

DOWNTOWN PARKING PLAN

CITY OF HARRISONBURG

SUBMITTED ON THE 7TH DAY OF APRIL, 2020

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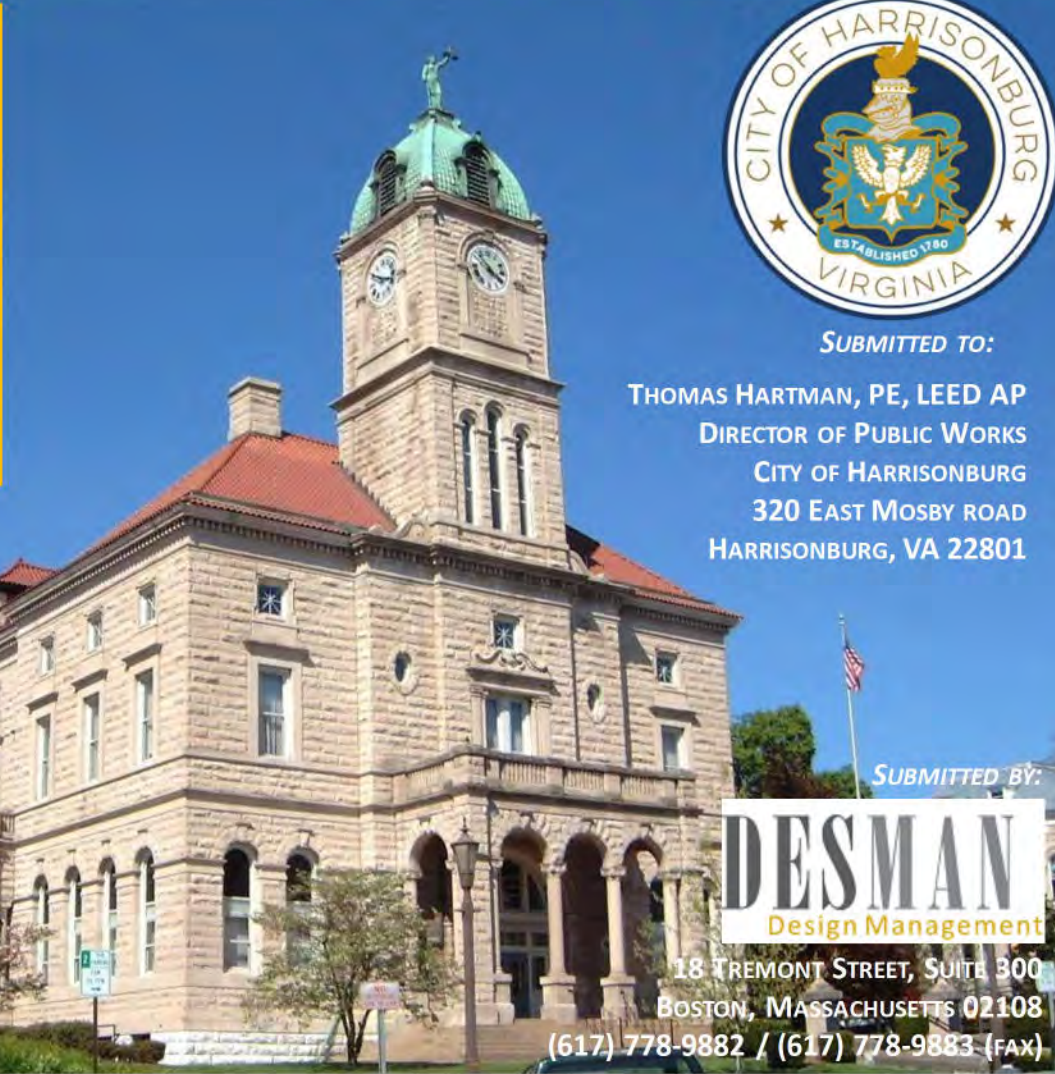
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PREPARED IN COLLABORATION WITH THE DEPARTMENTS OF PUBLIC WORKS, COMMUNITY DEVELOPMENT, CITY POLICE, AND THE HARRISONBURG DOWNTOWN RENAISSANCE

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1. EXECUTIVE SUMMARY

The City of Harrisonburg, Virginia (“City”) retained the services of DESMAN Inc. (“DESMAN”) to perform a strategic parking management study for its downtown central business district. The objectives of this parking study were to:

1. Assess existing conditions in Downtown Harrisonburg;
2. Engage with stakeholders to gain an understanding of the community’s concerns, values and objectives for parking;
3. Review future development in the surrounding area to gain an understanding for how Harrisonburg will evolve;
4. Develop a set of proposed initiatives to address current and anticipated issues;
5. Vet these options with stakeholders to receive feedback;
6. Revise proposed initiatives accordingly and develop a proposed program for implementation;
7. Describe how the proposed initiatives might be applied to neighborhoods outside the study area on a ‘best practices’ basis to support the master plan process.

A total of 7,903 parking spaces were inventoried in the 48-block area comprising downtown Harrisonburg. Roughly 13% of these spaces (994) were on-street and the remaining 87% (6,909 spaces) were in off-street facilities. About 27.5% (2,176) of the total parking supply was publicly-owned and -accessible; the remainder was in public facilities set aside for a restricted class of users or privately-owned, privately-accessible parking facilities. In contrast, the publicly-owned and -accessible parking supply is typically utilized to three-fourths (75%) of its capacity, whereas utilization of the majority of the privately-accessible parking supply rarely exceeds 55% of capacity. It is from this imbalance of usage of assets where a great deal of the current dissatisfaction with the parking system arises.

Interactions with stakeholder groups and the general public raised a number of issues including:

- Concern that the lack of parking requirements associated with zoning for the downtown district would eventually lead to a situation where no more parking was available, impacting both existing properties and new development.
- The quality of pedestrian travel pathways across downtown was a significant concern and was thought to impact individual’s willingness to park any significant distance from their destination.
- Parking on days when the downtown court buildings were especially busy was noted as a perpetual issue.
- Several business owners felt that communications regarding public parking options, especially for employees, could be improved upon.
- Proximity to destination was the first and highest consideration for the majority of individuals when parking downtown.

An assessment of known future development indicated that the downtown area could experience a shortfall of over 300 parking spaces in the next three years if corrective action was not taken to prevent it. This shortfall could grow by an additional 300+ spaces in the mid-term (3-5 years) and an additional 67 spaces in the long-term. In total, the downtown area could experience shortfalls of up to 700+ parking spaces if all the proposed new development comes to pass without any mitigating measures.



DESMAN proposes a number of actions for addressing these conditions which included proposals to:

1. Institute parking requirements associated with downtown development per zoning with a wide variety of allowed waivers or reductions to let development progress while assuring some action taken to offset parking impacts associated with continued growth.
2. Change how public parking assets are currently managed and parking policy is enforced to make better use of existing public facilities.
3. Improve wayfinding systems, making it easier to find public parking assets, and investigate technologies which could provide real-time parking availability to individuals through a number of platforms.
4. Replace the Water Street Deck in the near term with an expanded mixed-use facility and examine opportunities to expand the public parking supply in the mid- to long-term with another parking structure.
5. Promote the execution of Shared Parking agreements between private parties to make better use of the underutilized private assets across downtown.
6. Revise the current system of time limits to improve ease of parking enforcement and respond to public concerns regarding the availability of short-term parking in key facilities while providing alternatives for long-term parkers.
7. Introduce new technologies to allow the general public to self-administer some processes currently provided by City staff who could be serving higher, better uses.
8. Where possible, support the development of programs and infrastructure to promote the use of alternative modes of transportation.
9. Where warranted by conditions and need, introduce 'paid parking' in a manner least disruptive to the continued vitality and growth of downtown Harrisonburg.



2. INTRODUCTION

The Downtown Harrisonburg Parking Study is the most comprehensive analysis of parking since 2009 when the previous parking study was conducted. Since that time there have been significant changes to the downtown that have greatly changed the character and profile of Harrisonburg.

The City of Harrisonburg, Virginia (“City”) has retained the services of DESMAN Inc. (“DESMAN”) to perform a strategic parking management study for its downtown central business district to craft recommendations that maintain the economic activity but also encourage more development and strategic growth. The goal was also to assess the impact of the anticipated changes to the downtown and to assess the overall use of the parking supply now and in the future.

The objectives of this parking study were to:

1. Assess existing conditions in Downtown Harrisonburg;
2. Engage with stakeholders to gain an understanding of the community’s concerns, values and objectives for parking;
3. Review future development in the surrounding area to gain an understanding for how Harrisonburg will evolve;
4. Develop a set of proposed initiatives to address current and anticipated issues;
5. Vet these options with stakeholders to receive feedback;
6. Revise proposed initiatives accordingly and develop a proposed program for implementation;
7. Describe how the proposed initiatives might be applied to neighborhoods outside the study area on a ‘best practices’ basis to support the master plan process.

How parking is used to support the activity of a city is a direct reflection of that community’s evolution. In small communities where development is sparse, open land is abundant, and density is low, parking is a utility commonly provided by local government much like power, water, sewer, and communications infrastructure to support commerce and growth. Unlike these other utilities, parking is commonly provided at no cost as the expense of developing facilities and providing them for use by the public is incorporated into the cost of providing other infrastructure such as roadways or municipal buildings, which is paid for by general property tax assessments. In settings such as these, alternative modes of transportation may be supported through the provision of sidewalks for pedestrians, bike lanes and racks, and in some cases, even transit service. However, the primary users of these services are typically a minority of individuals disposed to using these alternative modes of transportation or those unable to access a personal vehicle.

As a community grows and land is absorbed for higher and better uses, competition for available parking increases. On-street availability is typically the first resource to be exhausted as it offers the best access and proximity to most destinations. The cost to develop additional surface parking increases as the competition for open space increases, but the density brought on by the new development also creates a more walkable environment as multiple destinations come into existence in a compact area. Time limits are commonly instituted to promote turnover for on-street spaces so that new visitors and customers can be accommodated. Additionally, codes may be instituted requiring developers begin to provide off-street parking for the employees, residents and patrons of their buildings.



The idea of charging for parking may be explored if competition for open public parking is especially fierce, usually as an avenue for generating revenue to develop more public parking, but these initiatives are often defeated by arguments alleging that doing so would place the community at a competitive disadvantage with surrounding destinations that do not charge for parking. At this point in the evolution of a community, attention may be given to improving the infrastructure supporting alternative modes of transportation as an effort to mitigate increasing parking demand, however these initiatives are often competing with public tax funds that could also be invested in more public parking infrastructure.

It is at this point in the evolution of a community that ‘parking problems’ are most commonly identified. These problems may be quantitative - where in the number of vehicles in a particular area exceeds the number of parking spaces available - or qualitative, where in there are open spaces within a particular area but they are located an unacceptable distance from popular destinations, subject to access limitations which place them off-limits to the users who need parking, or otherwise limited in such a way that empty parking spaces cannot be used at times when parkers are actively seeking accommodation. In many communities, the conventional wisdom is that either issue can be solved through simply adding more public parking supply to the area, although the mechanisms for achieving this, particularly as they apply to land acquisition and financing, are often subject to broad and heated debate. Increasingly, within the same communities, there is a constituency who will argue that these issues are best addressed by reducing demand, principally through the promotion of alternative modes of transportation.

The increasing demand for parking is inextricably linked to how the built environment has been and continues to be redesigned to accommodate the personal automobile. With the help of this nationwide reconfiguration, private automobiles provide people with a certain convenience, flexibility, comfort, and speed that is now largely unparalleled in the US. The advent and proliferation of the personal vehicle has created entire industries, defined the design and development of cities, and reshaped the American landscape more extensively than any other manmade creation. In 2017, 59% (\$176.9B) of the \$298 billion was spent on highways, bridges, and roadways¹, to maintain 4.18M miles of roadway comprising less than 1% of the total land area² in the U.S. Thus, when a community begins to discuss changes in parking policy, the dialogue carries far more weight than simply a debate regarding time limits, code changes, or whether to charge for parking; it is a discussion about how constituents will access their homes, businesses, and institutions now and in the future.

The City of Harrisonburg has a mix of strengths that contribute to a small yet robust downtown destination. With the potential parking solutions that are available to the city, the downtown will continue to prosper with the implementation of specific initiatives.

Study Area

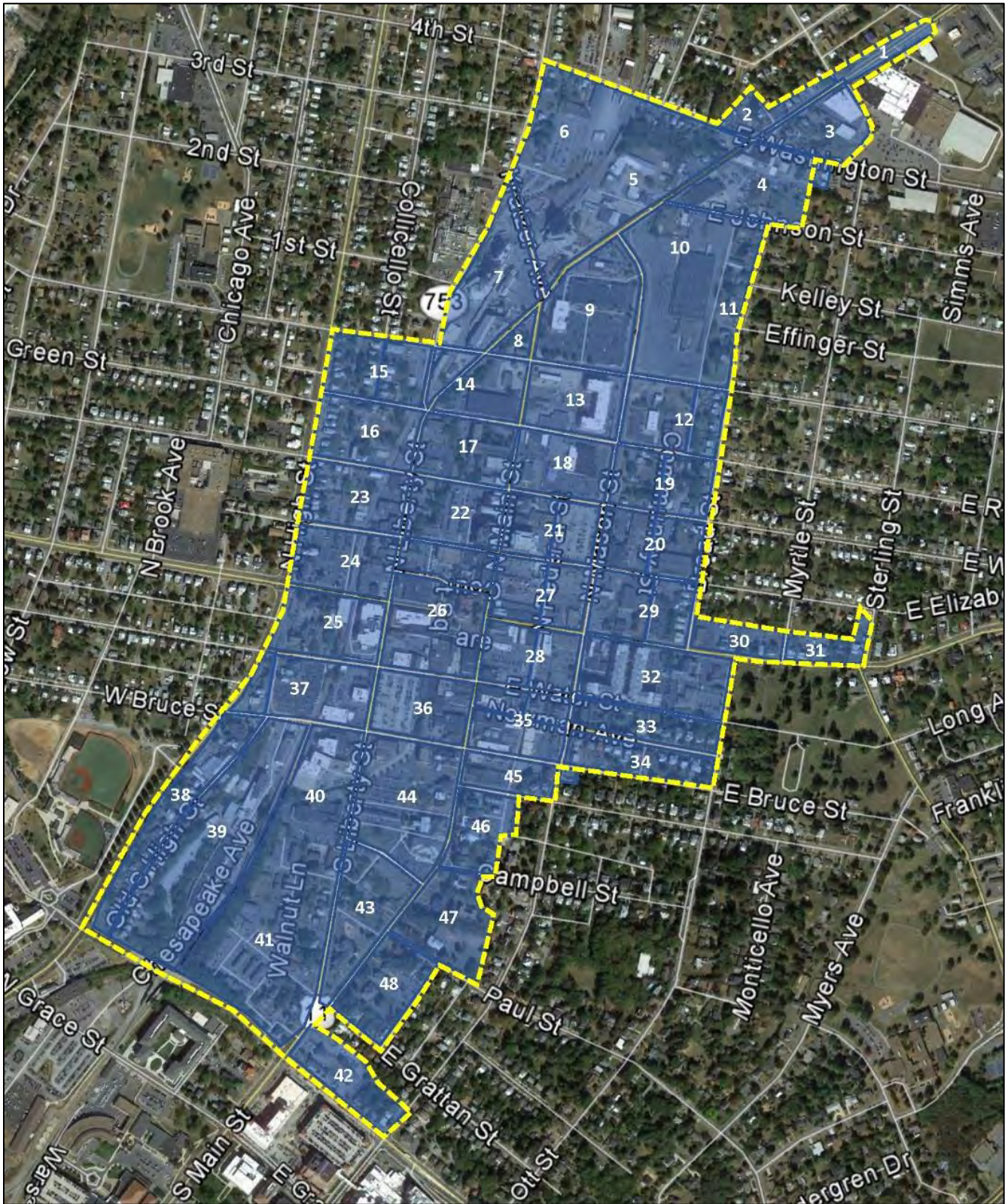
The study area for this engagement was defined by the City prior to issue of the original Request for Proposals. This area, illustrated in **Figure 1** on the following page, is roughly bound by High Street and Liberty Street to the west; Washington Street and Main Street to the north; Broad Street and Campbell Street to the east; and Martin Luther King Jr. Way to the south.

¹ Congressional Budget Office, using data from the Office of Management and Budget and the Bureau of the Census. In contrast, national spending for mass transit only accounted for 23% (\$69.92B) in 2017 expenditures.

² U.S. Department of Transportation, Federal Highway Administration.



Figure 1: Defined Study Area and DESMAN Block Assignments



The study area contains the City’s compact commercial district that is largely mixed-use, but offers more commercial uses than residential, cultural, or recreational. The City’s downtown sits at a crossroads of historic and bustling commercial districts that caters to both locals and tourists throughout the year. With the campus of James Madison University (JMU) positioned at the southern end of the study area, there are varying levels of parking demand based on the student population as well.

General Methodology and Work Plan

DESMAN commenced work with the City of Harrisonburg in June of 2019. A critical first step in the study was to compile, review and analyze data on parking use throughout the downtown district. The review of all provided data resulted in development of an Existing Conditions Assessment, which highlighted how the City’s parking system operates currently. The existing condition review was based on parking behavior throughout the study area as observed on a typical weekday in April. The results were processed by DESMAN’s representatives to better understand the workings of the city. That data was further manipulated to show the conditions on a block-by-block basis to serve as the baseline conditions of the city.

Figure 2: Study Process



Once the existing conditions of downtown were compiled, the second step for the study was to get input from the key stakeholders in Downtown Harrisonburg to validate the observed conditions. A series of meetings were arranged to speak with select groups during the week in late July and early August. These groups were property owners, business owners, and residents of downtown. Through these small forum group meetings DESMAN was able to solicit feedback about the parking environment in downtown and better understand who is involved. The conversations with the groups verified the results of the existing conditions review and concluded that parking is a common pain point for all constituents of downtown in some way.

As a continuation of the process, a public meeting was conducted later in August to interact with the daily users of downtown. The public meeting also served as a way to further publicize the city's efforts to improve Harrisonburg as well as share the results of the work of the parking study team conducted up to that point. After a presentation, attendees were encouraged to engage in discussions with DESMAN staff regarding the findings as well as any topics of concern. These one-on-one discussions helped to shape the team's first-draft recommendations in a way that responded more closely to downtown stakeholder concerns.

Shortly after the public meeting concluded, the City released a survey to gauge public opinion and identify the main concerns with parking in Harrisonburg. The survey had over 1,100 responses and contained numerous comments related to parking, enforcement, and development policies. All responses were reviewed and a summary of the findings was compiled. This offered valuable insight into the dynamics of downtown parking that might not have been immediately apparent in the team's analysis of data.

As a method to determine the impact that development and continued revitalization of downtown occurs there will be an impact on parking demand. As another component to this study DESMAN assembled information into a parking demand model to evaluate conditions as they are now as well as project changes to Harrisonburg over the course of the next 10-years. This analysis is a useful way to compare national industry knowledge and research on typical parking behavior to the observed parking utilization. During this process the City's Department of Community Development in coordination with the Harrisonburg Downtown Renaissance and Department of Economic Development compiled a listing of all known land uses as well as those that are anticipated to come online in the next 10 years

The results of the current conditions showed that Harrisonburg experiences their peak demand for 4,135 vehicles in the month of September at 5:00pm on a typical weekday. This was identified as the busiest day and time of the year in Harrisonburg. The results from the peak projected demand were then folded into the development information received from the collective Planning department, which was split into near-term, mid-term, and long-term. Based on this analysis, the future of Harrisonburg will experience a high level of parking demand, over 4,909 vehicles, that stems from new development and changes to the existing landscape.

