the rack at two points, is recommended in local and regional bicycle guidance documents. However, grid style bicycle racks continue to be the most commonly installed rack type by private businesses. Table 5.1 summarizes downtown bicycle parking. Figure 5.1 displays the location of all bicycle parking in the study area and CBD.



Wave Rack at the Market Garage



Grid Rack at the Virginia Museum of Transportation



Inverted U Rack downtown

Table 5.1: Downtown Bicycle Parking

Label	Location	Covered?	Rack Type
1	Library - Main Branch	No	Grid
2	Mill Mountain Greenway	No	Inverted U
3	Noel C. Taylor Municipal Building	No	Grid
4	Regional Commission	Yes	Inverted U
5	Campbell Avenue	No	Wave
6	Salem Avenue	No	Inverted U
7	Parking Garage - Williamson Rd.	No	Wave
8	Parking Garage - Church Avenue	yes	Grid
9	Campbell Avenue	No	Inverted U
10	Parking Garage - Campbell Avenue	Yes	Inverted U
11	City of Roanoke Courthouse	No	Inverted U
12	Transportation Museum	Yes	Inverted U
13	Church Avenue	No	Inverted U
14	Church Avenue	no	Inverted U
15	Church Avenue	No	Inverted U
16	Church Avenue	No	Inverted U
17	Campbell Avenue	No	Inverted U
18	Campbell Avenue - Market Building	No	Inverted U
19	Norfolk Southern Building	No	Grid
20	Pedestrian Bridge - Market and Norfolk	Yes	Inverted U
21	Regional Commission	No	Inverted U
22	Crystal Tower	No	Inverted U
23	Kirk Avenue	No	Inverted U
24	Verizon Building	No	Grid
25	Parking Garage - Williamson Rd.	Yes	Wave
26	Federal Building	No	Grid
27	Wachovia Tower	No	Inverted U
28	Valley Metro - Campbell Court	Yes	Inverted U
29	Valley Metro - Campbell Court	Yes	Inverted U
30	AEP - parking lot	No	Grid
31	Convention and Visitors Bureau	No	Inverted U
32	Jefferson School of Health Sciences	No	Grid

Map 5.1: Bicycle Parking



6.1: Study Findings

The demand for convenient parking, especially on-street spaces, close to business, retail shops, and restaurants is in high demand. Residents and visitors expressing that there is not enough parking downtown are often competing for the most convenient spaces close to their desired destinations. The results of the parking inventory and subsequent utilization analysis reveal that, while there are some areas of very high demand in the downtown area, overall the parking supply is adequate to accommodate existing downtown demand. However, additional parking management strategies could be implemented to increase parking space turnover, decrease confusion about space and restriction designations, and encourage the demand and utilization of off-street lot and garage parking spaces. A summary of the key observations is outlined below:

On-Street Parking Spaces

- overall, the on-street parking supply is sufficient to meet existing demand. In fact, daytime peak occupancy of 67 percent within the CBD indicates that the supply is being underutilized.
- free on-street parking and time limit restrictions are the two primary factor shaping on-street parking preferences and utilization patterns
- concentrations of highly demanded on-street parking spaces may create the perception that the on-street parking supply is inadequate

- downtown parking enforcement officers typically only enforce on-street parking restrictions from 8am to 4pm during the weekdays and not at all on the weekends.
- 57 percent of study area spaces are occupied at noon
- 55 percent of all CBD spaces are occupied on Saturday mornings
- concentrations of highly occupied on-street spaces include:
 - Blocks within the Market District
 - Campbell Avenue between 1st and 2nd Streets
 - Franklin Road between Williamson Road and 1st Street
- 79 percent of all 1 hour spaces within the CBD are occupied at 12pm

Off-Street Parking Spaces

- Within the CBD, 77 percent of publically available off-street spaces are occupied at 12pm
- 75 percent of Study Area off-street spaces are occupied at 12pm pm
- PARK Roanoke lots and garages are the most utilized of all parking facilities, including on-street spaces
- within the CBD, 83, 85, and 72 percent of PARK Roanoke spaces are occupied at 9am, 12pm, and 3pm respectively
- the Market Lot and the Tower Garage are the most underutilized PARK Roanoke facilities
- the majority of Car Park lots are significantly underutilized, especially the Elm, Seven O Seven, and Lamp lots
- the Pollard, Sportsman, Vaco, and Fella lots are the most utilized Car Park facilities
- the Sportsman Lot exceeds capacity at 12pm by 17 percent

- despite its prime location in the Market District, the Market Lot

7.1: Parking Management Recommendations

Addressing the supply, utilization, and perception issues of the parking management system are crucial to continuing downtown Roanoke’s vibrancy and revitalization efforts. Effective management of the existing parking supply is less expensive than creating additional on-street parking or constructing surface lots and garages. Parking management should include setting appropriate time limit restrictions for on-street parking, oversee directional signage to parking facilities, and, in the future, potentially implement and regulate paid parking.

On-street parking spaces downtown are preferred by residents and visitors because they are free and convenient. The most cost effective way to manage on-street parking demand is to increase the “effective supply” of on-street parking. Reducing parking demand tends to be more cost-effective than building new parking and can contribute to other downtown goals such as improving the pedestrian environment and encouraging walking and bicycling. Paid parking is controversial, and the analysis and recommendations presented below are specifically designed to maximize other parking management strategies before considering paid parking.

The following comprehensive parking recommendations include measures focused on on-street and off-street management improvement options, alternative transportation, user communication, and wayfinding modifications. A broad range of

only reaches 41 percent occupancy at peak hour (12 pm)

parking management recommendations and measures are provided below. They address the issues identified by the Downtown Mobility Task Force and focus group discussions:

- increase parking enforcement
- improve and encourage alternative modes of transportation
- increase vehicle turnover through paid parking
- Create a downtown parking improvement fund
- improve wayfinding and user communication
- implement parking strategies to encourage use of parking lots and garages

Recommendation: Increase parking enforcement

Often in downtown areas, much of the current on-street parking supply is consumed by employees and other parkers who evade enforcement. For example, an ongoing issue mentioned repeatedly during the focus group discussions was that downtown employers and employees are moving their vehicles during the day to avoid parking tickets. This results in the same vehicles occupying several different spaces throughout the day, which decreases the availability of parking for other residents and visitors. Better enforcement leads to higher turnover rates, which effectively creates new parking supply and benefits downtown businesses. For time restrictions to work effectively, users must have the perception that they will be fined for violations. The enforcement strategies are outlined below:

Increase the probability that offenders will receive tickets

Employee parking is a poor use of downtown on-street parking because it underutilizes highly valued parking spaces. Employee cars sit all day without generating additional pedestrian activity to the street and without generating additional shopping trips. Employees and employers parking in front of their businesses impede the access of customers to their stores, making downtown shopping less attractive. Parking enforcement during the evening hours and on weekends will discourage parkers from occupying the same space beyond the posted time limit restrictions. Parking should be enforced from 8 am – 7 pm Monday thru Saturday. Parking could be provided free on City holidays and on Sundays.

Eliminate the employee shuffle

Experience has shown that some employees and other long-term parkers avoid parking tickets by shuffling their cars throughout the day, wiping off the chalk mark, or my simply rolling their cars forward. Increased enforcement efforts will decrease the likelihood that parkers will shuffle their cars within the same time zone.

Increase parking fines for repeat offenders

In areas where parking spaces are in high demand and enforcement officers are scarce, some drivers may be willing to risk receiving a parking ticket. An occasional fine may be worth the convenience of not moving the car during the day. Although fines increase for multiple violations in one day, the fines do not increase for multiple offenses over time. Increasing fines for repeat offenders is an important part of enforcement.



Roanoke electric parking enforcement vehicle



Increased parking enforcement

Advances in parking technology could make parking enforcement officers more effective. Handheld computerized machines record the parking history of each vehicle ever entered. This allows enforcement agents to keep track of first time offenders, repeat offenders, and vehicles being shuffled around during the day. Some handheld units provide digital recognition of license plates. Agents are more efficient because they spend less time entering license plate numbers, and more time enforcing.

Continue to provide a resident and visitor environment

No one enjoys receiving a ticket, especially if the violator was unfamiliar with parking regulations. Visitors, downtown shoppers, and new residents are an important part of the downtown economy and it is important that these patrons do not leave upset from a parking ticket they felt was undeserved. Continuing the “first time forgiveness” policy is essential to maintaining the right balance of leniency and enforcement for downtown patrons, especially as parking management policies change. A friendly note, informing parkers parked illegally of new management policies, as opposed to a parking ticket, can be an effective means of communicating changes to residents and visitors.

Recommendation: Improve and encourage bicycle and transit use

The dense grid of low-speed streets and bicycling infrastructure makes downtown an excellent cycling environment. Additionally, the existing sidewalk network also provides an ideal environment for walking. An easy and cost effective technique to enhance the cycling environment further is to ensure adequate bicycle parking and integrate bicycle parking and transit service. Bicycle use has increased significantly in Roanoke and bicycle parking could be required in connection with off-street auto parking requirements and provided at prominent transit stop locations. Although there are approximately 30 bike racks with the study area, bicycling parking best practices suggest the implementation of high-volume bicycling parking areas. This benefits businesses, increases visibility of cycling, and provides a more secure environment. However, many people live too far from their jobs to realistically commute by bike on a regular basis. Leveraging the frequent, reliable and comfortable Valley Metro transit service could help directly reduce parking demand from those that do not live close enough to walk or bike yet would prefer an alternative to driving.