With these considerations in mind, DESMAN began to formulate methods to mitigate the parking demand while maintaining the culture of Downtown Harrisonburg. A list of seven themes or initiatives was developed to be vetted by the city and the general public. The strategy identified presented options that could be used to reduce or accommodate the expected parking demand of Harrisonburg in the future.

Equipped with the data, both current and modeled, a second round of meetings with the public was scheduled. The meeting was held at two separate times on January 22nd in order to meet the variety of constituent's availability. The meetings began with a brief presentation rehashing the identified issues



and reviewing the potential solutions. As with the first public meeting there were displays of information and graphics highlighting some of the proposed options that could be implemented in Harrisonburg. The meetings were well attended and provided guiding feedback for the revision of the long-list.

As a supplement, and continuation of the public process, another survey was disseminated by the city. This survey gauged appeal of each of the presented topics and asked for comments. All comments and responses were reviewed to provide guidance on which initiatives would best suit the public interest in Harrisonburg. After these comments and responses were evaluated, DESMAN took time to craft a short list of actionable short-list initiatives that would have the most immediate impact to the City.

The final recommendations are listed in this report, and will be presented through a PowerPoint and brochure to the City of Harrisonburg for crafting into the Master Plan.



3. EXISTING CONDITIONS

The following section details the existing conditions of Downtown Harrisonburg at the time of the initial parking occupancy counts. The existing conditions does not take into account any of the new development or any outside circumstances that can impact the parking demand in the study area. The information included serves as a baseline for future analysis of demand factors that may impact parking conditions in Downtown Harrisonburg. The evaluation of existing conditions is important to identify any areas within the study area that may be of particular concern or express an immediate parking shortage.

Methodology

The actual parking supply inventory field work and physical occupancy counts were performed under a separate contract at the City's request. This was done to ensure that occupancy counts reflected conditions when James Madison University was still in session, as the contract for the actual study was not ratified and executed until early June. The raw data from this work, along with a preliminary summary of findings and conditions, was conveyed to DESMAN for application in the study process.

The contracted agency performed a parking supply inventory across the entire study area in early April, documenting the location and capacity of both public and private parking facilities and categorizing them according to whether they were located on- or off-street; if the individual parking spaces contained therein were subject to any type or regulation, restriction, or reservation; and if the parking spaces were clearly delineated ("marked") or not ("unmarked"). In instances when the parking spaces were not delineated, the contracted agency estimated capacity as follows:

- For on-street parking spaces, the agency measured the length of the block face and divided that length by 20' to generate an estimated curbside capacity.
- For off-street parking facilities, the agency measured the square footage of usable area within each parcel and divided by a factor of 400' - 600' to estimate the number of parking spaces.

According to the Department of Public Works, curbside parking may not occur within 25' behind or after the tangent point at intersections in the absence of clearly designated 'no parking' areas, in order to preserve sight lines. Additionally, curbside parking may not occur within 15' of a fire hydrant. The City did not indicate any formal requirements for length or width of a curbside parking space or any required setback from stop lines or crosswalks or curb cuts. Based on these regulations, DESMAN took a test measure of 10 randomly selected block faces with unmarked parking areas and compared them to the estimates provided by the contractor and determined the estimates of capacity were reasonably representative.

Similarly, DESMAN reviewed the design standards for off-street parking facilities as stipulated in the Harrisonburg Zoning Ordinances and Design and Construction Standards Manual and applied these to 10 randomly-selected parking facilities with unmarked parking areas. Through this spot-check, DESMAN found that the estimated capacity of each facility was in agreement with that estimated by the contractor.

Once the validity of the supply inventory data was established, DESMAN organized the provided data by location (e.g. block), broad category (on-street versus off-street), ownership, access, facility type, user type, capacity type, and user/time restriction. DESMAN then organized the occupancy count data to follow the formats established within the supply inventory and analyzed the results.



Parking Supply

A total of 7,903 parking spaces were inventoried. Roughly 13% of these spaces (994) were on-street and the remaining 87% (6,909 spaces) were in off-street facilities. A detailed accounting of all facilities inventoried is provided as **Appendix A** at the conclusion of this document.

Table 1: Total Parking Inventory (by Block)

Block	On-Street	Off-Street				Total Supply
		Employees	Mixed/ Public	Customers	Residential	
1	24		4			28
2	21		83			104
3	7		49			56
4	14	27	42			83
5	46		136		29	211
6	38	156	28			222
7		52	29		19	100
8		17	6			23
9			347			347
10	58			453		511
11	26					26
12	66	21	54		4	145
13			153	39		192
14	14	46	44			104
15	15		55		13	83
16	7	5	36		23	71
17				116	63	179
18	12	15	164	15		206
19	63		12		11	86
20	43	78	60			181
21		35	324			359
22	7	69		119		195
23	3		75		80	158
24	3	172	19		18	212
25	10	30	23	70	12	145
26		74	47	75		196
27		33	51	33		117
28	9		121	83		213
29	18	74	105	42		239
30	4		64		25	93
31	7		30			37
32	11	85	60		29	185
33	45		9	48		102
34	62		46		24	132
35	26	90		69		185
36			28	351		379
37	19	146	110		4	279
38	62		11		4	77
39		70			36	106
40	17	19	83	6	52	177
41	51		13		242	306
42			115		8	123
43	41		39	60		140
44	12	39	53	181		285
45	29		58		6	93
46	36	47	22	13	3	121
47	41	9	104		24	178
48	27	41	9	36		113
TOTAL	994	1,450	2,921	1,809	729	7,903



Table 2: On-Street Parking Supply Inventory

BLK #	DESMAN ID#	NAME/DESCRIPTION	ADDRESS	ON-STREET FACILITIES							TOTAL				
				15-Min	30-Min	1-Hour	2-Hours	Unrestricted	Red Permit	Blue Permit		Loading Zone	No Parking		
1	U1	N. Main St. (Eastside)	Monroe St. to Ashby Ave.				18								18
1	U2 & U3	N. Main St. (Westside)	Access Road to ~ Monroe St.				5	1							6
2	U5	N. Main St. (Eastside)	W. Washington St. to Monroe St.				12								12
2		W. Washington St. (Northside)	Jefferson St. to N. Main St.					9							9
3	U4	N. Main St. (Westside)	E. Washington St. to Access Road				7								7
3		E. Washington St. (Northside)	Access Road to N. Main St.									0			0
4	U12	E. Johnson St. (Northside)	N. Main St. to Harris St.					7							7
4	U13	E. Johnson St. (Southside)	Broad St. to Harris St.					7							7
5	U6	W. Washington St. (Northside)	Jefferson St. to N. Main St.					10							10
5	U7	W. Washington St. (Southside)	Train Tracks to N. Main St.									0			0
5	U8	N. Main St. (Westside)	W. Johnson St. to W. Washington St.					23							23
5	U9	N. Main St. (Eastside)	E. Johnson St. to E. Washington St.					13							13
6	U18	N. Liberty St. (Westside)	3rd St. to W. Washington St.					9							9
6	U19	N. Liberty St. (Westside)	Kratzer Ave. to W. Washington St.					18							18
6	U20	N. Liberty St. (Eastside)	Kratzer Ave. to 3rd St.					11							11
10	U10	E. Johnson St. (Northside)	Community St. to Broad St.					20							20
10	U11	E. Johnson St. (Southside)	N. Main St. to Community St.									0			0
10	U14	E. Johnson St. (Southside)	Community St. to Broad St.					38							38
11	U15	Broad St. (Westside)	Kelley St. to E. Johnson St.					12							12
11	U16	Broad St. (Westside)	Effinger St. to Kelley St.					8							8
11	U17	Broad St. (Westside)	E. Gay St. to Effinger St.					6							6
12	U21	Community St. (Westside)	E. Rock St. to E. Gay St.					14							14
12	M4	N. Main St. (Eastside)	W. Elizabeth St. to E. Wolfe St.	6		7									13
12	U22	Community St. (Eastside)	E. Rock St. to E. Gay St.					11							11
12	U24	Broad St. (Westside)	E. Rock St. to E. Gay St.					12							12
12	U23	Broad St. (Eastside)	E. Rock St. to E. Gay St.					16							16
14	M1	W Rock St. (Northside)	Noll Dr. to N. Main St.				8								8
14	U39	N Liberty St. (East side)	W. Rock St. to W. Gay St.					6							6
15	U38	Collicello St. (Westside)	W. Rock St. to W. Gay St.					15							15
16	M2	N Liberty St. (Westside)	W. Wolfe St. to W. Rock St.				7								7
18	M3 & M22	E. Wolfe St. (Southside)	N. Main St. to N. Federal St.	3		5									8
18	U40	N. Main St. (Eastside)	W. Wolfe St. to W. Rock St.			4									4
19	U25	N. Mason St. Shunt	E. Wolfe St. to E. Rock St.				8								8
19	U26	Community St. (Westside)	E. Wolfe St. to E. Rock St.				12								12
19	U27	E Rock St. (Southside)	Community St. to Broad St.				19								19
19	U28	Broad St. (Westside)	E. Wolfe St. to E. Rock St.				12								12
19	U29	Broad St. (Eastside)	E. Wolfe St. to E. Rock St.				12								12
20	M7	E. Elizabeth St. (Northside)	Community St. to Broad St.			8									8
20	U30	Community St. (Westside)	E. Elizabeth St. to E. Wolfe St.				5								5
20	U31	Community St. (Eastside)	E. Elizabeth St. to E. Wolfe St.				9								9
20	U32	Broad St. (Westside)	E. Elizabeth St. to E. Wolfe St.				11								11
20	U33	Broad St. (Eastside)	E. Elizabeth St. to E. Wolfe St.				10								10
22	M6	W. Elizabeth St. (Southside)	N. Liberty St. to Graham St.				7								7
23	M5	N. Liberty St. (Westside)	W. Elizabeth St. to W. Wolfe St.		1		2								3
24	M8	N. Liberty St. (Westside)	W. Market St. to Even with Graham St.			3									3
25	M9	N Liberty St. (Westside)	W. Water St. to W. Market St.				10								10
28	M10	E. Market St. (Southside)	N. Main St. to N. Federal St.	3	3		3								9
29	U34	Broad St. (Westside)	E. Market St. to E. Elizabeth St.				6								6
29	U35	Broad St. (Eastside)	E. Market St. to E. Elizabeth St.				12								12
30	U36	Myrtle St. (Westside)	E. Market St. to E. Elizabeth St.				4								4
31	U37	Myrtle St. (Eastside)	E. Market St. to E. Elizabeth St.				7								7
32	M11	S. Mason St. (Eastside)	E. Water St. & W. Market St.				2								2
32	U41	E. Water St. (Northside)	S. Mason St. & Ott St.				9								9
33	U42	E. Water St. (Southside)	S. Mason St. to Ott St.									0			0
33	U43	Ott St. (Eastside)	Newman Ave. to E. Water St.					19	7						26
33	U45	Newman Ave. (Northside)	S. Mason St. to Ott St.					19	19						38
34	M13	S. Mason St. (Eastside)	Newman Ave. to E. Water St.	3											3
34	U44	Ott St. (Westside)	E. Bruce St. to E. Water St.						22						22
34	U46	Newman Ave. (Southside)	S. Mason St. to Layman & Nichols Driveway				15								15
34	U47	Newman Ave. (Southside)	Layman & Nicholas Driveway to Ott St.						14						14
34	U48	Ott St. (Eastside)	E. Bruce St. to Newman Ave.						8						8
35	U49	S. Main St. (Southside)	E. Bruce St. to Newman Ave.								2				2
35	M15	Newman Ave (Northside)	S. Main St. to S. Federal St.				2								2
35	M16	Newman Ave (Southside)	S. Main St. to S. Mason St.												8
35	M14	Newman Ave (Northside)	S. Federal St. to S. Mason St.		11		8								11
35	M12	E Water St. (Southside)	S. Federal St. to S. Mason St.				3								3
37	M18	W Bruce St. (Southside)	Train Tracks to S. Liberty St.	2			2					2			6
37	M17	W Bruce St. (Southside)	Old S. High St. to Train Tracks				2								2
37	U74	Old S. High St. (Eastside)	W. Bruce St. to W. Water St.					11							11
38	U75	W. Bruce St. (Southside)	S. High St. to Old S. High St.					4							4
38	U76	Old S. High St. (Westside)	M.L.K. Jr. Way to W. Bruce St.					58							58
40	U62	S Liberty St. (Westside)	Lewis St. to W. Bruce St.				10								10
40	U64	Lewis St. (Northside)	Train Tracks to S. Main St.					7							7
41	U66	S Liberty St. (Westside)	W. Grattan St. to Lewis St.					16							16
41	U68	W. Grattan St. (Northside)	Train Tracks to Kyle St.						3						3
41	U69	W. Grattan St. (Northside)	Kyle St. to Walnut St.						10						10
41	U70	W. Grattan St. (Northside)	Walnut St. to S. Liberty St.						7						7
41	U71	W. Grattan St. (Southside)	Train Tracks to Kyle St.						1						1
41	U72	W. Grattan St. (Southside)	Kyle St. to Walnut St.						4						4
41	U73	W. Grattan St. (Southside)	Walnut St. to S. Liberty St.						10						10
43	U67	S. Liberty St. (Eastside)	W. Grattan St. to Baptist Church Lot					18							18
43	U65	S. Liberty St. (Eastside)	Baptist Church Lot to 295 S. Liberty St.					7							7
43	U63	S. Liberty St. (Eastside)	294 S. Liberty St. to Warren St.				8								8
43	U58	S. Liberty St. (Eastside)	Baptist Church Lot to Warren St.						8						8
44	U56	S. Main St. (Westside)	Warren St. to Even with Campbell St.					4							4
44	M19	W. Bruce St. (Southside)	S. Liberty St. to S. Main St.				8								8
44	M21	Franklin St. (Southside)	S. Main St. to S. Mason St.				7								7
45	M20	S. Main St. (Eastside)	Even with Franklin St. to W. Bruce St.				4								4
45	U50	Franklin St. (Northside)	S. Federal St. to S. Mason St.				4		4						8
45	U51	Franklin St. (Southside)	S. Federal St. to S. Mason St.						10						10
46	U52	Franklin St. (Southside)	S. Main St. to S. Federal St.					6	6						12
46	U53	S. Main St. (Eastside)	Warren St. to Franklin St.				12								12
46	U54	Campbell St. (Northside)	S. Main St. to S. Mason St.						12						12
47	U55	Campbell St. (Southside)	S. Main St. to S. Mason St.						12						12
47	U57	S. Main St. (Eastside)	Paul St. to Campbell St.					15							15
47	U59	Paul St. (Northside)	S. Main St. to S. Mason St.							14					14
48	U60	Paul St. (Southside)	S. Main St. to S. Mason St.							13					13
48	U61	E. Grattan St. (Northside)	S. Main St. to S. Mason St.							14					14
Total				8	24	3	229	528	157	41	4	0	0	0	994



On-Street Parking Supply

There were 994 total on-street parking spaces within the study area, spread across 94 block faces, as shown in **Table 2**, prior page. DESMAN also noted four block faces where parking was neither expressly authorized nor prohibited, but vehicles were parked upon. These are referenced in the table as “No Parking” areas.

On-street facilities were identified by the street name and side of the roadway (e.g. eastside, westside, etc.) the particular block face fell upon, as well as the block number and cross streets. The 994 on-street parking spaces were generally characterized as time-limited (i.e. 15 minutes, 1 hour, 2 hours, etc.), open only to permit holders, or ‘unrestricted,’ which meant any member of the general public could park for any length of time without penalty. DESMAN also noted the presence of a handful of curb side loading zones across the study area and block faces signed as ‘no parking’ for their full length.

As shown in **Figure 3**, more than half of the on-street supply is unrestricted, while about 27% is subject to some form of time limit and 20% is set aside for permit holder use only.