Provide high volume bicycle parking

Inadequate bicycle parking facilities and fear of theft are two of the most frequent deterrents to bicycle transportation. To ensure that bicycle parking is utilized, choose locations that are convenient and safe for all users. High volume bicycle parking areas should be located in visible and prominent locations, in areas with significant pedestrian activity. High volume bicycle parking location, design, and supply guidelines are provided below:

Location guidelines:

- Bicycle parking should be at least as convenient as the majority of automobile parking. It should be easily accessible from the road or bicycle path. The entrance and exit should be designed to minimize conflict with flows of pedestrians and motor vehicles.
- Spaces that are unusable for cars and would otherwise be dead space due to their location or size are appropriate for bike parking, with little or no opportunity cost incurred. Locating parking at intersections in curb extensions is one way to make use of otherwise unusable space.
- On-site bicycle parking should not be located in front of buildings unless the furnishing zone is wide enough that parked bicycles do not block the sidewalk. Ideally a rack area should be located along a major building approach line.

Supply guidelines:

- Coordinate with local bicycle advocacy organizations to determine bicycle parking locations
- Develop a relationship between bicycle and vehicle parking requirements.
- Determine if long and short-term parking is necessary and if different types of parking should be provided to accommodate different users



High volume bicycle parking

Design guidelines:

- Bicycle parking should be provided in a safe and secure environment for both the bicycle and the cyclist.
- An enclosed area with limited access (fence or locked gate) is essential to providing appropriate long-term bicycle parking.
- The space between each rail should allow for the length of the bike, width of the handlebars, and access for riders to lock and unlock their bicycle. Research conducted suggests that each bicycle parking space be approximately 2 feet by 6 feet
- Corridors within bicycle parking facilities should provide adequate space for a rider to maneuver their bicycle and to walk side by side with their bike and miscellaneous possessions
- Research suggests that an aisle of at least 5 feet wide be provided behind all bicycle parking to allow room to maneuver
- If possible, high volume bicycle parking facilities should be covered to protect bicycles and cyclists from weather elements
- Signage and other user information such as instructions on how to appropriately lock and unlock a bicycle should be provided at rack locations and bicycle parking facilities.

Improve transit service and bicycle parking coordination

As mentioned previously, one of the cost effective ways to reduce the demand for parking, thus increasing the effective parking supply, is to improve transit service and bicycle and pedestrian accommodations. Transit is most effective for moderate to long-distance trips along busy corridors. Bicycling is most effective for short-distance trips. A high level of mobility can be achieved by integrating transit service and operations with bicycling. For example, a transit stop with frequent service typically attracts customers within a half-mile or 10 minute walk. Providing safe bicycle storage or locking facilities at a particular stop will increase the catchment area for potential transit customers, since bicyclists can generally travel greater distances in 10 minutes.

Continue transportation demand management programs

Transportation demand management (TDM) is a general term used to describe various strategies and programs aimed at using transportation resources more efficiently. Specifically, TDM programs encourage the proliferation of multiple travel alternatives, allowing commuters to drive less without experiencing reduced mobility. Ride Solutions, a program of the Roanoke Valley-Alleghany Regional Commission, is responsible for the implementation of the regions TDM programs. A summary of TDM programs is provided in Appendix B.

Recommendation: Increase vehicle turnover through paid parking

One of the most aggressive strategies to increasing available parking supply in downtowns is to switch to paid parking. As noted above, this is a controversial step that should be considered only after the other strategies described previously have been implemented. In addition to paid parking, vehicle turnover will also be encouraged by enforcement efforts and through the modification of time limit restrictions. While controversial, paid parking in downtown core areas has proven time and again to be successful. Benefits of on-street paid parking include:

- business owners and employees will likely be discouraged from occupying high value parking spaces close to retail locations
- the less convenient on-street parking can remain free
- prices can be set high enough that there will always be available spots and low enough to not discourage use
- paid parking can depoliticize the parking fee structure since demand will determine the price

Performance pricing, a market based approach, allows parking fees to be adjusted to achieve desired occupancy rate. Research suggests that a target occupancy of 80 - 90 percent at peak hour is the most efficient use of the existing on-street parking supply. This equates to roughly one or two vacant spaces per block. An occupancy rate greater than 80-90 percent can lead to excessive traffic, frustrated drivers, lost business, and lost parking revenue. Maintaining adequate parking space occupancy data is essential to predicting the right price for on-street parking. Parking meters will discourage some drivers, but the on-street spaces these drivers would have occupied will be available to those who are willing to pay for convenient parking.

Parking rates should be set to encourage different behaviors. For example, the availability of on-street parking meters conveys a great deal about the perceived convenience of shopping or conducting business downtown, thus regular turn-over at the meters and long-term parking off-street must be encouraged. The parking fee structure can affect parking choices by making it less expensive to park at off-street facilities than on-street.

Proposed on-street time restrictions and rate structure:

- On-street meters are intended for short-term use, two hours or less
- On-street parking meters: \$1 per hour
- Surface lots and garages: first hour free, \$0.75 per hour for additional hours

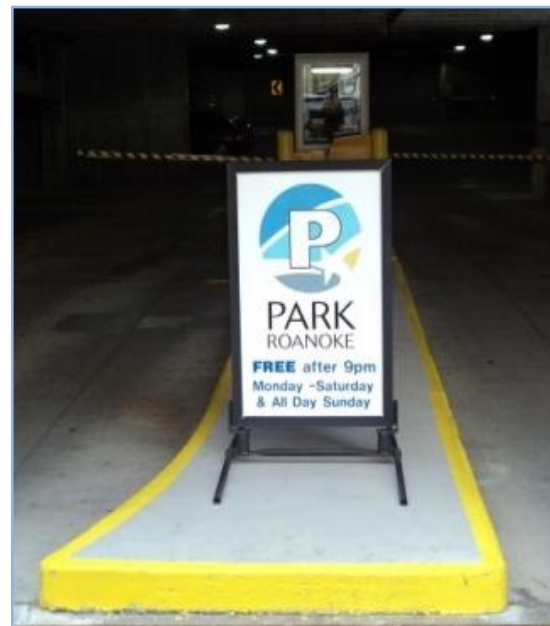
Before paid parking is considered, the existing parking limit restrictions could be modified to maximize the efficiency of existing spaces. More simplified parking restrictions in conjunction with improved signage and user communication could increase the effective on-street parking supply. Public parking policies and fee structures should be based on quantified data. The costs, benefits, pricing strategies, and meter options are detailed in Appendix A.

Recommendation: Create a Downtown Improvement Fund

The City of Roanoke currently captures all parking garage and lot fees and ticket revenue into a dedicated fund designed to ensure that the parking system remain self-supporting. If on-street paid parking was implemented, the revenue generated could become the primary funding mechanism for a Downtown Improvement Fund. Improvements could include benches, landscaping, wayfinding, lighting, undergrounding utilities, sidewalk maintenance, and other functional and aesthetic streetscape improvements. The establishment of Downtown Improvement Fund is a proven strategy for gaining support for on-street pricing among business owners and downtown residents.

Recommendation: Improve wayfinding and user information

Many conventional parking problems (or perception of problems) occur in part because of inadequate user information. User information includes consistent and distinctive maps, brochures, signs, web sites, advertisements, and electronic guidance systems. Effective user information can increase the efficiency of existing parking facilities by making motorists aware of parking space availability and facility options. Parking problem can occur when spaces and facilities are not visible or adequately identified. Information expands the range of parking options serving a destination. Consumers benefit significantly from improved user information by providing them with the information needed to locate the type of parking facility that best suits their needs and limits the amount of time and resources spend looking for available parking.



Park Roanoke user information

Wayfinding and directional signage currently exists for PARK Roanoke lots and garages. However, a comprehensive wayfinding and signage system offering parking location, availability, regulations, and pricing should be developed to include on-street and off-street parking facilities. City of Roanoke parking management staff should also coordinate with Car Park to make residents and visitors more aware of their surface lot parking options. Advanced parking management systems, which provide real time user information regarding the quantity and location of parking spaces within lots and garages, should also be considered.

Recommendation: Implement parking strategies to encourage use of parking lots and garages

Consider the implementation of “Smartcard” technology, which allows parkers or transit users to use one card to pay for on-street and off-street parking as well as transit. Smartcard technology could incentivize residents to make decisions regarding travel choices since parking and transit fees will be paid for from the same account. A smart card is plastic like a credit card, embedded with a special computer chip that keeps track of the card’s value. A card may be recharged via an online account, where card balance and usage history may be tracked. It could also be recharged at ticket machines, by phone, or at travel information centers.

Providing parkers with the ability to use credit cards to pay for off-street parking and simplifying the user fees associated with PARK Roanoke facilities will make parking garages and lots more convenient. If on-street paid parking is implemented, consider providing one to two hours of free PARK Roanoke garage and lot parking. This will encourage the use of off-street parking facilities and will still provide a means of free parking.

8.1: Parking Management Summary and Implementation

The Parking management strategies and recommendations outlined above are appropriate for Roanoke. It should be emphasized that the strategies and recommendations should be implemented sequentially, starting with the least costly and aggressive (enforcement) and working up to more aggressive (increasing turnover through paid parking) only as needed. The objective of parking management should be to maximize the use of the existing on-street and off-street parking supply, incentivize use of alternative travel modes (by discouraging unnecessary vehicle trips), and not creating undue barriers or burdens for residents, business owners, employees, or visitors.