Figure 3: Distribution of On-Street Parking Supply

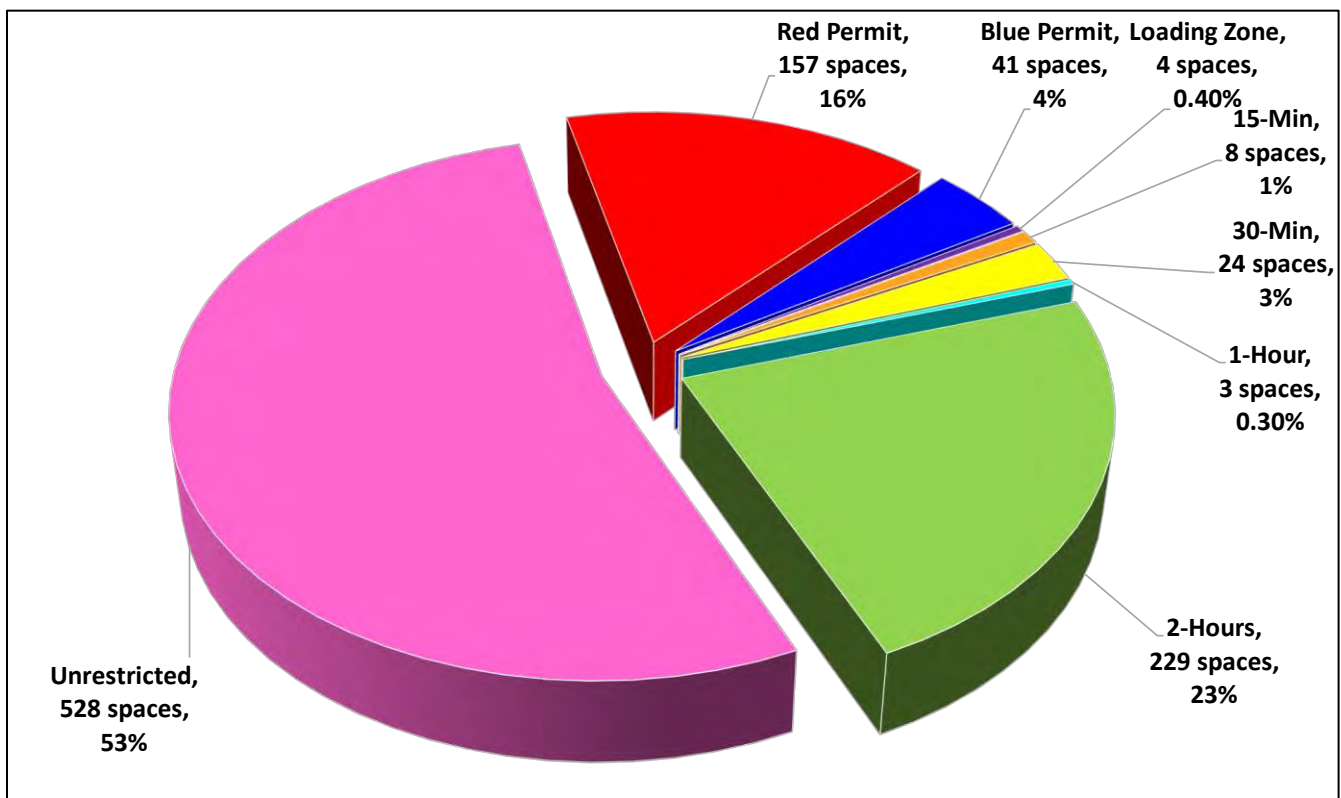
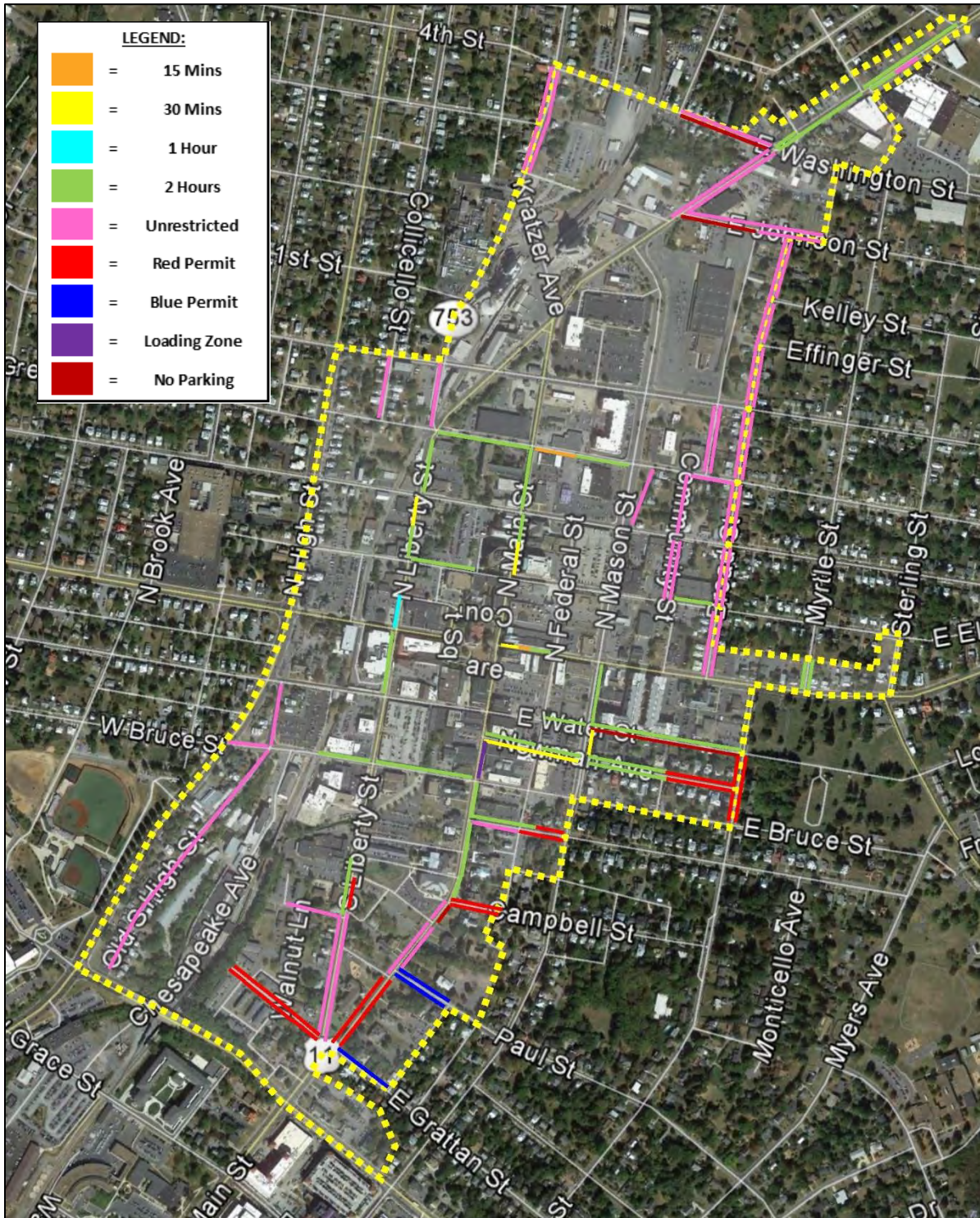


Figure 4, next page, shows where on-street parking is located, by type, across the study area.



Figure 4: On-Street Parking Supply



Off-Street Parking Supply

A total of 205 off-street parking facilities containing 6,909 total parking spaces were surveyed within the study area. Off-street parking facilities were identified by either the name of the facility itself, the name of the building, business or institution the facility served, or the physical address. Altogether, 34% (2,381 spaces) of this supply was reserved and 3% (193 spaces) was dedicated to the handicapped. DESMAN also assigned each facility a unique alphanumeric identifier, which begins with the block the facility sits upon as shown in **Table 3**.

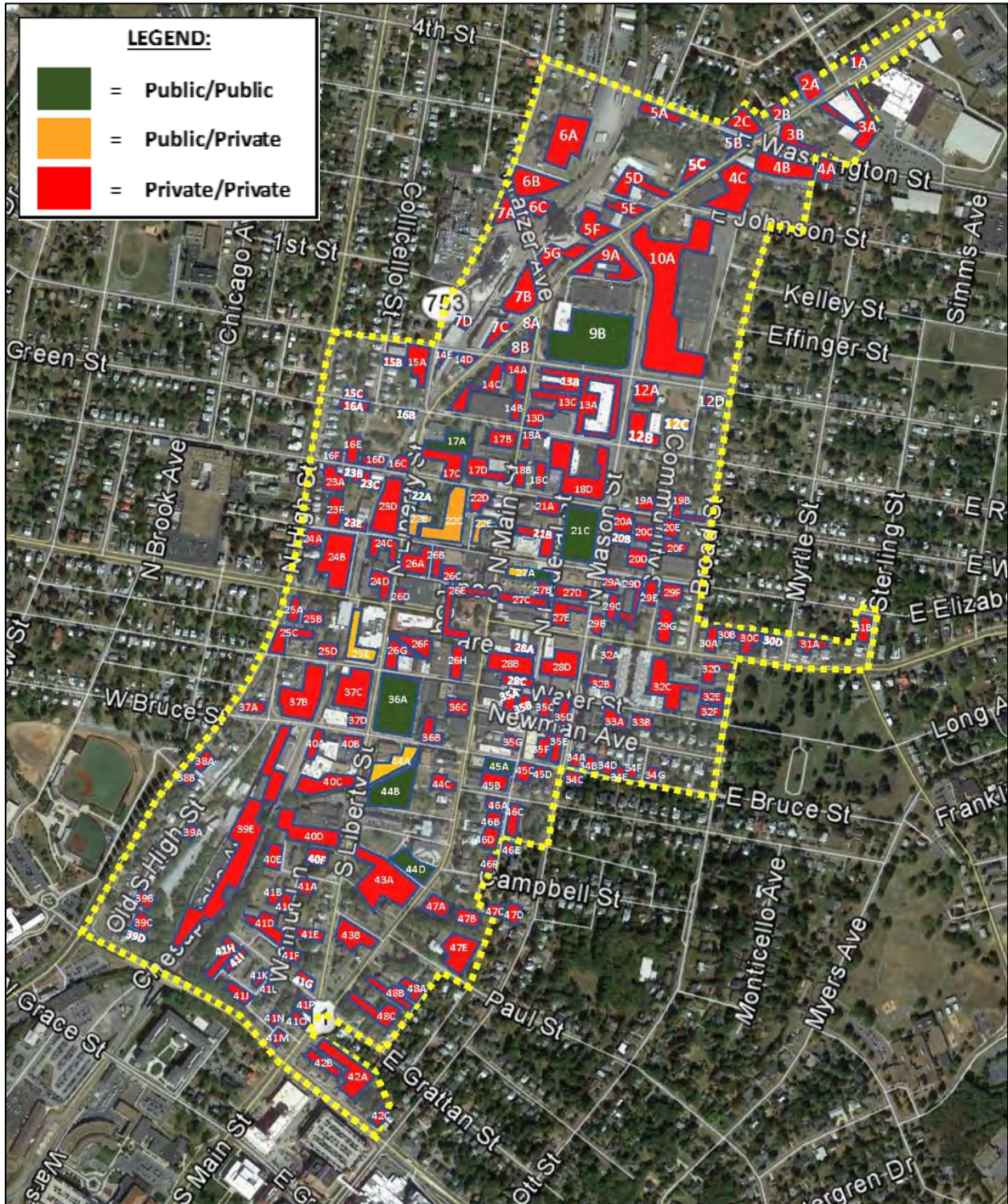
Table 3: Off-Street Parking Supply Inventory

BLK #	ID#	DESMAN ID#	NAME/DESCRIPTION	ADDRESS	OWNERSHIP	ACCESS	FACILITY TYPE	SUB-TYPE	OFF-STREET FACILITIES				TOTAL
									General	Reserved	Special	H/C	
1	1A	88L Glens & Mmmor Lot	827N Main St	Private	Private	Lot	Mixed	4	4			4	
2	2A	Dano Car Salon	745N Main St	Private	Private	Lot	Mixed	21	21			21	
3	2B	Advantage Accounting & Tax Inc Lot	721N Main St	Private	Private	Lot	Mixed	12	12			12	
4	2C	Edwin Auto Sales Lot	703N Main St	Private	Private	Lot	Mixed	49	1	50		100	
5	3A	Matchbox Realty Shop/Lot	794N Main St	Private	Private	Lot	Mixed	39	2	39		79	
6	3B	Willage Auto Center Lot	776N Main St	Private	Private	Lot	Mixed	14	14			28	
7	4A	Pentecostal Tabernacle	159E Washington St	Private	Private	Lot	Employees	8	8			8	
8	4B	Windchill Id City	690N Main St	Private	Private	Lot	Mixed	42	42			84	
9	4C	Appalachian Equipment & Supply	600N Main St	Private	Private	Lot	Employees	19	19			38	
10	5G	W&W Auto Recon	551 US-11	Private	Private	Lot	Mixed	16	16			32	
11	5F	NAPA Auto Parts Atkins Automotive	551N Main St	Private	Private	Lot	Mixed	40	40			80	
12	5E	Single-Family Residence	569W Johnson St	Private	Private	Lot	Residents	29	29			58	
13	5D	Faith Tabernacle Lot	673N Main St	Private	Private	Lot	Mixed	8	8			16	
14	5C	Whitmer's Tire Parking Only	611N Main St	Private	Private	Lot	Mixed	16	16			32	
15	5D	Martin Auto Express	6205 Main St	Private	Private	Lot	Mixed	39	39			78	
16	5A	BlackAuto Repair	35W Washington St	Private	Private	Lot	Mixed	17	17			34	
17	6A	George's Foods LLC	54W Johnson St	Private	Private	Lot	Employees	103	103			206	
18	6B	George's Foods Employee Parking	599-591L Liberty St	Private	Private	Lot	Employees	53	53			106	
19	6C	Carroll Feed Mill Lot A	30-24 Kratzer Ave	Private	Private	Lot	Mixed	28	28			56	
20	7A	Carroll Feed Mill Lot B	17 Kratzer Ave	Private	Private	Lot	Mixed	19	19			38	
21	7C	Carroll Feed Mill Lot C	445 State Rte 753	Private	Private	Lot	Mixed	10	10			20	
22	7D	Carroll Feed Mill Lot D	56W Gay St	Private	Private	Lot	Residents	16	1	2	19	36	
23	7E	Carroll Feed Mill Permit Lot	499 Lee Hwy	Private	Private	Lot	Employees	20	32	2	52	104	
24	8A	Chanello's Pizza	425N Main St	Private	Private	Lot	Mixed	6	6			12	
25	8B	Quillen Optical	421N Main St	Private	Private	Lot	Employees	9	8	17		34	
26	9A	M&S Auto Repair	530N Main St	Private	Private	Lot	Mixed	26	26			52	
27	9B	Rodkingham County Parks & Recs	20E Gay St	Public	Public	Lot	Mixed	274	38	1	8	321	
28	10A	Valley Play Shopping Center	450N Mason St	Private	Private	Lot	Customers	444	49	9	453	906	
29	12A	Flora's Flowers	311E Gay St	Private	Private	Lot	Mixed	5	5			10	
30	12B	Auto Zone	840N Mason St	Private	Private	Lot	Mixed	42	2	44		88	
31	42C	City of Harrisonburg Fire Station 4	210E Rock St	Public	Private	Lot	Employees	21	21			42	
32	44A	120 Resident Home	375 Broad St	Private	Private	Lot	Residents	4	4			8	
33	37	Virginia ABC	398N Main St	Private	Private	Lot	Customers	38	51	1	39	89	
34	38C	Rodkingham Harrisonburg ASAP	350N Main St	Private	Private	Lot	Mixed	3	54			57	
35	39	Carquest Auto Parts	60E Rock St	Private	Private	Lot	Mixed	27	27			54	
36	40	U.S. Social Security Administration	57N Mason St	Private	Private	Lot	Mixed	48	20	4	72	144	
37	34E	Michie Inn	79W Gay St	Private	Private	Lot	Mixed	3	3			6	
38	14D	Ellis	385N Hill Dr	Private	Private	Lot	Mixed	13	13			26	
39	14C	Concar Flats @ West Rock	865E Liberty St	Private	Private	Lot	Employees	14	11	1	26	52	
40	14A	Liberty Convenience Store	34W Gay St	Private	Private	Lot	Mixed	15	1	16		32	
41	14B	Ray Carr Tires Inc	335 US-11	Private	Private	Lot	Mixed	12	12			24	
42	15C	Resident Parking Only	155W Rock St	Private	Private	Lot	Residents	8	5	5		18	
43	15B	Apartment Building	128W Gay St	Private	Private	Lot	Residents	8	8			16	
44	15A	Big T Tire Service Center	865E Liberty St	Private	Private	Lot	Mixed	55	55			110	
45	16C	L & S Diner LLC	255N Liberty St	Private	Private	Lot	Mixed	15	15			30	
46	16A	Town House Parking	270N Wolf St	Private	Private	Lot	Residents	16	16			32	
47	16B	Blue Ridge Liquors, Inc.	204N High St	Private	Private	Lot	Employees	5	7	4		16	
48	16F	Wolfe	127N High St	Private	Private	Lot	Employees	4	7	4		15	
49	16D	Bestless Mogens Brewing	120W Wolf St	Private	Private	Lot	Mixed	8	1	9		18	
50	16E	Old L&S Diner Lot	265N Liberty St	Private	Private	Lot	Mixed	12	12			24	
51	17A	The Church of the Incarnation	292N Liberty St	Public	Public	Lot	Customers	44	52	2	52	100	
52	17C	Georgetown Apartments	202N Liberty St	Private	Private	Lot	Residents	44	2	46		92	
53	17D	Wife Building	227N Liberty St	Private	Private	Lot	Customers	16	43	59		118	
54	17E	Glenn's Fair Price Store Inc.	227N Main St	Private	Private	Lot	Customers	16	43	59		118	
55	17B	Tenant Parking Only	9W Rock St	Private	Private	Lot	Residents	10	7	17		34	
56	18A	288 Lee Highway Lot	288 Lee Hwy	Private	Private	Lot	Mixed	6	6			12	
57	18B	Pawn Emporium Customer Parking	268N Main St	Private	Private	Lot	Customers	15	15			30	
58	18C	Holy Family Center	4E Wolfe St	Private	Private	Lot	Employees	14	1	15		30	
59	18D	Food Plaza and U.S. Postal Service	281N Main St	Private	Private	Lot	Mixed	125	28	1	4	158	
60	19A	Comcast Parking Lot	218W Wolfe St	Private	Private	Lot	Mixed	12	12			24	
61	19B	Wolfe Townhouses	264W Wolfe St	Private	Private	Lot	Residents	11	4	15		30	
62	20A	Valley Workforce Center and Comcast	166N Mason St	Private	Private	Lot	Mixed	14	4	18		36	
63	20B	Social Services Employee Parking	160N Mason St	Private	Private	Lot	Employees	16	22	1	23	41	
64	20C	Skyline Literacy	110N Mason St	Private	Private	Lot	Employees	36	2	38		74	
65	20D	Rodkingham County Social Services	110N Mason St	Private	Private	Lot	Employees	36	2	38		74	
66	20E	Comcast Lot	255E Wolfe St	Private	Private	Lot	Mixed	12	12			24	
67	20F	The Church World Service Immigration	250E Elizabeth St	Private	Private	Lot	Mixed	26	1	27		54	
68	21A	Blessed Sacrament Catholic Church	154N Main St	Private	Private	Lot	Employees	8	4	12		24	
69	21B	U.S. District Court	116N Main St	Private	Private	Lot	Employees	22	1	23		46	
70	21C	Elizabeth St. Deck	100-18E Elizabeth St	Public	Public	Structure	Public	319	5	304		628	
71	22A	Liberty Park Parking Lot	188N Liberty St	Public	Public	Lot	Public	12	8	15		35	
72	22B	Clark And Bradshaw Client and Staff	144N Liberty St	Public	Private	Lot	Employees	1	21	22		44	
73	22C	86-92 W Elizabeth St Parking	86-92 W Elizabeth St	Public	Private	Lot	Public	101	3	104		204	
74	22D	Golden Pony and Shops Parking	175N Main St	Private	Private	Lot	Employees	22	22			44	
75	21E	Harrisonburg Police Department	101N Main St	Public	Private	Lot	Employees	26	26			52	
76	23A	High House Parking	162N High St	Private	Private	Lot	Residents	36	36			72	
77	23B	Elizabeth Housing Permit Parking	62W Elizabeth St	Private	Private	Lot	Residents	36	36			72	
78	23C	136 Elizabeth Lot	161W Elizabeth St	Private	Private	Lot	Mixed	12	12			24	
79	23D	Wolfe Housing Permit Parking	166W Wolf St	Private	Private	Lot	Residents	8	8			16	
80	23E	The Appliance Hospital	129W Wolf St	Private	Private	Lot	Mixed	15	15			30	
81	23F	The Frame Factory and Stores	B C U & Keyes	Private	Private	Lot	Mixed	30	17	47		94	
82	24A	High St. Apartments	90N High St	Private	Private	Lot	Residents	18	18			36	
83	24B	Otterbein United Methodist Church	176W Market St	Private	Private	Lot	Employees	127	12	139		266	
84	24C	Faye Barber Shop	77N Liberty St	Private	Private	Lot	Mixed	11	8	19		38	
85	207	Union Station Restaurant and Shops	128W Market St	Private	Private	Lot	Employees	31	2	33		64	
86	25A	Otterbein United Methodist Church	127W Market St	Private	Private	Lot	Employees	18	1	19		37	
87	25B	Market Resident Parking	157W Market St	Private	Private	Lot	Residents	12	12			24	
88	25C	Community Mennonite Church	705 High St	Private	Private	Lot	Customers	8	34	2	44	84	
89	25D	Rosetta Stone	135W Market St	Private	Private	Lot	Mixed	23	23			46	
90	25E	Rockingham County Jail	80 Court Square	Public	Private	Lot	Employees	30	12	42		84	
91	26D	Court Square Theaters	92W Market St	Private	Private	Lot	Employees	13	13			26	
92	111	26G	Bella Luna Employees	99W Water St	Private	Private	Lot	Employees	34	34			68
93	112	26F	Larkin Arts	61 Court Square	Private	Private	Lot	Employees	2	26	28		56
94	113	26G	AOT	80 Court Square	Private	Private	Lot	Mixed	25	3	28		56
95	114	26H	Hendleton Community Bank Only	75 Court Square	Private	Private	Lot	Employees	1	2	3		6
96	84	26A	Clark and Bradshaw PC	92N Liberty St	Private	Private	Lot	Customers	32	2	34		66
97	85	26B	1st Presbyterian Church Visitor Parking	38 Graham St	Private	Private	Lot	Customers	22	8	30		60
98	86	26C	1st Presbyterian Church Handicap	32 Court Square	Private	Private	Lot	Customers	8	8	11		27
99	87	26D	N. Main St. Parking Lot	90N Main St Parking	Public	Public	Lot	Public	33	33			66
100	88	27B	W&F Parking	21N Federal St	Private	Private	Lot	Employees	15	15			30
101	89	27C	Market Place Shop Employees Only	24N Main St	Private	Private	Lot	Employees	18	18			36
102	90	27D	Carter Bank and Trust	75N Mason St	Private	Private	Lot	Mixed	19	2	23		44
103	91	27E	SunTrust	180E Market St	Private	Private	Lot	Mixed	27	2	29		56



Figure 5 shows the location of each of the 205 off-street facilities.