Appendix A: Parking Pricing Best Practices

Parking Pricing

Parking pricing for automobiles requires that motorist pay directly for using parking facilities. Charging for parking is a market based approach to managing parking demand; it also encourages the use of alternative modes of transportation such as bicycling, walking, and transit. Market based pricing strategies can encourage employee carpooling and can bring substantial environmental and congestion benefits.

Costs and Benefits

The construction, maintenance, operation, and land costs associated with providing free on-street parking are incurred by local governments. Free or highly subsidized parking often encourages overuse and typically results in more parking spaces being provided. Free on-street parking near shopping and other retail destinations is more likely to be available to customers if priced in such a way that short stays are optimal. Parking spaces that are free, convenient, and on-street are often occupied all-day by employees and residents, which results in infrequent turnover rate of high dollar spaces. The implementation of market based pricing strategies for on-street spaces typically result in a more frequent turnover of the most accessible spaces. Increasing parking space turnover may increase economic vitality, by allowing customer access to the same parking space several times throughout the day.

Pricing Strategies and Meter Options

Inconvenient pricing strategies can lead to pricing resistance. Some strategies and meters require payment in specific denominations (bills or coins) or only accept credit cards. The amount of time motorists will be parked is frequently paid for in advance. Most pricing systems do not offer a refund if a motorist vacates the space earlier than predicated. Some payment systems, including parking meters, are confusing and can be time consuming to use. The Pricing Methods and Meters Options Table provide a description of various parking pricing methods and meter options.

Modern electronic and multi-space parking management systems tend to have higher initial capital costs but are generally less expensive to operate. They are more convenient, flexible, and cost effective than mechanical systems. Pricing is also very convenient and secure for motorists when parking facility attendants are used. Some parking management systems utilize parking attendants during peak periods and for special events and accept electronic payment methods during off-peak periods. Improved pricing methods make market based pricing strategies more acceptable to consumers and are more cost effective and easier to implement. This typically results in an increase in the amount of parking that is priced while allowing for more efficient rate structures.

Pricing Methods and Meter Options

Method	Description	Application		Capital Costs	Operating Costs	User Convenience	Price Adjustability
		On-street	Off-Street				
Parking Pass	Purchase and display a pass						
Time coded tickets	Purchase a ticket for a certain amount of time. Display ticket in vehicle						
Mechanical Single space meters	Prepay a meter located at each space						
Electronic Single space meters	Prepay a meter located at each space						
Smart Meters/Multi-Space meters	A detector determines when the space is vacated and resets the meter. Allows parkers to pay only for time used. Prepay an electronic meter using a credit card, cash, or cell phone						
Pay box (Honor Box)	Prepay into a box with a slot for each space						
Mechanical pay-and-display meters	Prepay a meter, which prints a ticket that is then displayed in their vehicle						
Electronic pay-and-display meters	Prepay a meter, which prints a ticket that is then displayed in their vehicle						
Electronic pay-per-space meters	Prepay an electronic meter						

On-street	Low	Low	Poor	Poor
Off-street	Medium	Medium	Medium	Medium
On/off-street	High	High	Good	Good
Not applicable				

Pricing Methods and Meter Options (Continued)

Method	Description	Application		Capital Costs	Operating Costs	User Convenience	Price Adjustability
		On-street	Off-Street				
In-vehicle meter	Display a small electronic meter with prepaid credits inside their vehicle						
Contactless cell phone payment	Wave their cell phones in front of a contactless meter						
Attendant	Pay an attendant when entering or leaving a parking facility						
Automated controlled access system	Pay a machine when entering or exiting a parking facility						
Automatic vehicle identification	System automatically records vehicle entering and exiting a parking facility and then bills for use						
Global location technology	Satellite-based system tracks vehicle location, which automatically calculates parking fees and then bills for use						

On-street	Low	Low	Poor	Poor
Off-street	Medium	Medium	Medium	Medium
On/off-street	High	High	Good	Good
not applicable				

Implementation

Parking pricing strategies are usually implemented by local governments, downtown organizations, and/or business. A demand based approach to determining price depoliticizes pricing strategies, since demand determines price. Off-street parking pricing facilities are often managed by companies specializing in parking facility management and provide parking to several property owners.

Appendix B: Transportation Demand Management Best Practices

Transportation Demand Management

Transportation demand management (TDM) is a general term used to describe various strategies and programs aimed at using transportation resources more efficiently. Specifically, TDM programs encourage the proliferation of multiple travel alternatives, allowing commuters to drive less without experiencing reduced mobility.