Figure 5: Off-Street Parking Supply



DESMAN categorized each facility according to ownership and access. In the case of ownership, if the facility was owned by a governmental agency, it was considered 'public,' whereas any facility owned by a private individual, institution, or business was termed 'private.' A facility was determined to have 'public' access if any member of the general public could park within the facility, allowing for the posted regulations. However, if the facility was set aside for exclusive use by a particular user group, it was identified as 'private.' Taken together, this meant that every facility fell into one of four possible categories: *Public/Public*, *Public/Private*, *Private/Private*, or *Private/Public*. In cases where portions of a facility fell into more than one category, DESMAN designated the facility according to the majority category.

Examples of each category are as follows:

- *Public/Public* - a facility owned by a public agency and accessible to all members of the general public. The Water Street Deck is a good example of such a facility, even though portions are signed for permit holders only, any member of the general public can purchase a permit to park in that area.
- *Public/Private* - a facility owned by a public agency, but accessible only to a select group of users. The parking areas signed exclusively for Police Department personnel and vehicles in the lot behind the Public Safety Building is an example of an asset owned by a public agency, but not open to use to members of the general public.
- *Private/Private* - a facility owned by a private party and reserved for a select group of users. The majority of off-street parking facilities in the study area fall under this category.
- *Private/Public* - a facility owned by a private party but open for use by the general public. These are most commonly commercial parking facilities that allow the public to park for a fee. Such a facility does not exist in downtown Harrisonburg currently, although the parking meters along South Main Street between Jack Brown's Beer and Burger Joint and Taj of India are a good example of a portion of a Private/Private facility operating as a Private/Public venture.

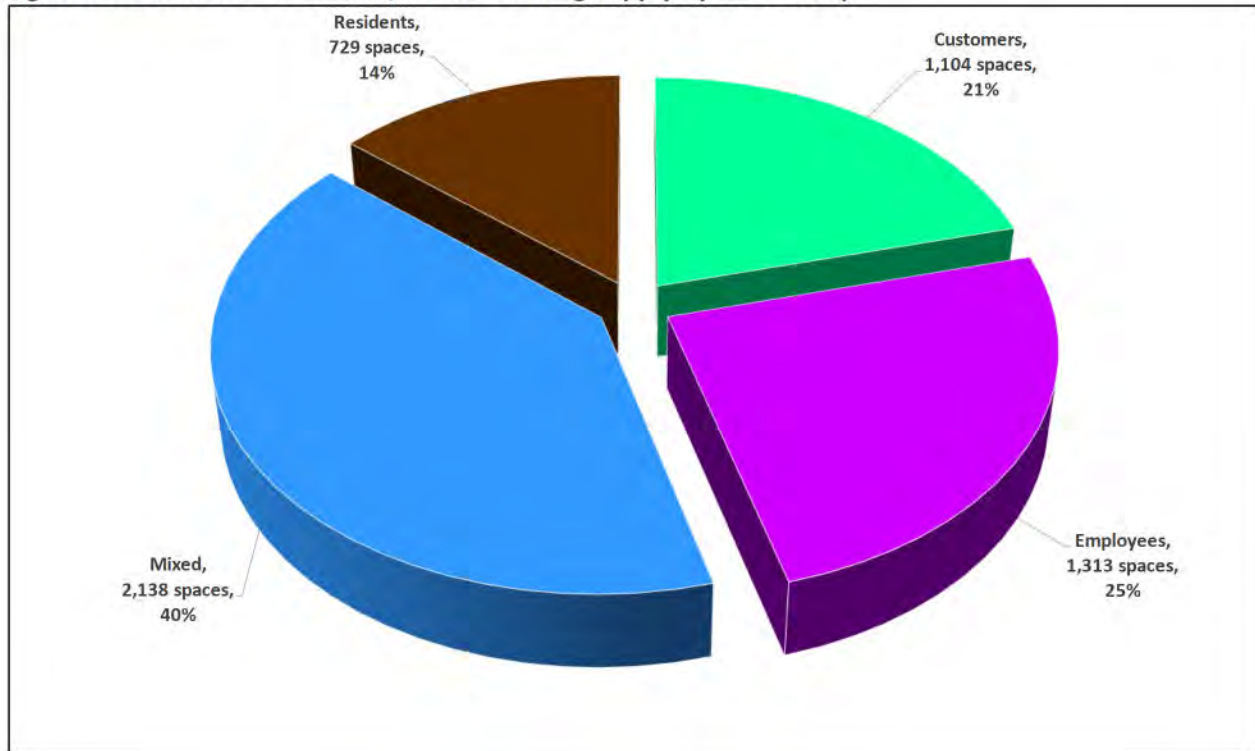
DESMAN identified 12 Public/Public facilities within the study area containing 1,384 total spaces, or about 20% of the total off-street inventory, and 6 Public/Private facilities containing 241 spaces, or approximately 4% of the total off-street inventory. The remaining 187 facilities were identified as Private/Private and accounted for 76% of the total off-street inventory (5,284 spaces).

DESMAN further categorized the Private/Private off-street facilities by the end users they were reserved to serve. These end users generally fell into one of four common categories: *Residents*, *Customers*, *Employees*, or *Mixed*. These approved users may be explicitly stated on the signage around or within the facility or implied by the proximity of the facility to an adjacent land use and the pattern of use during the course of a typical day. For example, a parking lot in front of an apartment building that does not start to fill up until late in the day may be assumed to be set aside for residents. Where the signage on a facility did not specify a particular user group, or when it was clear that multiple users park in the facility, it was classified as Mixed.

Figure 6, next page, illustrates the distribution of space assignments among the four Private/Private sub-categories.



Figure 6: Distribution of Private/Private Parking Supply by User Group



Effective Parking Supply

It is a generally accepted principle in the parking industry that a supply of parking operates at optimum efficiency when peak occupancy is at 85% to 95% of capacity. The excess spaces provide a “cushion” to allow for the dynamics of vehicles moving in and out of parking stalls at the same time and to reduce the time required to search for the last few available spaces. This cushion also allows for daily, weekly, and seasonal variations as well as vacancies created by restricting facilities to certain users, mis-parked vehicles, snow cover, and minor construction. When occupancy exceeds the optimum level, there may be delays and frustration in finding a space or the patron may be forced to use an undesirable space, such as one at a greater or uncomfortable walking distance. The parking supply may be perceived as inadequate even though spaces are available in the system. As a result, the *Effective Parking Supply* is used for analysis of the adequacy of the parking system, rather than the total supply or inventory of spaces.

For the purposes of this analysis, DESMAN adjusted the on-street parking inventory by a factor of 15% for time-limit, permit and unrestricted spaces, reducing the raw inventory of 994 spaces to an effective parking supply of 850 spaces.

For off-street parking facilities, DESMAN reduced the raw inventory by a factor of just 10%, as motorists searching in these facilities are subject to reduced competing vehicular and pedestrian traffic and these facilities are often designed to support extended searching efforts. In addition, this factor was only applied to the general parking spaces within these facilities; those spaces reserved exclusively for a particular user or group, including handicapped spaces, do not appear to be subject to the same perceptive challenges. The application of the 10% factor reduces the off-street inventory from 6,909 spaces to an effective supply of 6,480 spaces. A summary of effective parking supply by block is included as **Table 4**, next page.



Table 4: Effective Parking Supply by Block

Effective Supply			
Block	On-Street	Off-Street	Total
1	20	4	24
2	18	75	93
3	6	45	51
4	12	62	74
5	40	147	187
6	32	166	198
7	0	95	95
8	0	21	21
9	0	317	317
10	49	409	458
11	22	0	22
12	56	72	128
13	0	180	180
14	12	84	96
15	13	62	75
16	6	61	67
17	0	173	173
18	10	179	189
19	53	21	74
20	37	127	164
21	0	358	358
22	6	186	192
23	3	142	145
24	3	190	193
25	9	128	137
26	0	193	193
27	0	110	110
28	9	203	212
29	15	202	217
30	3	82	85
31	6	27	33
32	10	161	171
33	38	56	94
34	54	65	119
35	23	155	178
36	0	379	379
37	17	238	255
38	52	14	66
39	0	96	96
40	15	147	162
41	44	230	274
42	0	119	119
43	35	91	126
44	10	270	280
45	24	57	81
46	30	77	107
47	35	126	161
48	23	78	101
TOTAL	850	6,480	7,330

Detailed tables showing the effective supply of parking by facility and street segment are presented in **Appendix B** at the end of this document.



Parking Occupancy and Utilization

Parking occupancy is commonly defined as the number of vehicles parked in a particular facility or area at a given time and date. *Utilization* is the measure of the amount of effective parking supply within the facility or area in use during each occupancy observation. This differs slightly from *parking demand*, which is the total number of vehicles generated by a particular land use.

In order to determine if there is existing parking demand being generated by the land uses in downtown Harrisonburg that cannot be accommodated by the existing supply of parking, it is necessary to identify the current utilization of parking on each block. If there are blocks where the entire effective parking supply is being utilized, this may mean that the demand that cannot be satisfied is being pushed to other blocks nearby or that those potential visitors and patrons of downtown businesses could be going elsewhere due to a lack of parking. In most cases where the demand cannot be accommodated on a single block, drivers will park as close as possible to their destination, while still patronizing downtown. Typically, only when parking is unavailable for several contiguous blocks will patrons become discouraged and, potentially, choose not to patronize a business on those blocks.

For the purposes of this study, the City contracted with another parking firm to conduct parking occupancy counts on Tuesday, April 16, 2019, to capture a picture of the existing utilization of parking. These counts were executed to capture activity in the morning (7:00 AM – 9:00 AM), mid-day (11:00 AM – 1:00 PM), and early evening (4:00 PM – 6:00 PM), and were performed on a typical business day with clear weather. DESMAN then organized the count data to evaluate the existing utilization of parking, including analyzing on-street parking by category and off-street parking by type.

In the aggregate, utilization of the area-wide effective parking supply (7,330 spaces in total) never exceeded 54%. Utilization grew appreciably between the early morning counts (2,005 total vehicles, 27% of effective supply utilized) and mid-day (3,904 total vehicles, 55% of effective supply utilized) to peak in the early evening (3,969 total vehicles, 54% of the effective supply utilized). Detailed utilization data can be found in **Appendix C**.

Based on the analysis, DESMAN identified only one block during the morning counts where utilization met or exceeded the effective supply of parking, as shown in **Table 5** and **Figure 7** on the following pages. Three blocks were identified during the mid-day counts and four blocks were noted during the early evening counts where utilization exceeded the effective supply of parking. The blocks where shortfalls were noted included:

- Block 4, which includes Appalachian Equipment & Supply and Windshield City. It appears that the large number of cars parked at Windshield City may have caused utilization to exceed the effective supply on this block throughout the day.
- Block 7, which includes three surface lots for Cargill Feed Mill employees, was over 100% utilized at mid-day only. It appears that employees from the Cargill Feed Mill are driving this utilization.
- Block 45, which includes the Valley Turnpike Museum and the Biltwell Apartments, exceeded its effective parking supply during the mid-day and evening counts. It appears that residential demand from the abutting blocks may be driving high utilization in the evenings.
- Block 46, which includes McGriff Insurance and the Campbell Apartments, exceeded its effective parking supply during the mid-day and evening counts. It appears that residential demand from the abutting blocks may be driving high utilization in the evenings.



Figure 7: Block-by-Block Utilization (4/16/2019)

MORNING (7:00 AM – 9:00 AM)

MID-DAY (11:00 AM – 1:00 PM)

EARLY EVENING (4:00 PM – 6:00 PM)

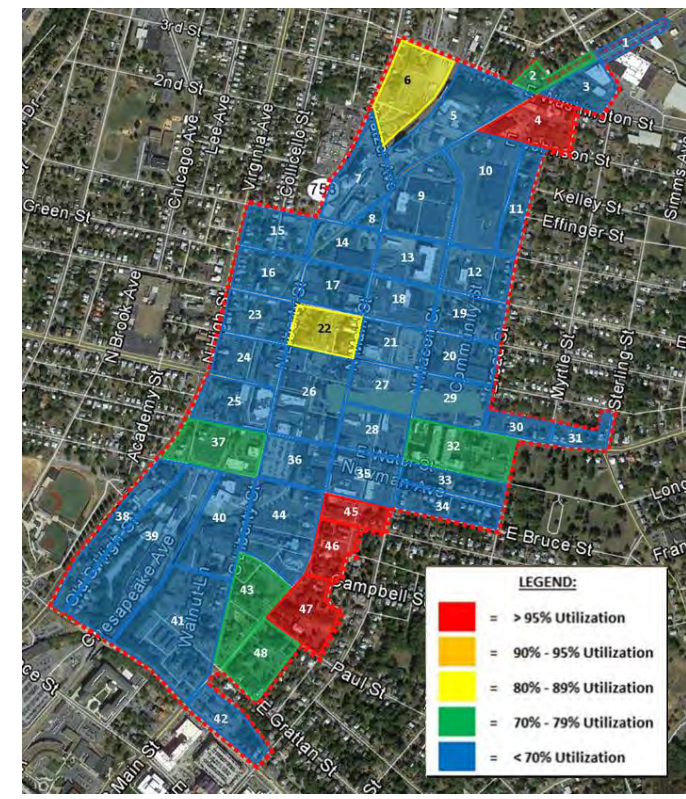
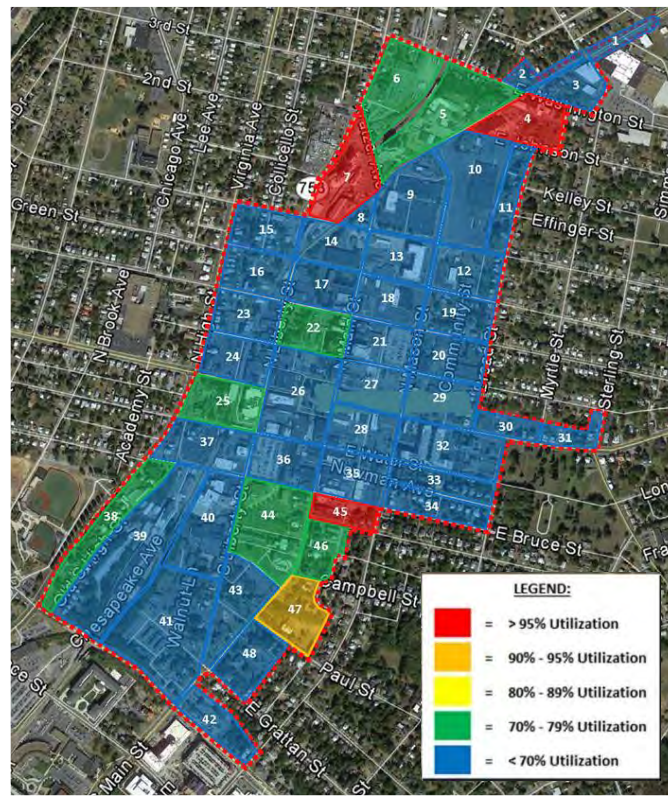
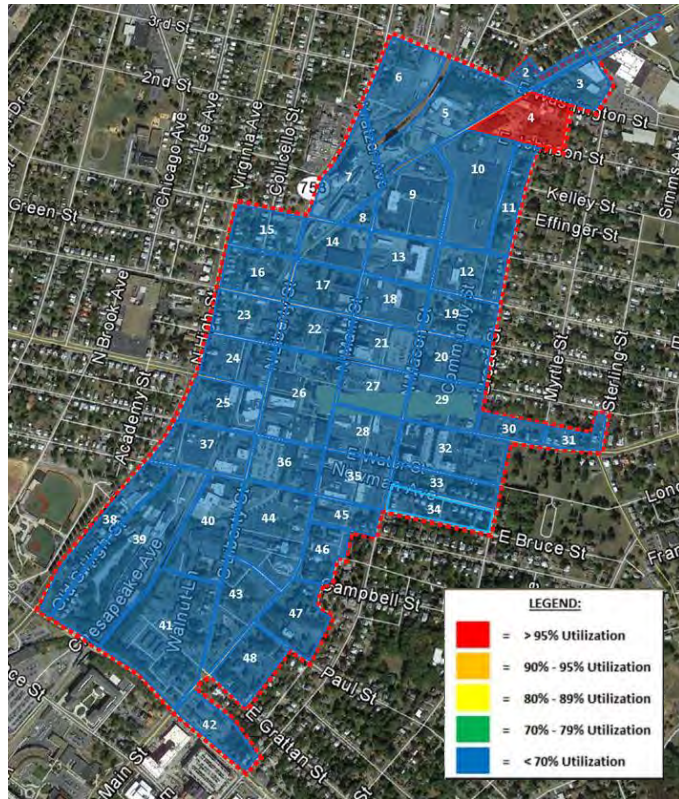


Table 5: Block-by-Block Utilization (4/16/2019)

MORNING (7:00 AM – 9:00 AM)

Block	Effective 7:00 am - 9:00 am		Utilization
	Supply	Occupancy	
1	24	0	0%
2	93	40	43%
3	51	17	33%
4	74	78	105%
5	187	91	49%
6	198	88	44%
7	95	54	57%
8	21	3	14%
9	317	40	13%
10	458	26	6%
11	22	5	23%
12	128	29	23%
13	180	61	34%
14	96	53	55%
15	75	8	11%
16	67	19	28%
17	173	50	29%
18	189	17	9%
19	74	31	42%
20	164	23	14%
21	358	37	10%
22	192	70	36%
23	145	43	30%
24	193	12	6%
25	137	54	39%
26	193	27	14%
27	110	29	26%
28	212	13	6%
29	217	54	25%
30	85	26	31%
31	33	16	48%
32	171	68	40%
33	94	29	31%
34	119	39	33%
35	178	29	16%
36	379	74	20%
37	255	32	13%
38	66	45	68%
39	96	57	59%
40	162	49	30%
41	274	170	62%
42	119	22	18%
43	126	41	33%
44	280	81	29%
45	81	43	53%
46	107	28	26%
47	161	46	29%
48	101	38	38%
Total	7,330	2,005	27%

MID-DAY (11:00 AM – 1:00 PM)

Block	Effective 11:00 am - 1:00 pm		Utilization
	Supply	Occupancy	
1	24	1	4%
2	93	46	49%
3	51	7	14%
4	74	92	124%
5	187	148	79%
6	198	142	72%
7	95	129	136%
8	21	6	29%
9	317	36	11%
10	458	56	12%
11	22	5	23%
12	128	48	38%
13	180	103	57%
14	96	38	40%
15	75	7	9%
16	67	24	36%
17	173	49	28%
18	189	66	35%
19	74	32	43%
20	164	102	62%
21	358	135	38%
22	192	140	73%
23	145	63	43%
24	193	128	66%
25	137	104	76%
26	193	97	50%
27	110	70	64%
28	212	109	51%
29	217	111	51%
30	85	38	45%
31	33	15	45%
32	171	118	69%
33	94	41	44%
34	119	52	44%
35	178	100	56%
36	379	226	60%
37	255	136	53%
38	66	50	76%
39	96	92	96%
40	162	81	50%
41	274	161	59%
42	119	69	58%
43	126	63	50%
44	280	207	74%
45	81	90	111%
46	107	78	73%
47	161	147	91%
48	101	46	46%
Total	7,330	3,904	53%

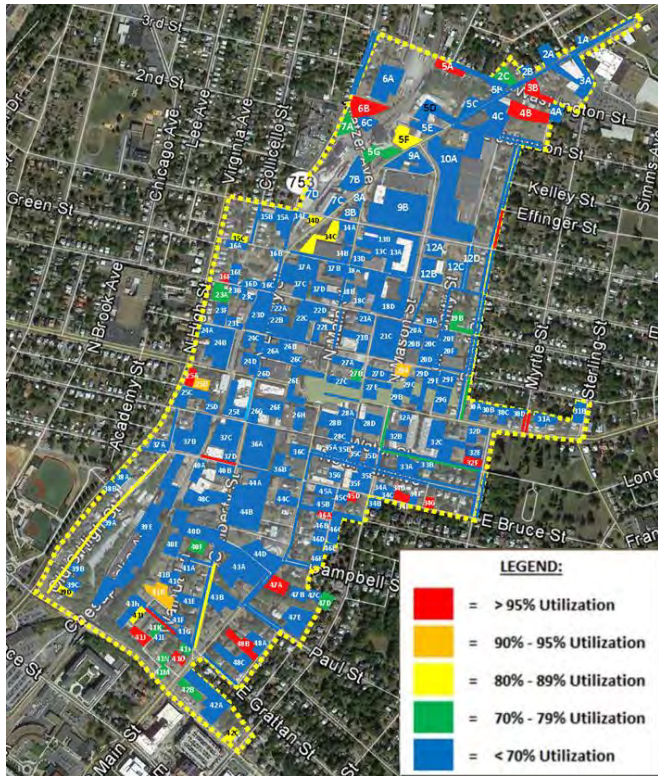
EARLY EVENING (4:00 PM – 6:00 PM)

Block	Effective 4:00 pm - 6:00 pm		Utilization
	Supply	Occupancy	
1	24	3	13%
2	93	68	73%
3	51	25	49%
4	74	87	118%
5	187	94	50%
6	198	167	84%
7	95	62	65%
8	21	4	19%
9	317	130	41%
10	458	38	8%
11	22	6	27%
12	128	48	38%
13	180	95	53%
14	96	35	36%
15	75	5	7%
16	67	11	16%
17	173	71	41%
18	189	59	31%
19	74	31	42%
20	164	80	49%
21	358	185	52%
22	192	153	80%
23	145	52	36%
24	193	79	41%
25	137	86	63%
26	193	95	49%
27	110	66	60%
28	212	107	50%
29	217	113	52%
30	85	36	42%
31	33	16	48%
32	171	123	72%
33	94	42	45%
34	119	51	43%
35	178	104	58%
36	379	248	65%
37	255	187	73%
38	66	35	53%
39	96	94	98%
40	162	76	47%
41	274	123	45%
42	119	51	43%
43	126	98	78%
44	280	156	56%
45	81	121	149%
46	107	111	104%
47	161	163	101%
48	101	79	78%
Total	7,330	3,969	54%

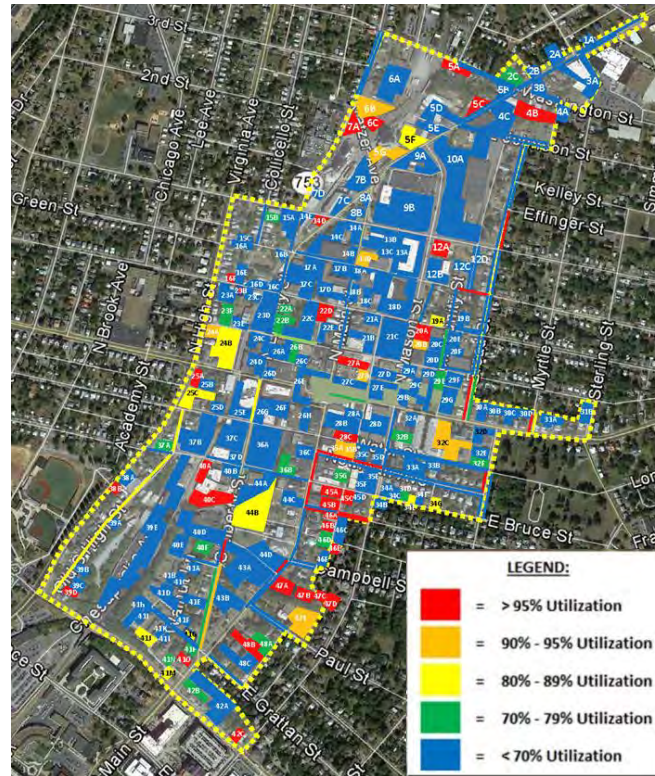


Figure 8: Facility-by-Facility Utilization (4/16/2019)

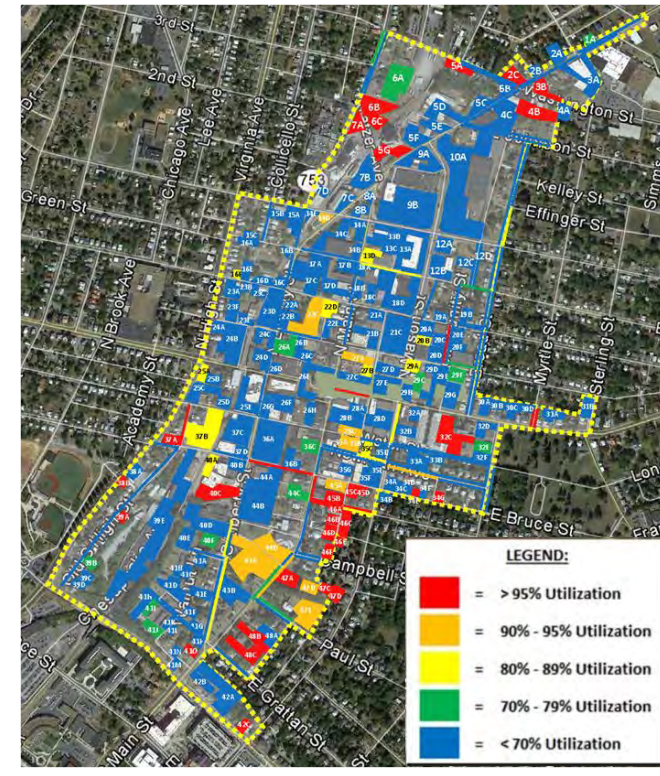
MORNING (7:00 AM – 9:00 AM)



MID-DAY (11:00 AM – 1:00 PM)



EARLY EVENING (4:00 PM – 6:00 PM)



- Block 47, at 465 S. Mason St., and the Elks Lodge, exceeded its effective parking supply during the mid-day and evening counts. It appears that residential demand from the abutting blocks may be driving high utilization in the evenings.

In addition to these block-by-block utilization patterns, during the morning counts there were 20 facilities or block faces where utilization met or exceeded the effective supply of parking. At mid-day, this number jumped to 44 facilities or block faces and, in the early evening, there were 41 facilities or segments of on-street parking where the utilization of spaces met or exceeded the effective supply of parking.

Figure 8, prior page, illustrates the utilization of the off-street facilities and on-street spaces in greater detail.

On-street utilization ranged from 31% of effective supply in the morning to 44% at mid-day. Utilization rates by the type of on-street parking space varied, with time-limited spaces experiencing higher levels of utilization at mid-day and early evening, as shown in **Table 6**.

Table 6: On-Street Occupancy and Utilization (4/16/2019)

Type of Space	Effective Supply	7:00 am - 9:00 am		11:00 am - 1:00 pm		4:00 pm - 6:00 pm	
		Occupancy	Utilization	Occupancy	Utilization	Occupancy	Utilization
Short-Term	221	56	25%	132	60%	126	57%
Blue Permit	35	5	14%	10	29%	14	40%
Red Permit	147	50	34%	44	30%	49	33%
Unrestricted	447	152	34%	186	42%	158	35%
TOTAL	850	263	31%	372	44%	347	41%

Of the block faces inventoried as part of this project, 35 of them were signed for short-term parking with a combination of 15-minute, 30-minute, 1-hour, and 2-hour time limits. During the course of field observations, three of these block faces were observed to be parked at or over the effective parking supply during the morning counts, increasing to nine block faces at mid-day, then decreasing to seven block faces in the early evening.

By contrast, only three block faces designated for Blue Permit parking exceeded 42% utilization at any time, well below full utilization. Similarly, the 13 block faces designated for Red Permit parking averaged between 34% and 39% utilization, with only 3 block faces exceeding the effective parking supply at mid-day and in the early evening.

Finally, of the 41 block faces determined to be ‘unrestricted,’ DESMAN only noted 4 block faces where utilization exceeded the effective parking supply, which occurred at mid-day and in the early evening.

Detailed tables showing on-street utilization by block face are presented in **Appendix D**.

Off-street utilization ranged from 27% of the effective supply in the morning to 56% in the early evening, as shown in **Table 7**, next page.



Table 7: Off-Street Occupancy and Utilization (4/16/2019)

Type of Space	Effective Supply	7:00 am - 9:00 am		11:00 am - 1:00 pm		4:00 pm - 6:00 pm	
		Occupancy	Utilization	Occupancy	Utilization	Occupancy	Utilization
Private/Private	4,894	1,413	29%	2,732	56%	2,675	55%
Public/Public	1,355	249	18%	657	48%	780	58%
Public/Private	231	82	35%	145	63%	170	74%
Total	6,480	1,744	27%	3,534	55%	3,625	56%

DESMAN noted that only 3 of the 12 Public/Public facilities reached capacity during the mid-day field counts. Only one of the six Public/Private facilities exceeded 79% utilization during field observations. Detailed tables showing off-street utilization by facility are presented in **Appendix E**.

Among the 187 Private/Private off-street facilities, 16 facilities exceeded their effective parking supply during morning counts, while 27 facilities were at or over the effective parking supply at mid-day and in the early evening.

The highest utilization levels among the sub-types of Private/Private facilities were observed in facilities set aside for Residents in the morning hours, Employee and Mixed facilities at mid-day, and Employee facilities in the evenings, as shown in **Table 8**.

Table 8: Private/Private Occupancy and Utilization by User (4/16/2019)

Sub-Type	Effective Supply	Morning		Noon		Evening	
		Occupancy	Utilization	Occupancy	Utilization	Occupancy	Utilization
Customers	961	140	15%	398	41%	372	39%
Employees	1,216	353	29%	731	60%	813	67%
Mixed	2,053	521	25%	1,226	60%	1,135	55%
Residents	664	399	60%	377	57%	355	53%
TOTAL	4,894	1,413	29%	2,732	56%	2,675	55%

DESMAN noted that only 3 of the 20 Private/Private facilities reserved for Customers reached capacity during the field surveys; 9 of the 37 Private/Private facilities allocated for Employees reached capacity; 13 of the 49 Private/Private facilities assigned for Residents reached capacity, and; 18 of the 81 Private/Private facilities open to Mixed user types were parked at or beyond their effective supply during the survey day. Additional detail related to the utilization of these types of spaces is presented in **Appendix E**.



Conclusions

The existing supply of parking within the defined downtown Harrisonburg study area is comprised on 994 on-street spaces and 6,909 off-street spaces or a total of 7,903 spaces. On-street, the spaces are a combination of time-limited spaces, permit parking only, or spaces with no identifiable restrictions. Off-street, 205 individual parking facilities were identified, with a mix of publicly- and privately-owned facilities; a majority of the off-street facilities are privately-owned and serve particular businesses or residential buildings, while the City of Harrisonburg is the primary owner of the facilities that serve the general public.

Using parking space occupancy data that was gathered in April 2019, DESMAN was able to analyze the current utilization of the existing parking supply and identify any existing shortfalls. The results of this analysis indicate that, at present, there is significant available parking capacity across the study area during a typical weekday. While a handful of off-street parking facilities and areas of on-street parking were fully utilized at certain times of the survey day, nearly every block within the study area had some parking availability, even during the busiest hours of the day. These results indicate that, while some downtown patrons, visitors and employees may, on occasion, experience difficulty finding available parking near their desired destinations, there is likely availability on an adjoining block. Whether or not this parking is available for use by the general public or is restricted for use only by certain groups is a question that will be answered as this study progresses.



4. PUBLIC ENGAGEMENT

One of the most valuable methods for gathering information regarding parking in a city is to solicit direct input from the people who use the parking system on a regular basis. Downtown employees, residents, business patrons, and visitors can provide valuable insights into parking conditions that may not be evident to an outside observer. While observations of actual parking demand conditions are necessary to analyze current and future parking adequacy, the input gathered during the public outreach process helps focus attention on other issues such as localized parking deficits, the distribution of spaces among various user groups, inadequate signage, facility maintenance issues, the adequacy of enforcement – among others.

Approach

In order to gather public input on parking issues in downtown Harrisonburg, DESMAN employed three methods: in-person meetings with groups of downtown stakeholders, and online survey efforts to define parking issues and get feedback about proposed solutions, and two public forums.

On Wednesday, July 31 and Thursday, August 1, 2019, DESMAN personnel and City of Harrisonburg staff organized three in-person meetings with groups of downtown Harrisonburg stakeholders: property owners, business owners, and residents. The aim of these meetings was for DESMAN to hear first-hand the parking issues faced by these three user groups, as well as any ideas they had for improving the parking experience in downtown.

In addition to the group stakeholder meetings, DESMAN, in cooperation with the City, organized a public meeting to provide an additional opportunity for public input. This meeting was held on the evening of Wednesday, August 28, 2019 and was advertised in advance on the City's website. The meeting was attended by approximately 25 members of the public, along with three DESMAN staff members and the City's project team for this study.

The public forum included a short presentation on the goals of the study and DESMAN's progress to date, as well as a period of open discussion during which citizens could talk one-on-one with project team members (from both DESMAN and the City) about various parking-related issues. Several stations were set-up around the room which displayed maps of the existing inventory of on- and off-street parking in downtown Harrisonburg, heatmaps of observed parking utilization, and a display which allowed attendees to indicate their greatest challenges with parking in downtown.

In tandem with this event, the City also launched an online survey to solicit input from the general public regarding their parking behaviors and what they perceived as shortfalls or failings in the existing system. A total of 1,117 individuals responded to this 21-question survey.

A second public forum was conducted on Wednesday, January 22, 2020. Two sessions were offered, one in the morning and one in the evening, and roughly 100 persons in total attended. The objective of these forums was to review findings from the work to date and present potential options for addressing each issue as identified and defined during the course of study. Each session opened with an informational presentation, followed by a brief question and answer period and then an extended period of open dialogue between DESMAN team members, City staff, community leaders, and members of the general public.



As a follow up to the public forums, the City also issued a 10-question online survey asking respondents to provide feedback on the nine presented options. A total of 281 responses were recorded.

Stakeholder Meetings

The City invited key stakeholders to one of three meetings scheduled from July 31 and August 1, 2019. Meetings were organized by representative user group focused on downtown property owners, business owners and residents. The property owner's meeting attracted roughly 25 participants and the business owner's meet roughly 30 participants. No downtown residents appeared at the time and date scheduled for their meeting and as a result, the meeting was never conducted.

Issues raised and discussed at the Property Owner's meeting included the following:

- There was a concern that the lack of parking requirements associated with zoning for the downtown district would eventually lead to a situation where no more parking was available, impacting both existing properties and new development.
- Several individuals felt there was adequate parking across the area much of the time, but it was often located in inconvenient locations or hard to find if one was not familiar with the area.
- The quality of pedestrian travel pathways across downtown was a significant concern and was thought to impact individual's willingness to park any significant distance from their destination. In particular, the width and quality of sidewalks and lighting within the City's two parking structures were identified as inhibiting issues.
- Several individuals felt there were too many different time restrictions spread across the public on- and off-street parking areas, creating confusion among infrequent or first-time visitors.
- Parking on days when the downtown court buildings were especially busy was noted as a perpetual issue.
- Several property owners indicated that they were aware of informal shared parking arrangements occurring ad hoc within the downtown that suggested that formalizing the practice would not be unthinkable.
- It was hypothesized that some current issues may be the result of JMU (James Madison University) students parking within the study area to avoid paying the cost to park their vehicles on campus.

Issues raised and discussed at the Business Owner's meeting included the following:

- There was substantial discussion about the allocation of parking spaces for short-term (2 hours or less) versus long-term (10 hours or more) in the area surrounding the Water Street Deck and City Hall. Specifically, there appears to be an appetite for more short-term parking in the area, although several individuals noted that their employees relied on the (free) 10-hour spaces and could not bear the cost of a monthly parking permit.
- Concerns regarding perceived safety in the public parking facilities downtown, particularly as it applied to the quality of lighting, were expressed.



- Several business owners felt that communications regarding public parking options, especially for employees, could be improved upon.
- Issues surrounding the continuing expansion of the Ice House project and its potential impact on parking in the immediate area were expressed by multiple individuals.
- Several business owners advanced the opinion that employee parking, both city and private businesses, should be relegated to areas of lesser congestion to assure adequate resources for patrons and visitors.

Survey Efforts

In an effort to reach as many members of the public as possible, the City requested that DESMAN also develop an online survey to gather data on parking in downtown Harrisonburg. The survey was geared to gather experiences, behavior, and preferences of visitors to and residents of downtown, as well as employees working in downtown. Participants were asked to respond to 19 specific questions based on their typical day or average experience finding parking or using parking facilities, in addition to 2 demographic classification questions. A link to the survey was posted on the City's website and social media pages, as well as being distributed electronically to e-mail listserv participants.

In total, 1,117 responses were received from the online survey. Out of an estimated total population of 54,033³, this **sample represents just over 2% of the city's total estimated population.**

The survey drew a fairly diverse age demographic, with roughly 6% of respondents identifying between the ages of 18-24, roughly 24% ages 25-34, 26% ages 35-44, approximately 32% ages 45-64, and roughly 12% ages 65 and over. The participation was slightly different than the most recent (2017) American Community Survey results which placed 19.8% of the City's total population at ages 20-24, 14.4% at ages 25-44, 10.7% at ages 35-44, 16% at ages 45-64, and 8.7% at ages 65 and over and indicates that **representation among the middle aged demographics was disproportionately larger than their population.**

The vast majority of the people who responded to the survey reside within the City of Harrisonburg in ZIP Code 22801 or 22802. Nearly 75% of the survey-takers who answered this question (811 out of 1,090 respondents) live in one of those two ZIP codes.