Benefits

TDM programs are designed to manage demand for and promote more efficient use of transportation facilities. A common objective of TDM programs is mitigating the need to add roadway capacity to accommodate peak period congestion. Additional benefits of the mode shifts potentially achieved by TDM programs include:

- reducing the need for parking facilities
- reducing traffic congestion
- reducing greenhouse gas emissions
- reducing dependence on non-renewable energy sources
- improving physical activity levels and public health

TDM Programs

The most effective TDM programs provide services to enhance the convenience of alternative modes. TDM-friendly built environments, site design, and pricing strategies provide support and incentives for non-single occupant vehicle travel. The most common types of services and programs include the following:

Modeshift

Modeshift strategies encourage travelers to make trips by travel modes other than motor vehicle. Examples include improved transit service, subsidized transit passes and bike parking. This also includes measures to discourage drive-alone travel, such as paid parking. One of the primary strategies to reduce vehicular travel, especially in peak travel periods, is to increase transit ridership. In many urban areas, it is also possible to shift vehicle trips to walking and bicycling

Ridesharing

Ridesharing programs help commuters find others in their area who are interested in participating in a carpool or vanpool program. A commuter database is often used to match origins, destinations, and work hours with other traveler's in the database. Providing vanpool and carpool parking that is closer to the work site or is in a preferred location (e.g. covered parking) not only encourages participation in rideshare programs but also raises the visibility and status of these programs.

Car Sharing

A car share program is a rental program where people rent vehicles for a short period of time (often by the hour). Urban car sharing is often promoted as an alternative to owning a car where transit, walking, and bicycling can be used for most trips and a car is only needed for out of town trips, moving large items, or special occasions. Car-sharing can also be used as an alternative to owning multiple vehicles for households with more than one driver. Larger

companies such as Zipcar or Flexcar typically distribute vehicles throughout an urban area, often near transit.

Vanpools and Shuttles

Vanpools and shuttle services allow groups of people to share a ride between home (or a common meeting location) and work (or another common destination). Vehicles may be provided by an individual, a public or private support program, or an employer. Vanpools are a popular option for commuters who work far from home due to potential time, fuel, and vehicle operating cost savings.

Transit and Bicycle Integration

One of the best ways to reduce the demand for parking is to improve transit service and bicycle and pedestrian accommodations. Transit is most effective for moderate to long-distance trips along busy corridors. Bicycling is most effective for short-distance trips. A high level of mobility can be achieved by integrating transit service and operations with bicycling. For example, a transit stop with frequent service typically attracts customers within a half-mile or 10 minute walk. Providing safe bicycle storage or locking facilities at a particular stop will increase the catchment area for potential transit customers, since bicyclists can generally travel greater distances in 10 minutes. In addition to providing bicycle racks at transit stops, transit ridership and bicycle usage can also be encouraged by providing bike rack equipped buses. This allows travelers with the ability to use a bicycle at both ends of a trip.

Transportation Allowance and Financial Incentives

A transportation allowance is a program which includes a package of incentives and support measures designed to help employees avoid having to drive to work. The main advantage is that it provides employees with the option of choosing what transportation option works best for them. Most employers offer their employees the option of free parking, which is often the only choice provided to them. With the existence of the transportation allowance, employees get discretion over employer transportation benefits. They can then choose from one of the following: a parking permit good for parking in existing facilities, a carpool parking permit which allows the employee to park in preferential locations reserved for those who carpool, a free transit pass, or a parking cash-out.

- Parking permit - A parking permit is a free parking pass, generally in the form of a hang tag. All employees who choose to drive to work, as opposed to utilizing an alternative mode of transportation, must display a parking pass on the rearview mirror of their vehicles
- Transit pass - Another pertinent transportation allowance employers can utilize is to offer transit passes to their employees in lieu of free parking. This transit pass would be equal to the transportation allowance, which would enable employees to ride all transit services for free
- Parking cash-out - Parking cash-out rewards employees by providing them with cash instead of a parking permit or transit

pass. It also financially rewards those who walk/bike and for those who are involved in carpools. The amount of cash should be equal to the cost of a monthly transit pass. For those who continue to drive alone, the cash out would then be used to purchase a parking pass

Transportation Management Associations (TMA)

TMA are typically non-profit organizations that promote more efficient use of transportation and parking resources in a particular area. TMAs are often comprised of public/private partnerships consisting of area businesses and local governments.

Pricing Measures

Pricing measures use facility or service pricing to influence the time, route or amount of travel. Examples include congestion pricing on toll roads, fare-free transit zones, reduced parking fees for carpools, and the implementation of a transportation allowance.

Implementation

Different TDM measures are appropriate for implementation by different entities (public and private sector). TDM programs are typically implemented either by municipalities or by employers. A city or municipality may implement a TDM program as part of a larger effort to reduce peak period traffic congestion in the downtown or to improve regional air quality. The objectives of employer-based TDM programs are typically focused on reducing the need for additional on-site parking or controlling peak period roadway demand through a regional congestion mitigation strategy. Large employers managing TDM programs often times employ a Transportation Coordinator to manage their TDM implementation program.

Alternative Work Schedules

Alternative work schedules include flextime and compressed workweek strategies.