Respondents were asked to identify their top four primary reasons for coming downtown. A large number of respondents identified themselves as diners (~ 85%), shoppers (~ 71%) or entertainment seekers (~ 60%) first and foremost. Roughly 30% of respondents also identified themselves as a downtown employee, about 27% came downtown to visit a professional office, and slightly more than 10% indicated they also lived downtown. Only 6% of respondents indicated ownership of a downtown business or property drawing them into the area. Roughly 18% identified themselves as "Other," which included visiting family or friends in downtown, conducting business with a public agency, going to a library or museum, attending church, or patronizing the Farmer's Market or a JMU event.

Almost 90% of all respondents indicated they drove themselves downtown on a regular basis, underscoring their reliance on available parking to support their trips.

³ U.S. Census Bureau population estimate as of 7/1/2018, up 10.5% from 4/1/2010 Census.



Of the 1,112 individuals who identified where they typically parked, more than 87% of the respondents indicated that they typically park in a public parking lot or parking deck (75%) or in a curbside space (12%). In contrast, less than 9% of parkers responding to the survey usually park in a private parking lot. **This is in stark contrast to the existing supply where just 30% (2,378 spaces) of the total parking supply (7,903 spaces) is in publicly owned and accessible parking facilities** and begins to explain some of the concerns stated during stakeholder meetings regarding ‘inadequate’ parking in the downtown area.

Over 40% of respondents indicated that they typically parked one to two hours when visiting downtown and another 25% indicated they commonly stayed 3-4 hours when they came downtown. Roughly 4% of respondents indicated they parked less than one hour, while 10% indicated they stayed 4-8 hours and roughly 18% indicated they parked 8-12 hours, while roughly 3% parked 12-24 hours. **These results contrasted well with the survey results, which found a majority of respondents identified as primarily short-term parkers (i.e. shoppers, diners, entertainment seekers) while a relative minority identified themselves as employees (~ 30%) or residents (~ 10%).**

When asked what time of day do respondents most commonly arrive or visit downtown, the responses were diverse, with roughly 23% indicating a morning (7 am – 11 am) arrival, 23% selecting an evening arrival (after 5 pm), and roughly 28% indicating they came down at various times of day. There was a slightly higher representation of afternoon arrivals (1 pm – 5pm), than mid-day arrivals (11 am -1 pm). **DESMAN interpreted these results to mean that downtown most assuredly held a position as both a business center (i.e. morning arrival) and entertainment, dining, and/or residential destination (i.e. evening arrival), but was not exclusively influenced by either population.** This was consistent with occupancy observations.

Nearly 70% of survey respondents indicated that they come to downtown more frequently than once per week, while an additional 23% visit once a week. With less than 8% of survey respondents visiting downtown once a month or less, the **vast majority of respondents are frequent visitors to downtown who should have a good idea of the parking options that are available and where the spaces are located** if properly informed.

A majority of survey respondents indicated that they typically park in downtown during the daytime on weekdays. These responses reinforce the fact that during the daytime on weekdays, particularly around the lunch hour, is when most people experience difficulty finding available parking within certain areas of downtown.

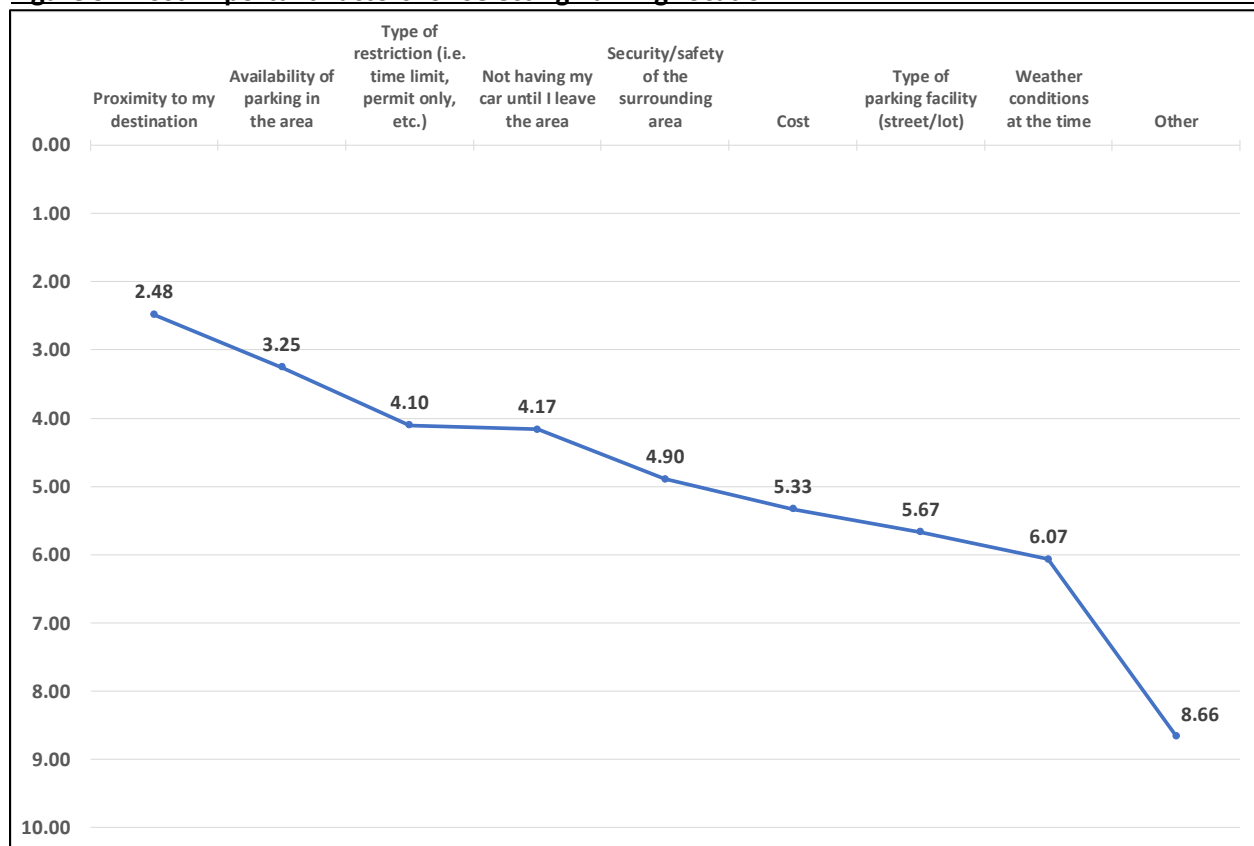
Respondents were asked to rank nine factors that influenced their selection of a place to park, with [1] being the most important and [9] being the least important. For this reason, the lowest numerical average represents the most important factor and the highest average represents the least important factor. As **Figure 9** on the following page shows, **proximity to destination was the first and highest consideration for the majority of respondents**, followed by availability and access or time restriction on the facility. Despite some of the comments during the stakeholder meetings, safety and security was the fifth most important factor.

Respondents were also asked how far they were willing to park from their intended destination to establish a baseline for maximum acceptable walking distance for the Harrisonburg market. Respondents were offered five options:



- Less than 50 feet from my destination
- Within the same block as my destination
- On the next block over from my destination
- Not more than two blocks away from my destination
- More than two blocks from my destination

Figure 9: Most Important Factors for Selecting Parking Location



Roughly 35% of respondents indicated their maximum allowable distance from parking to destination was two blocks or less. Approximately 22% indicated they would not park further away than the next block and about 19% indicated they had to park within the same block as their destination. Only about 1% insisted they had to be within 50 feet of their destination and around 23% of respondents indicated they would be willing to park more than two blocks away from their destination. These results suggest there is no single standard for acceptable walking distance from parking to destination in Harrisonburg, but **roughly 58% of respondents would be satisfied to find parking within two blocks of their destination or closer and 80% of respondents would be satisfied to be within one block of their intended destination.** As a result of these findings, DESMAN chose to focus on areas where clusters of blocks were projected to be under duress, rather than single blocks showing a potential shortage of parking.

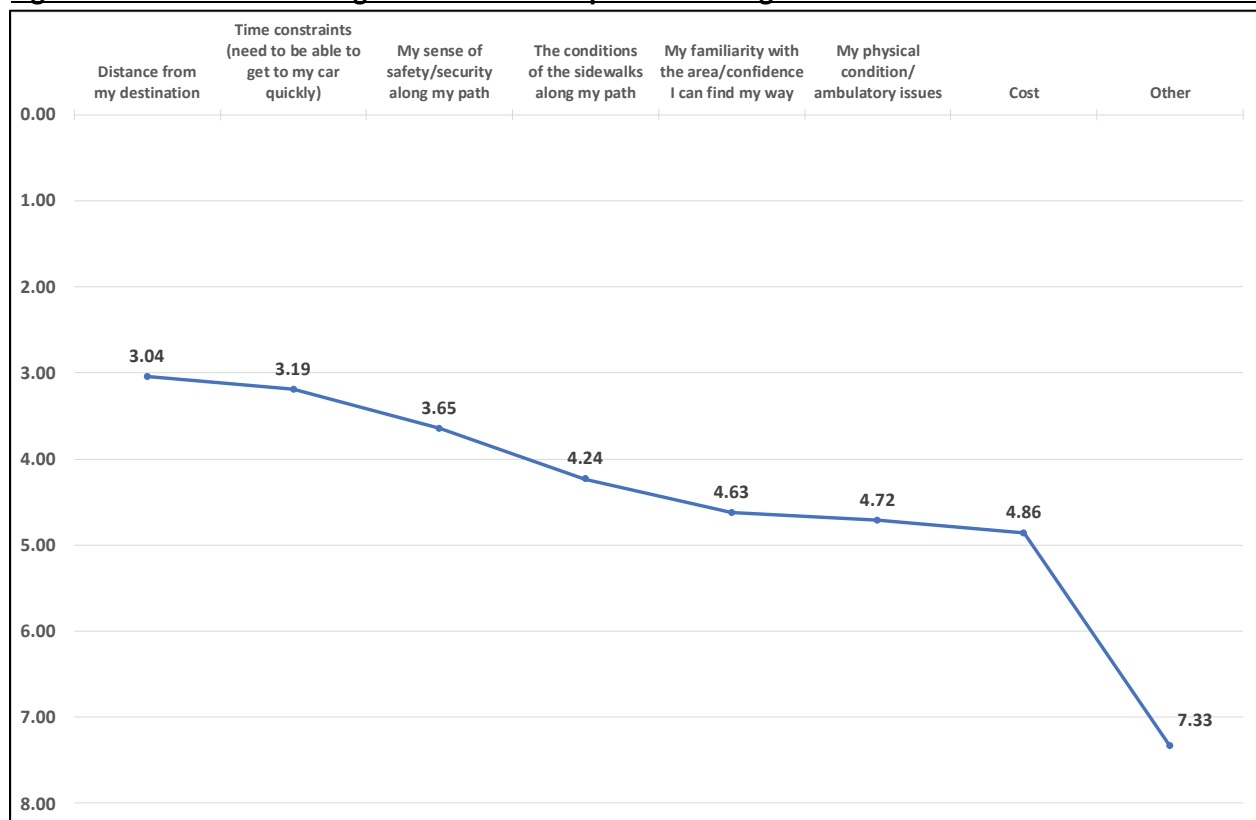
Respondents were further asked to define the conditions that led them to their answer for the prior question. Specifically, respondents were asked how much the following factors influenced their definition of acceptable walking distance:



- The linear distance travelled on foot from parking to destination;
- Time constraints associated with your visit (i.e. you need to quickly access your destination or vehicle);
- The respondent’s sense of safety or security along their walking path between parking and destination;
- The condition of the sidewalk between parking and destination;
- The individual’s familiarity with the surrounding area;
- The individual’s physical condition;
- The cost of the parking;
- Other factors.

As with the question regarding why an individual chose to park where they did, respondents were asked to rank the listed factors from most (i.e. “1”) to least (“8”) important. As **Figure 10** shows, the **linear travel distance from parking to destination was considered the most important factor** followed by the need to park close to a destination to manage time constraints associated with the trip and then the need to reduce walking distance due to concerns regarding personal safety and security.

Figure 10: Factors Influencing Definition of Acceptable Walking Distance



DESMAN considered these results in the context of responses to earlier questions regarding how respondents selected where to park and their definition of acceptable walking distance, as well as the current composition of the parking market in downtown Harrisonburg. Within this market, parking is largely free with the exception of fees paid for parking permits in select public facilities, so cost is not an



influencing factor at this time. Neither weather nor individual ambulatory challenges appeared to be a majority concern, although safety and security were noted concerns on both questions. Therefore, it would seem that the **two factors most influencing individual's decisions** on where to park and how far they are willing to park come down to **proximity** to their intended destination and **time** it takes to traverse the distance from parking to destination.

One of the concerns commonly raised among downtown property owners is that, if there is no adequate parking very close to an individual's destination, then these individuals are likely to depart the area and seek goods or services in a location with more proximate parking. DESMAN decided to test this by asking respondents what they would do if parking were not available in front of their intended destination. Over 70% of respondents indicated they would simply park further from their destination while another 15% stated they would circle the block until a space opened up nearby their destination. **Only about 8% of respondents indicated they would take their business elsewhere if proximal parking was not available.**

Nearly half of survey respondents (45%) indicated that they can typically find a parking space in downtown in less than 5 minutes, while an additional 44% of respondents can find a space in under 10 minutes. However, a number of the survey-takers (~ 8%) stated that they typically require 10 minutes or more to find an available parking space. Of the 3% that responded "Other" three-quarters of these individuals indicated that search times were largely reliant on what time of day they were coming downtown.

Roughly 80% of the survey respondents described the physical quality of the parking facilities such as lighting, cleanliness, signage, and general condition, as "average" or better. However, that still left one in every five (20%) respondents indicating they felt the City's parking facilities were in below average condition.

When asked, roughly 49% of respondents felt the signage leading drivers to parking facilities was clear and easy to understand, while 24% indicated they did not feel the signage was adequate. Another 27% indicated they were unsure if the current signage was sufficient. **These results suggest the current signage system requires review and possible augmentation to reach and make an impression on the majority of the population.**

Roughly 28% of respondents indicated they felt there was an adequate supply of handicapped accessible spaces in downtown, while only 10% stated they felt the supply was inadequate. Almost 60% of respondents indicated they were unsure with many commenting that they felt there may be enough accessible parking spaces downtown, **but they may be located in the wrong places relative to need.** Many respondents also indicated **they felt that placard abuse, not an inadequate supply, contributed to the impression there may not be enough accessible spaces.**

Respondents were asked to rank, in order from 'not a problem' (1) to 'major problem' (7), what they felt was the greatest parking challenge currently impacting downtown from the following statements:

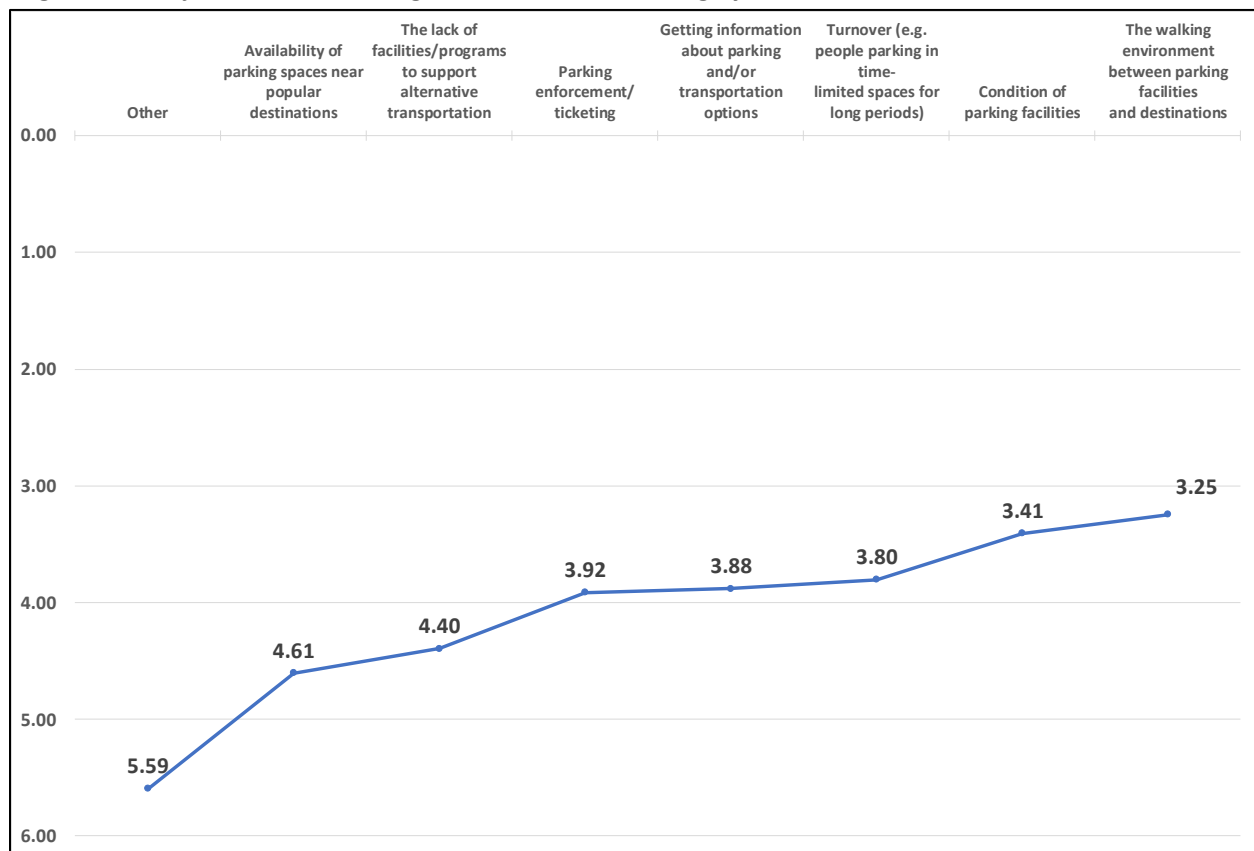
- Availability of parking spaces near popular destinations;
- Parking enforcement/ ticketing;
- Turnover (e.g. people parking over posted time limits or for long periods);
- The condition of public parking facilities;
- The walking environment between parking facilities and destinations;



- The lack of facilities/ programs to support alternative transportation modes;
- Getting information about downtown parking and/or transportation options;
- Other.

Within this question, the higher the ranking or scoring, the more respondents indicated that they felt a particular statement represented a major problem with the current downtown parking system. 841 respondents answered this question, while 276 skipped it. Responses are shown in **Figure 11**.

Figure 11: Major Problems Facing the Downtown Parking System



The largest response was for “Other”, indicating that respondents felt their most acute concern was not captured in the other seven statements. A total of 156 respondents selected “Other” and entered comments, which can be grouped into one of eight themes, which included:

- *Safety and security.* Many of these comments were more focused on the concentration of homeless in the downtown area or panhandling, although lighting conditions in the City’s garages were noted several times.
- *Parking facility conditions.* These comments were focused on the cleanliness of public parking facilities, drainage issues and ponding after precipitation, and snow removal.
- *Mix of parking spaces.* This drew the most comments, the majority of which were advocating for the provision of more long-term and/or permit parking or more short-term parking in the city’s

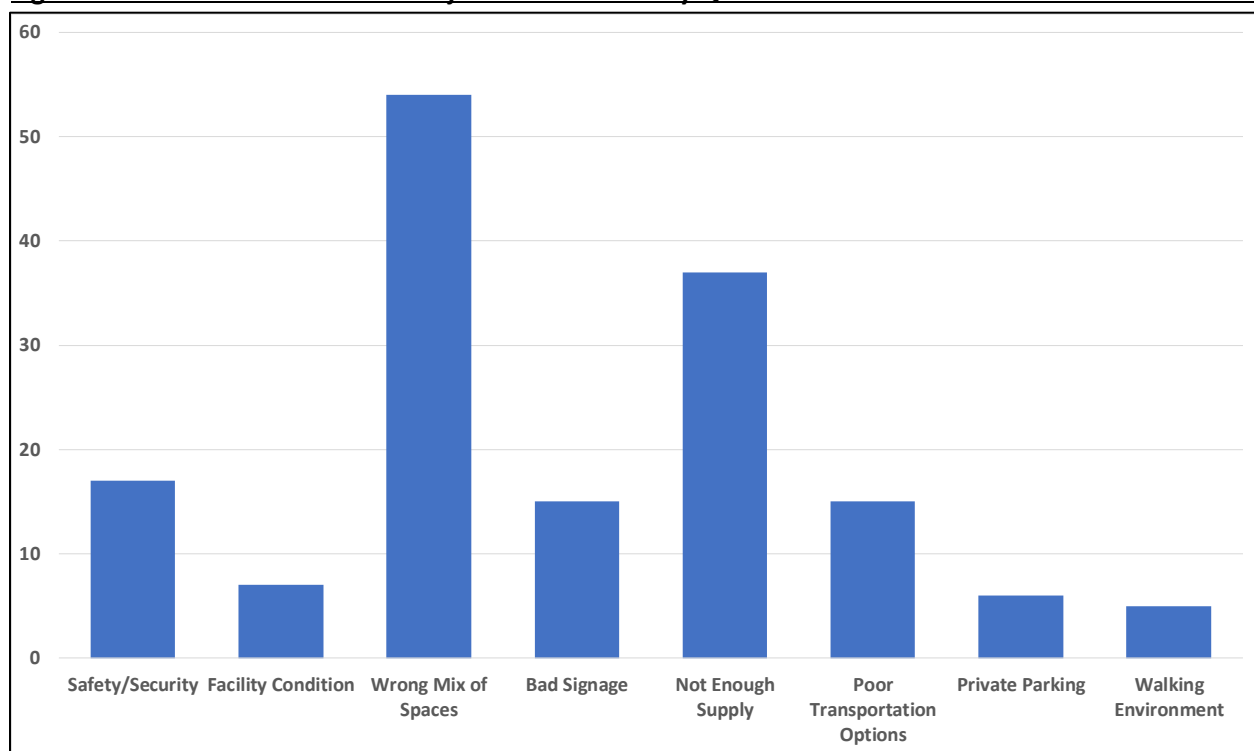


parking decks in equal measure. There were also multiple comments about the need for more handicapped accessible parking across downtown.

- *Bad signage.* Roughly 10% of the respondents selecting “Other” remarked that they felt the downtown parking wayfinding system was inadequate and needed improvement.
- *Not enough supply.* About 24% of respondents choosing “Other” offered general comments that they felt there were either not enough parking spaces near popular destinations or simply not enough parking capacity altogether in downtown Harrisonburg.
- *Poor transportation options.* Approximately 10% of respondents selecting “Other” followed up with comments indicating the City should be doing more to promote alternative transportation modes, with the majority of these comments focused on improving bicycling infrastructure.
- *Private parking facilities.* A handful of respondents stated they felt that the proliferation or poor management of private parking facilities represented a major challenge to downtown.
- *Walking environment.* A handful of respondents indicated they felt attention should be focused on improving downtown to support more pedestrian traffic, including widening sidewalks, introducing elevated crosswalks on busy streets as traffic calming devices, and improving streetscapes to create a more inviting walking environment.

Figure 12 shows the distribution of “Other” responses.

Figure 12: Comment Themes for Major Problems Survey Question

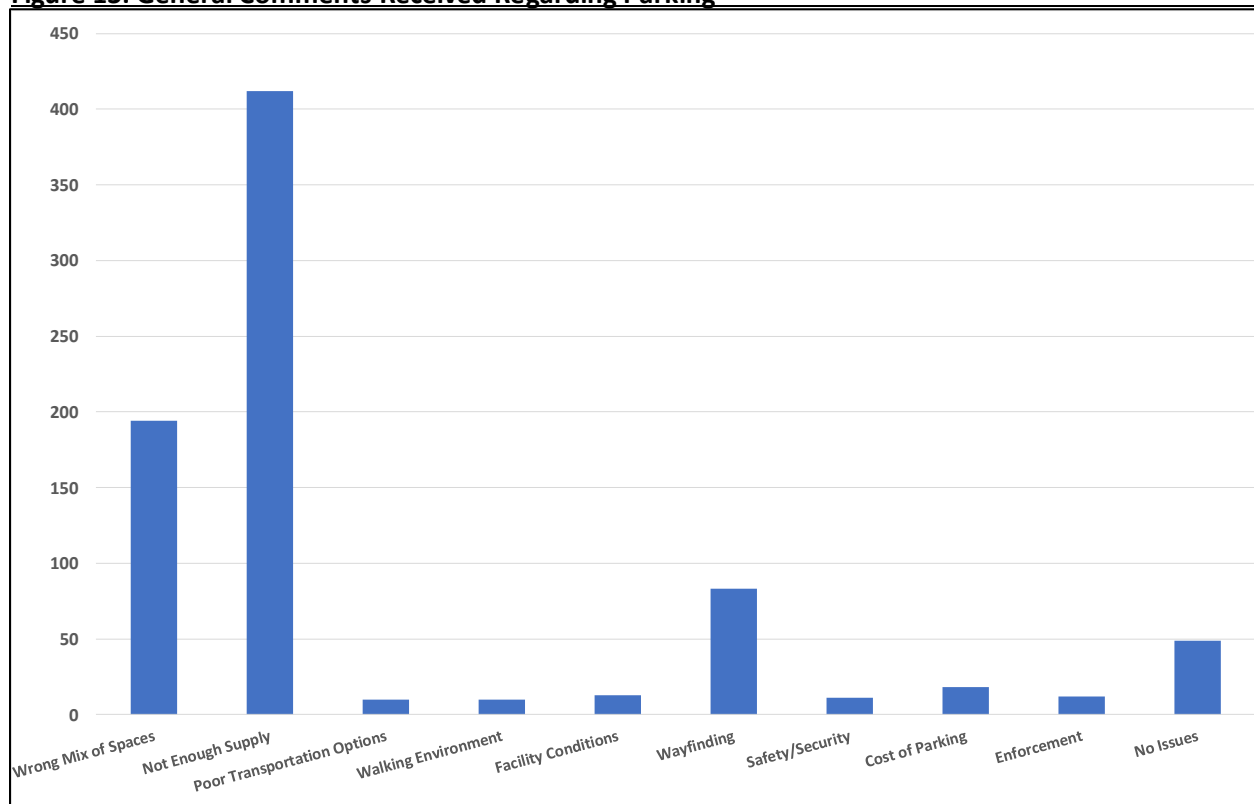


The second most significant problem facing downtown was the lack of availability of parking spaces near popular destinations, followed by a lack of facilities or programs to support alternative transportation modes.



At the conclusion of the survey, respondents were asked if they had any additional thoughts or insights they would like to share. While 664 respondents declined to make additional statements, 453 respondents elected to submit 763 comments to this invitation. While these comments covered a diverse range of topics and sentiments, many of them were reiterations or expansions on responses to the question asking individuals to identify the biggest challenges facing downtown. As such, the comments could be organized into one of ten general themes, as shown in **Figure 13**.

Figure 13: General Comments Received Regarding Parking



Second Public Meeting

The second public meeting was established to present the findings of the parking study and promote the long-list of recommendations developed for the City. The first component of the meeting was to present the analysis conducted by DESMAN and review the information that was derived from the study. The presentation also included a further evaluation of the initiatives that DESMAN concluded to be applicable to the City of Harrisonburg.

The main initiatives that were presented and solicited for feedback for the public were:

- Parking Requirements
- Improved Maintenance and Management Practices of Off-street facilities
- Enhanced Wayfinding and Parking Guidance
- Public Parking Supply Expansion Options



- Promoting Shared Parking
- Simplify Parking Time Limits
- Improve Enforcement and Other Services
- Support Alternative Transportation Modes
- Investigate Paid Parking

After the presentation a brief Q&A was held to allow the public to provide input on the study as well as offer any perspectives that were not considered or opinions on the long list recommendations. Through use of displays and various images, the concepts were communicated to the public in attendance. Additionally, DESMAN staff and City Staff were available to discuss the listed initiatives and provide clarification where required.

Some considerations that were presented that were not originally explored in the scope of the study were the placement of Handicap parking spaces, or ADA parking spaces, on street throughout the downtown. This is an example of one concern that was brought to light through these meetings, but was not fully explored over the course of the study. Attention should be paid to the ADA policies in the future to ensure downtown has the necessary number of handicapped spaces to accommodate the needs of those users.

In a similar fashion to the first public meeting, another survey was distributed to garner feedback on which initiatives presented seemed most reasonable. These survey responses assisted in the crafting of the short-list of recommendations to the city.

The feedback received by DESMAN during the stakeholder and public meetings, along with the responses to the online survey, helped inform our analysis of the existing and future parking conditions in downtown Harrisonburg. In addition, as we formulate recommendations to address existing and potential future parking issues, we continued to reference the public input received in order to ensure that the concerns of citizens are being addressed in the Harrisonburg Downtown Parking Plan and future Master Plan.



5. FUTURE NEEDS ASSESSMENT

In order to project future demand, DESMAN developed a parking demand model specific to the defined study area.

Methodology

DESMAN employed the Shared Parking methodology recommended by the Urban Land Institute (ULI). This methodology is based on parking demand ratios developed from empirical study of existing land uses. The relationship between the number of spaces needed to support a land use and some critical driver representing the land use is expressed as a ratio of parking spaces needed per metric. For example, the Urban Land Institute has determined that a typical soft-goods retail store needs between 3.50 and 4.00 spaces per 1,000 square feet of Gross Leasable Area (GLA). The ULI developed this ratio by studying many retail stores over a period of years and isolating the busiest hour of the busiest day of the year for each observation, then calculating the number of spaces occupied at that time and comparing it to the total square footage of each store.

Similar studies were performed for restaurants, banks, health clubs, office buildings, theaters, residential properties, institutions and all other manner of land use. **Table 9** shows the land uses occurring in downtown Harrisonburg and the corresponding demand ratio recommended by ULI for each one.

Table 9: Base Parking Demand Ratios

Land Use	User Group	Weekday	Weekend	Unit	Source
Standard Retail	Customer	2.90	3.20	/ksf GLA	Parking Generation: 5th Edition . Washington DC: ITE - Institute of Transportation Engineers , 2019
	Employee	0.70	0.80	/ksf GLA	Parking Generation: 5th Edition . Washington DC: ITE - Institute of Transportation Engineers , 2019
Standard Grocery	Customer	3.80	4.90	/ksf GLA	DESMAN Inc. (proprietary information).
	Employee	1.00	0.90	/ksf GLA	DESMAN Inc. (proprietary information).
Fine/Casual Dining	Customer	15.25	17.00	/ksf GLA	Parking Generation: 5th Edition . Washington DC: ITE - Institute of Transportation Engineers , 2019
	Employee	2.75	3.00	/ksf GLA	Parking Generation: 5th Edition . Washington DC: ITE - Institute of Transportation Engineers , 2019
Fast Casual Dining	Customer	9.00	12.75	/ksf GLA	Parking Generation: 5th Edition . Washington DC: ITE - Institute of Transportation Engineers , 2019
	Employee	1.50	2.25	/ksf GLA	Parking Generation: 5th Edition . Washington DC: ITE - Institute of Transportation Engineers , 2019
Café/Take Out	Customer	12.25	12.00	/ksf GLA	Parking Generation: 5th Edition . Washington DC: ITE - Institute of Transportation Engineers , 2019
	Employee	2.25	2.00	/ksf GLA	Parking Generation: 5th Edition . Washington DC: ITE - Institute of Transportation Engineers , 2019
Bank	Customer	3.00	3.00	/ksf GFA	Parking Requirements for Shopping Centers: 2nd Edition . Washington DC: ULI - The Urban Land Institute , 1999.
	Employee	1.60	1.60	/ksf GFA	Parking Requirements for Shopping Centers: 2nd Edition . Washington DC: ULI - The Urban Land Institute , 1999.
Hotel	Visitor	1.00	0.90	/room	Shared Parking: 2nd Edition . Washington DC: ULI - Urban Land Institute , 2005
	Employee	0.20	0.18	/room	Shared Parking: 2nd Edition . Washington DC: ULI - Urban Land Institute , 2005
Health Club	Customer	6.60	5.50	/ksf GLA	John W. Dorsett, "Parking Requirements for Health Clubs" <i>The Parking Professional</i> April 2004
	Employee	0.40	0.25	/ksf GLA	John W. Dorsett, "Parking Requirements for Health Clubs" <i>The Parking Professional</i> April 2004
Institutional	Visitor	3.69	1.14	/ksf GLA	Parking Generation: 5th Edition . Washington DC: ITE - Institute of Transportation Engineers , 2019
	Employee	0.65	0.20	/ksf GLA	Parking Generation: 5th Edition . Washington DC: ITE - Institute of Transportation Engineers , 2019
Residential - Rental	Resident	1.00	1.00	/unit	Shared Parking: 2nd Edition . Washington DC: ULI - Urban Land Institute , 2005
Residential - Owned	Resident	2.00	2.00	/unit	Shared Parking: 2nd Edition . Washington DC: ULI - Urban Land Institute , 2005
	Reserved	0.00	0.00	/unit	Shared Parking: 2nd Edition . Washington DC: ULI - Urban Land Institute , 2005
	Guest	0.10	0.10	/unit	Shared Parking: 2nd Edition . Washington DC: ULI - Urban Land Institute , 2005
General Office	Visitor	0.30	0.03	/ksf GFA	Parking Generation: 5th Edition . Washington DC: ITE - Institute of Transportation Engineers , 2019
	Employee	3.50	0.35	/ksf GFA	Parking Generation: 5th Edition . Washington DC: ITE - Institute of Transportation Engineers , 2019
Performing Arts Theater	Visitor	0.30	0.33	/seat	Shared Parking: 2nd Edition . Washington DC: ULI - Urban Land Institute , 2005
	Employee	0.07	0.07	/seat	Shared Parking: 2nd Edition . Washington DC: ULI - Urban Land Institute , 2005
Light Industrial	Visitor	0.39	0.36	/ksf GFA	Parking Generation: 5th Edition . Washington DC: ITE - Institute of Transportation Engineers , 2019
	Employee	1.55	1.44	/ksf GFA	Parking Generation: 5th Edition . Washington DC: ITE - Institute of Transportation Engineers , 2019
Manufacturing	Visitor	0.67	0.67	/ksf GFA	Parking Generation: 5th Edition . Washington DC: ITE - Institute of Transportation Engineers , 2019
	Employee	2.69	2.69	/ksf GFA	Parking Generation: 5th Edition . Washington DC: ITE - Institute of Transportation Engineers , 2019
Library	Visitor	3.81	1.50	/ksf GFA	Parking Generation: 5th Edition . Washington DC: ITE - Institute of Transportation Engineers , 2019
	Employee	0.67	0.27	/ksf GFA	Parking Generation: 5th Edition . Washington DC: ITE - Institute of Transportation Engineers , 2019
Church	Visitor	0.37	0.37	/ksf GFA	Parking Generation: 5th Edition . Washington DC: ITE - Institute of Transportation Engineers , 2019
	Employee	0.04	0.04	/ksf GFA	Parking Generation: 5th Edition . Washington DC: ITE - Institute of Transportation Engineers , 2019
Medical Office	Visitor	3.00	0.73	/ksf GFA	Shared Parking: 2nd Edition . Washington DC: ULI - Urban Land Institute , 2005
	Employee	1.60	0.39	/ksf GFA	Shared Parking: 2nd Edition . Washington DC: ULI - Urban Land Institute , 2005
Warehouse	Visitor	2.35	0.14	/ksf GFA	Parking Generation: 5th Edition . Washington DC: ITE - Institute of Transportation Engineers , 2019
	Employee	0.00	0.00	/ksf GFA	Parking Generation: 5th Edition . Washington DC: ITE - Institute of Transportation Engineers , 2019



The ULI employs an 85th percentile standard for ratios, which is to say that the recommended ratio represents the 85th percentile of the range of data points. In layman’s terms, this means only 15% of all observations exceeded this standard and 85% fell below. The 85th percentile is employed in traffic engineering because it results in a roadway that can carry planned traffic loads expediently under all but the most extreme and rare conditions. For a parking supply, it means that the planned parking supply should be adequate under nearly all foreseeable conditions in the future.

The demand ratios recommended by the ULI are based on the study of stand-alone buildings with their own dedicated parking supply and no transit service. The ULI model works by taking a base ratio, modifying it to reflect local conditions and then applying it to the measure of a land use. As the preceding table shows, most land uses are calculated on a number of spaces per every 1,000 square feet of area basis. Some land uses are tied to other metrics, such as the total number of students or employees, residential units, hotel rooms, or seats. The ULI recommends that these ratios be adjusted to reflect local conditions.

There are three adjustments that are employed:

1. A **modal adjustment**, which reflects the percentage of a population likely to drive themselves to a destination within the study area. A 100% modal adjustment assumes every user will drive by themselves to their destination. Any reduction off of this represents some percentage of the population likely to arrive by other modes such as walking, biking, rideshare, transit, etc.
2. A **capture adjustment**, which reflects the percentage of a population already captive within the study area who are likely to patronize another land use in the same area. For example, the office worker who steps over to the local coffee shop on break is already ‘captured’ by the office building they work in; most likely their vehicle is parked adjacent to it. The trip to the coffee shop is not adding to parking demand in the study area, nor does it impose additional need for parking on the coffee shop. Any number applied as an adjustment below 100% assumes that some percentage of the users associated with one land use are actually captive and already accounted for in the demand projections associated with another land use.
3. A **local adjustment**, which reflects the variance between demand projected by the model and actual conditions within the study area. Local adjustments are only applied when there is an adequate sample of actual occupancy counts against which model results can be compared.

DESMAN used reported modal splits for Harrisonburg employees⁴ and residents⁵ as reported in the most recent American Community Survey conducted by the U.S. Census Bureau and assumed modest (0-5%, depending on the land use) modal adjustments within the model for patrons and visitors. Capture adjustments were also nominal (5-25%) for retail, restaurant, and institutional land uses on weekdays, decreasing on weekday evenings and weekends as the number of captive users (largely office workers and other employees plus downtown residents) declined.

Local adjustments were based solely on a comparison between observed conditions in April 2019 and model outputs. Working with City of Harrisonburg officials, DESMAN developed a land use inventory of all existing buildings within the study area. DESMAN used GIS records as a base to establish building size

⁴ As reported according to Journey to Work responses.