- Flextime or Staggered Shifts – employees are allowed some flexibility in their daily work schedules or are scheduled to begin and end their workday in staggered shifts (i.e. some may work 8 to 4, others 9 to 5, etc.), with the benefit of staggering arrival and departure times.
- Compressed Workweek – employees work fewer but longer days (e.g. four, ten-hour days or five, nine-hour days with a day off every two weeks), with the benefit of saving one round-trip to work each week (or every two weeks).

Guaranteed Ride Home (GRH) Programs

GRH programs provides an occasional subsidized ride home (in case of an emergency, illness, unscheduled overtime, etc.) to commuters who use alternative modes. These programs address a common barrier to alternative mode use, and are considered an inexpensive “insurance policy.” GRH programs may use taxis, company vehicles or rental cars.

Appendix C: Focus Group Summary

Demographic Considerations

- low-wage employees/citizens and aging population – more likely to be low-tech, disabled, or without a credit card.

Loading Zones

- Need on street loading spaces, too. A loading space at on the Billy's restaurant block was removed at the start of construction three years ago and has not been replaced; one truck is parking all day in a loading space (will ask Traffic to follow up on this one)
- Option: just make it a 30-minute limit
- E.g., paper/copy company near 1st & Campbell

Time Limits

- There are tons of 15-minute spaces, particularly at 1st & Church (post office, 2 banks)
- SunTrust bank representative finds that 15 minutes is too short and stressful even for his customers; he would prefer 30 minutes. If time limits remain, more should be for two hours.

Metering or Pricing On-street

- People will pay to park in the most convenient spaces
- If it is decided that meters are necessary, don't put them everywhere (only in core area)
- If it is decided that meters are necessary, don't put them everywhere (only in core area)
- Need to look at existing legal authority, particularly who (city council now) has the power to set the rates

- Currently, city manager has power (under certain circumstances) to reduce rates but not to raise them
- People would be willing to pay to park closer and would be willing to walk if free.
- But free parking is an effective lure to bring people downtown.
- Can't make everybody happy.
- Idea of cell phone app allowing parker to purchase an additional hour worth investigating/piloting for high density parking areas
- Money collected from meters could be used to improve downtown (signage, lighting, streetscapes, etc.)
- 1-2 hour free in the garages and pay for on-street spaces
- Pricing strategy needs to ensure that the most convenient spaces are the most expensive
- Discussion of marked vs. unmarked parking spaces; most felt that marked spaces make it easier to park

Market Square

- Market Square pedestrian mall mentioned positively as well as more closing of streets in the market area for pedestrian use, perhaps as pilots
- 24 pull-in spaces may be converted into pedestrian plaza, leaving some space for farmers
- 3 key garages are centered around the square
- A lot of the adjacent streets, on the survey map, have no parking on them (maybe an excess of loading zones?)

Special Events

- Frequent street closures; locations vary

- My focus groups think people aren't frustrated with parking during events because they expect to have to park at a distance then. It seems like visitors during non-event time think they're the only ones interested in coming downtown.
- Focus group suggestions: Could use better signs/info during events. Also, selection of streets to close should consider traffic flow to garages. Collaborate with the private lots.

Employee Parking

- Group consensus is that many employees are parking on street and moving cars to avoid tickets, especially restaurant employees in the high use areas; need carrots as well as sticks to address
 - too easy to move car, rub off tire mark
 - employees park on streets nearby and not garages or lots because of safety concerns (perception it is not safe to leave work late at night with cash tips and walk any distance to a parking spot, garage or lot)
 - pilot an approach to improve security at such times
 - encourage employees to park in lots/garages with a special rate
 - encourage employee parking at less used on-street parking farther from market square; malls have a line that their employees have to park beyond
 - need strategy to get restaurateurs on board; Shockoe Bottom restaurant organization (Richmond) and low cost city parking lot for restaurant employees mentioned as a possible model

- make them feel safe, sell them on the price
- lack of Saturday enforcement cited as a reason employees park on street all day
- Restaurant/bar employees begin to fill up the streets surround Market Square starting
 - Restaurant/bar employees begin to fill up the streets surround Market Square starting at 3:30, when enforcement goes down or stops, depending on who you ask
 - An informal survey of employees at the Fork in the Market revealed:
 - Restaurant employees carpool to the area, then they take turns going out to move the car every hour
 - When visiting bars downtown, they park in the residential area north of the Roanoke Hotel and walk in
 - When metering was present, employees would just keep feeding the meters; would need to price correctly and develop competitive off-street employee parking.
 - Restaurant employees feel unsafe using garages at night after work
 - Focus group suggested having a trolley stop at the various garages to shuttle nighttime employees in/out safely

Parking Garages

- resident passes at pennies per day but still parking on street
- The prices seem reasonable to those who have lived in larger cities (who don't assume parking will be readily available), but it seems too high to those from small towns.

- The costs are prohibitive for lower-wage employees
- People don't know that the garages are free weekends and after 9 PM. Market garage has a waiting list for permits. People won't switch to another garage that is only about a block away.
- Private lots are not included on the online map of downtown parking
- One new employee was afraid to use a garage because it looked like an abandoned building (retail space was vacant). Another contributing factor to this perception: the entrance had once been on the street but was now in an alley.
- All city garages have first 15-minutes free. SunTrust rep would like to see this be 30-minutes.
- Garages do not take credit cards. Payment can only be made by cash or check.
- Garages need better identity; easy to drive by the entrance; how to make garage parking less intimidating?
- Garages seem less of an issue for tourists; local area residents are the ones with fears and negative perceptions.
- Incentivize business owners to use garages so that the most convenient spaces can be used by customers
- Garages need to accept credit cards
- Some of the pay boxes are in poor condition
- Parking spaces in garages are small. Larger spaces will encourage the use of garages
- Parking garages need better signage, way finding, etc.
- Require reserved parking to be on upper levels of parking garages, customers can use the most convenient spaces on the lower levels.

- Incentives to encourage residents and employees to use parking garages

Enforcement

- Tales differ as to when enforcement ends
- Not enforced on Saturdays, but the signs still include restrictions on Saturdays
- Near the Museum, after 5 is supposed to be free, but patrons still find officers marking their tires – creates stress
- During snow events, street clearing = filling on-street parking with snow. Perhaps remove snow and/or have a snow rate in garages – otherwise, people just park in the cleared portion of the street.

Transit

- Could use survey monkey to see where there is interest and what are the perceived hurdles
- According the National Transit Database, Roanoke's transit passenger miles have nearly doubled since 1991; unlinked passenger trips have also increased – by about 50%. So it seems it is being used, despite government employees' perceptions otherwise.

One-way to Two-way Street Conversions

- My focus group would like this to improve access the parking garages, but they recognize the problems associated with eliminating on-street parking. Two of them also hate and avoid parallel parking. This led me to wonder whether diagonal

parking might help retain parking on a street after a conversion to two-way?

- Perhaps switching to two-way for portions surrounding parking garages would help with garage access without eliminating as many on-street spaces.
- For some streets, portions could be converted to two-way, but some people (government employees? Business owners? Not sure who) want to keep the street consistent for its entire length.

Signage

- Electronic signage that communicates to drivers the number of spaces available in the lots and garages
- Most of my focus group found the huge number of signs (and their variability) to be confusing – arrows, times, restrictions, and colors vary many times as they pass down a block – difficult to process from a car, especially to those less familiar with the street.
- Focus groups ideas to help:
 - Painting the curbs or color-coding blocks (simplifying system) might help
 - Having the same restrictions and times in effect for the whole block, instead of splitting up into three different types of parking.

Wayfinding Information

- Many signs already exist to point the direction to Market Square, Taubman Museum, etc. My focus group unanimously

would like to see distances to the destinations added to the signs. Stickers could be an easy way to add this.

- The Museum would like a print-out parking map to hand to visitors and an online version to link to from their website
- A parking app to show the nearest garages, number of available spaces, and prices would be great.
- When directing to parking garages, could include fee information (would need simple fee structure).
- Way finding signs not adequate; branding is good; complimentary pedestrian level way finding signs with walk times to key locations may be helpful to generate a park once environment; reference to new signage in Lynchburg as a good example
- Parking smart phone application for downtown parking (lots/garages and on-street)
- Parking maps could be given to employers and handed out to customers.

Taubman Museum of Art

- Special events visitors mainly park on Norfolk, which has 2-hour parking, forcing patrons to move car
- She sends people to a garage that was formerly called Wachovia Garage (not sure which one that is)
- The area has improved in feeling safer, and that helps patrons feel comfortable parking farther away. Many patrons are elderly, handicapped, or have many small children. Distance is an issue. There is also slight grade on the street and cobblestones. More handicapped spaces would be appreciated.

Now, people don't want to plan events there because the elderly invitees won't have access. They considered a valet, but it is cost prohibitive. Roanoke is an aging community; so this is probably a concern for many businesses.

- Rep was very excited to learn that first 15 minutes is free in city garages. This will help with traffic during drop-off and pick-up times for children's events/programs.

Transportation Demand Management

- Trolley service could expand which could reduce parking demand

- Promote alternative transportation to impact parking demand: trolley on Saturdays from neighborhood to downtown, for example

Additional Comments

- Most residents parking off street, but concern with what will happen as more residences come on line (Shenandoah Building, Ponce de Leon Building)
- Promote a best practice of developers building parking-amenity fee into the rent, like at the Lofts at West Station)
- Have discussed parking for years, need Council leadership and not just reaction to negative voices
- There is not a parking problem in downtown