⁵ As reported as the number of households without a vehicle.



and general land uses, performed site visits as needed, confirmed building dimensions by aerial photographs as needed, and prepared a property-by-property accounting of each building by land use within the defined study area. According to DESMAN’s best estimates, within the study area are the following land uses:

- Approximately 343,234 square feet of soft-goods retail space;
- A 9,250-square foot grocery store;
- Roughly 121,000 square feet of restaurants;
- Just over 69,000 square feet of bank;
- A small inn of five rooms;
- Roughly 7,200 square feet of health club or fitness facility;
- Just under 320,000 square feet of institutional space, which include courthouses and other governmental buildings, non-profit offices, and James Madison University buildings;
- Slightly more than 667,000 square feet of office space;
- 646 rental residential units;
- A 260-seat performing arts theater;
- Roughly 131,000 square feet of industrial or manufacturing space;
- 30,000 square feet of library;
- Almost 183,000 square feet of church;
- Slightly less than 19,000 square feet of medical office or clinical space, and;
- Roughly 32,000 square feet of warehouse space.

DESMAN entered the land use inventory into the parking demand model and compared those projections to field observations performed in April 2019. DESMAN entered local adjustment factors of 0.73 for weekdays and 0.92 for weekend evenings to align the model with observed existing conditions. These adjustments can reflect land use vacancy rates, differences between estimated capture and modal split and actual conditions, and/or variances between the 85th percentile and actual performance. It should be noted that DESMAN did not assume any local adjustments relative to weekend projections, as no data regarding actual occupancy for this time period was provided. A complete accounting of all applied adjustment factors is included on the following page as **Table 10**, next page.

Once calibrated, the model was then ready to receive inputs representing emerging developments in the area. As this data was entered into the model, the resulting projections reflected a reasonably accurate projection of future parking need associated with each development. DESMAN then used these projections to assess the adequacy of the current parking supply. Once this model was set, DESMAN could then use it to identify peak hour conditions under current conditions, as well as to assess the impact of future developments.

The model also included ULI recommended adjustments in parking demand for each land use and user group according to time of day and time of year. These adjustments, known as **presence**, reflect the percentage of demand experienced by a particular user type (i.e. patrons, visitors, employees, residents, etc.) associated with a particular land use at a particular hour of the day or month of the year, relative to the absolute highest demand recorded for that user and land use. For example, retail shopping traditionally reaches its annual zenith at mid-day on the last Saturday before Christmas. For retail uses, the presence factor for December is 100%; all other months are calculated as a percentage off this figure. Also, if the busiest hour is 2:00 PM on that Saturday, every other hour is calculated a percentage of that



peak hour. Inclusion of presence allows the parking demand model to simulate how land uses exert parking demand according to time of day, day of week, and time of year across the study area currently.

Table 10: Adjusted Parking Demand Ratios

WEEKDAYS															
DAYTIME (6:00 AM - 4:59 PM)							EVENING (5:00 PM - 12:00 AM)								
Land Use	User Group	Base Ratio	Modal Adj.	Capture Adj.	Local Adj.	Project Ratio	Unit	Land Use	User Group	Base Ratio	Modal Adj.	Capture Adj.	Local Adj.	Project Ratio	Unit
Standard Retail	Customer	2.90	0.95	0.85	0.73	1.71	/ksf GLA	Standard Retail	Customer	2.90	0.95	0.90	0.92	2.28	/ksf GLA
	Employee	0.70	0.78	1.00	0.73	0.40	/ksf GLA		Employee	0.70	0.78	1.00	0.92	0.50	/ksf GLA
Standard Grocery	Customer	3.80	0.95	0.85	0.73	2.24	/ksf GLA	Standard Grocery	Customer	3.80	0.95	0.90	0.92	2.99	/ksf GLA
	Employee	1.00	0.78	1.00	0.73	0.57	/ksf GLA		Employee	1.00	0.78	1.00	0.92	0.72	/ksf GLA
Fine/Casual Dining	Customer	15.25	0.95	0.85	0.73	8.99	/ksf GLA	Fine/Casual Dining	Customer	15.25	0.95	0.90	0.92	12.00	/ksf GLA
	Employee	2.75	0.78	1.00	0.73	1.56	/ksf GLA		Employee	2.75	0.78	1.00	0.92	1.97	/ksf GLA
Fast Casual Dining	Customer	9.00	0.95	0.85	0.73	5.31	/ksf GLA	Fast Casual Dining	Customer	9.00	0.95	0.90	0.92	7.08	/ksf GLA
	Employee	1.50	0.78	1.00	0.73	0.85	/ksf GLA		Employee	1.50	0.78	1.00	0.92	1.07	/ksf GLA
Café/Take Out	Customer	12.25	0.95	0.75	0.73	6.37	/ksf GLA	Café/Take Out	Customer	12.25	0.95	0.85	0.92	9.10	/ksf GLA
	Employee	2.25	0.78	1.00	0.73	1.28	/ksf GLA		Employee	2.25	0.78	1.00	0.92	1.61	/ksf GLA
Bank	Customer	3.00	0.95	0.85	0.73	1.77	/ksf GFA	Bank	Customer	3.00	0.95	0.90	0.92	2.36	/ksf GFA
	Employee	1.60	0.78	1.00	0.73	0.91	/ksf GFA		Employee	1.60	0.78	1.00	0.92	1.14	/ksf GFA
Hotel	Visitor	1.00	0.95	1.00	0.73	0.71	/room	Hotel	Visitor	1.00	0.95	1.00	0.92	0.87	/room
	Employee	0.25	0.78	1.00	0.73	0.14	/room		Employee	0.25	0.78	1.00	0.92	0.18	/room
Health Club	Customer	6.60	0.95	0.85	0.73	3.89	/ksf GLA	Health Club	Customer	6.60	0.95	0.90	0.92	5.19	/ksf GLA
	Employee	0.40	0.78	1.00	0.73	0.23	/ksf GLA		Employee	0.40	0.78	1.00	0.92	0.29	/ksf GLA
Institutional	Visitor	3.69	0.95	0.90	0.73	2.30	/ksf GLA	Institutional	Visitor	3.69	0.95	0.95	0.92	3.06	/ksf GLA
	Employee	0.65	0.78	1.00	0.73	0.37	/ksf GLA		Employee	0.65	0.78	1.00	0.92	0.46	/ksf GLA
Residential - Rental	Resident	1.00	0.94	1.00	0.73	0.68	/unit	Residential - Rental	Resident	1.00	0.94	1.00	0.92	0.86	/unit
	Residential - Owned	Resident	2.00	0.94	1.00	0.73	1.37		/unit	Residential - Owned	Resident	2.00	0.94	1.00	0.92
Residential - Owned	Reserved	0.00	0.94	1.00	0.73	0.00	/unit	Residential - Owned	Reserved	0.00	0.94	1.00	0.92	0.00	/unit
	Guest	0.10	0.95	1.00	0.73	0.07	/unit		Guest	0.10	0.95	1.00	0.92	0.09	/unit
General Office	Visitor	0.30	0.95	1.00	0.73	0.21	/ksf GFA	General Office	Visitor	0.30	0.95	1.00	0.92	2.56	/ksf GFA
	Employee	3.50	0.78	1.00	0.73	1.99	/ksf GFA		Employee	3.50	0.78	1.00	0.92	2.50	/ksf GFA
Performing Arts Theater	Visitor	0.30	0.95	1.00	0.73	0.21	/seat	Performing Arts Theater	Visitor	0.30	0.95	1.00	0.92	2.60	/seat
	Employee	0.07	0.78	1.00	0.73	0.04	/seat		Employee	0.07	0.78	1.00	0.92	0.05	/seat
Light Industrial	Visitor	0.39	0.95	1.00	0.73	0.27	/ksf GFA	Light Industrial	Visitor	0.39	0.95	1.00	0.92	0.34	/ksf GFA
	Employee	1.55	0.78	1.00	0.73	0.88	/ksf GFA		Employee	1.55	0.78	1.00	0.92	1.11	/ksf GFA
Library	Visitor	3.81	0.95	0.90	0.73	2.38	/ksf GFA	Library	Visitor	3.81	0.95	0.95	0.92	3.16	/ksf GFA
	Employee	0.67	0.78	1.00	0.73	0.38	/ksf GFA		Employee	0.67	0.78	1.00	0.92	0.48	/ksf GFA
Church	Visitor	0.37	0.95	1.00	0.73	0.26	/ksf GFA	Church	Visitor	0.37	0.95	1.00	0.92	0.32	/ksf GFA
	Employee	0.04	0.78	1.00	0.73	0.02	/ksf GFA		Employee	0.04	0.78	1.00	0.92	0.03	/ksf GFA
Medical Office	Visitor	3.00	0.95	1.00	0.73	2.08	/ksf GFA	Medical Office	Visitor	3.00	0.95	1.00	0.92	2.62	/ksf GFA
	Employee	1.60	0.78	1.00	0.73	0.91	/ksf GFA		Employee	1.60	0.78	1.00	0.92	1.14	/ksf GFA
Warehouse	Visitor	2.35	0.95	1.00	0.73	1.63	/ksf GFA	Warehouse	Visitor	2.35	0.95	1.00	0.92	2.05	/ksf GFA
	Employee	0.00	0.78	1.00	0.73	0.00	/ksf GFA		Employee	0.00	0.78	1.00	0.92	0.00	/ksf GFA

WEEKENDS															
DAYTIME (6:00 AM - 4:59 PM)							EVENING (5:00 PM - 12:00 AM)								
Land Use	User Group	Base Ratio	Modal Adj.	Capture Adj.	Local Adj.	Project Ratio	Unit	Land Use	User Group	Base Ratio	Modal Adj.	Capture Adj.	Local Adj.	Project Ratio	Unit
Standard Retail	Customer	3.20	0.95	0.95	1.00	2.89	/ksf GLA	Standard Retail	Customer	3.20	0.95	0.95	1.00	2.89	/ksf GLA
	Employee	0.80	0.78	1.00	1.00	0.62	/ksf GLA		Employee	0.80	0.78	1.00	1.00	0.62	/ksf GLA
Standard Grocery	Customer	4.90	0.95	0.95	1.00	4.42	/ksf GLA	Standard Grocery	Customer	4.90	0.95	0.95	1.00	4.42	/ksf GLA
	Employee	0.90	0.78	1.00	1.00	0.70	/ksf GLA		Employee	0.90	0.78	1.00	1.00	0.70	/ksf GLA
Fine/Casual Dining	Customer	17.00	0.95	0.95	1.00	15.34	/ksf GLA	Fine/Casual Dining	Customer	17.00	0.95	0.95	1.00	15.34	/ksf GLA
	Employee	3.00	0.78	1.00	1.00	2.33	/ksf GLA		Employee	3.00	0.78	1.00	1.00	2.33	/ksf GLA
Fast Casual Dining	Customer	12.75	0.95	0.95	1.00	11.51	/ksf GLA	Fast Casual Dining	Customer	12.75	0.95	0.95	1.00	11.51	/ksf GLA
	Employee	2.25	0.78	1.00	1.00	1.75	/ksf GLA		Employee	2.25	0.78	1.00	1.00	1.75	/ksf GLA
Café/Take Out	Customer	12.00	0.95	0.90	1.00	10.26	/ksf GLA	Café/Take Out	Customer	12.00	0.95	0.90	1.00	10.26	/ksf GLA
	Employee	2.00	0.78	1.00	1.00	1.56	/ksf GLA		Employee	2.00	0.78	1.00	1.00	1.56	/ksf GLA
Bank	Customer	3.00	0.95	0.95	1.00	2.71	/ksf GFA	Bank	Customer	3.00	0.95	0.95	1.00	2.71	/ksf GFA
	Employee	1.60	0.78	1.00	1.00	1.24	/ksf GFA		Employee	1.60	0.78	1.00	1.00	1.24	/ksf GFA
Hotel	Visitor	0.90	0.95	1.00	1.00	0.68	/room	Hotel	Visitor	0.90	0.95	1.00	1.00	0.68	/room
	Employee	0.18	0.78	1.00	1.00	0.10	/room		Employee	0.18	0.78	1.00	1.00	0.10	/room
Health Club	Customer	5.50	0.95	0.95	1.00	4.96	/ksf GLA	Health Club	Customer	5.50	0.95	0.95	1.00	4.96	/ksf GLA
	Employee	0.25	0.78	1.00	1.00	0.19	/ksf GLA		Employee	0.25	0.78	1.00	1.00	0.19	/ksf GLA
Institutional	Visitor	1.14	0.95	1.00	1.00	1.08	/ksf GLA	Institutional	Visitor	1.14	0.95	1.00	1.00	1.08	/ksf GLA
	Employee	0.20	0.78	1.00	1.00	0.16	/ksf GLA		Employee	0.20	0.78	1.00	1.00	0.16	/ksf GLA
Residential - Rental	Resident	1.00	0.94	1.00	1.00	0.94	/unit	Residential - Rental	Resident	1.00	0.94	1.00	1.00	0.94	/unit
	Residential - Owned	Resident	2.00	0.94	1.00	1.00	1.87		/unit	Residential - Owned	Resident	2.00	0.94	1.00	1.00
Residential - Owned	Reserved	0.00	0.94	1.00	1.00	0.00	/unit	Residential - Owned	Reserved	0.00	0.94	1.00	1.00	0.00	/unit
	Guest	0.10	0.95	1.00	1.00	0.10	/unit		Guest	0.10	0.95	1.00	1.00	0.10	/unit
General Office	Visitor	0.03	0.95	1.00	1.00	0.03	/ksf GFA	General Office	Visitor	0.03	0.95	1.00	1.00	0.03	/ksf GFA
	Employee	0.35	0.78	1.00	1.00	0.27	/ksf GFA		Employee	0.35	0.78	1.00	1.00	0.27	/ksf GFA
Performing Arts Theater	Visitor	0.33	0.95	1.00	1.00	0.31	/seat	Performing Arts Theater	Visitor	0.33	0.95	1.00	1.00	0.31	/seat
	Employee	0.07	0.78	1.00	1.00	0.05	/seat		Employee	0.07	0.78	1.00	1.00	0.05	/seat
Light Industrial	Visitor	0.36	0.95	1.00	1.00	0.34	/ksf GFA	Light Industrial	Visitor	0.36	0.95	1.00	1.00	0.34	/ksf GFA
	Employee	1.44	0.78	1.00	1.00	1.12	/ksf GFA		Employee	1.44	0.78	1.00	1.00	1.12	/ksf GFA
Library	Visitor	1.50	0.95	1.00	1.00	1.43	/ksf GFA	Library	Visitor	1.50	0.95	1.00	1.00	1.43	/ksf GFA
	Employee	0.27	0.78	1.00	1.00	0.21	/ksf GFA		Employee	0.27	0.78	1.00	1.00	0.21	/ksf GFA
Church	Visitor	0.37	0.95	1.00	1.00	0.35	/ksf GFA	Church	Visitor	0.37	0.95	1.00	1.00	0.35	/ksf GFA
	Employee	0.04	0.78	1.00	1.00	0.03	/ksf GFA		Employee	0.04	0.78	1.00	1.00	0.03	/ksf GFA
Medical Office	Visitor	0.73	0.95	1.00	1.00	0.69	/ksf GFA	Medical Office	Visitor	0.73	0.95	1.00	1.00	0.69	/ksf GFA
	Employee	0.39	0.78	1.00	1.00	0.30	/ksf GFA		Employee	0.39	0.78	1.00	1.00	0.30	/ksf GFA
Warehouse	Visitor	0.14	0.95	1.00	1.00	0.13	/ksf GFA	Warehouse	Visitor	0.14	0.95	1.00	1.00	0.13	/ksf GFA
	Employee	0.00	0.78	1.00	1.00	0.00	/ksf GFA		Employee	0.00	0.78	1.00	1.00	0.00	/ksf GFA



Applied presence factors for time of day by weekday and weekend day and time of year are presented in Tables 11, 12, and 13 on the following pages.

Table 11: Applied Presence Factors for Time of Year

Land Use	User Group	January	February	March	April	May	June	July	August	September	October	November	December	Holidays
Standard Retail	Customer	75%	64%	64%	77%	86%	63%	57%	56%	100%	80%	75%	80%	64%
	Employee	80%	90%	90%	90%	80%	60%	55%	50%	100%	90%	80%	90%	90%
Standard Grocery	Customer	87%	89%	93%	96%	94%	88%	83%	79%	100%	94%	91%	95%	93%
	Employee	85%	85%	85%	85%	85%	87%	87%	87%	100%	90%	100%	100%	85%
Fine/Casual Dining	Customer	96%	99%	93%	92%	97%	83%	84%	91%	92%	97%	95%	100%	95%
	Employee	100%	100%	100%	100%	100%	95%	95%	100%	100%	100%	100%	100%	100%
Fast Casual Dining	Customer	86%	87%	97%	95%	100%	87%	84%	79%	95%	90%	92%	100%	95%
	Employee	100%	100%	100%	100%	100%	90%	85%	80%	100%	100%	100%	100%	100%
Café/Take Out	Customer	85%	90%	95%	100%	100%	75%	70%	65%	95%	100%	95%	90%	80%
	Employee	85%	90%	95%	100%	100%	75%	70%	65%	95%	100%	100%	100%	75%
Bank	Customer	95%	95%	95%	95%	100%	85%	80%	75%	100%	95%	95%	80%	75%
	Employee	95%	95%	95%	100%	100%	85%	80%	75%	100%	100%	100%	90%	80%
Hotel	Visitor	81%	85%	91%	90%	100%	92%	90%	88%	100%	95%	85%	87%	50%
	Employee	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Health Club	Customer	100%	95%	85%	80%	75%	65%	60%	65%	70%	75%	85%	90%	95%
	Employee	100%	100%	100%	100%	100%	95%	95%	95%	100%	100%	100%	100%	100%
Institutional	Visitor	100%	95%	90%	100%	100%	33%	33%	36%	100%	100%	90%	95%	25%
	Employee	100%	100%	100%	100%	100%	50%	45%	48%	100%	100%	100%	100%	33%
Residential - Rental	Resident	100%	100%	100%	100%	100%	85%	80%	73%	100%	95%	95%	90%	85%
Residential - Owned	Resident	100%	100%	100%	100%	100%	95%	90%	93%	95%	100%	95%	90%	85%
	Reserved	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Guest	100%	100%	100%	100%	100%	95%	90%	90%	95%	100%	95%	90%	85%
General Office	Visitor	100%	99%	97%	100%	95%	95%	90%	93%	95%	100%	100%	97%	80%
	Employee	100%	99%	97%	100%	95%	95%	90%	93%	100%	100%	100%	97%	80%
Performing Arts Theater	Visitor	90%	95%	100%	95%	90%	80%	70%	60%	90%	90%	90%	100%	100%
	Employee	100%	100%	100%	100%	100%	90%	80%	70%	100%	100%	100%	100%	100%
Light Industrial	Visitor	100%	100%	100%	100%	97%	95%	93%	91%	95%	100%	100%	100%	90%
	Employee	100%	100%	100%	100%	97%	95%	93%	91%	95%	100%	100%	100%	90%
Library	Visitor	90%	95%	97%	99%	97%	90%	85%	80%	95%	95%	90%	85%	80%
	Employee	100%	100%	100%	100%	100%	95%	90%	85%	100%	100%	100%	95%	90%
Church	Visitor	90%	85%	90%	100%	90%	80%	70%	60%	80%	90%	90%	100%	100%
	Employee	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Medical Office	Visitor	90%	95%	100%	90%	85%	85%	80%	85%	90%	95%	99%	90%	85%
	Employee	100%	95%	100%	95%	93%	90%	87%	85%	90%	95%	97%	99%	95%
Warehouse	Visitor	95%	90%	85%	90%	95%	90%	80%	90%	100%	95%	90%	95%	90%
	Employee	100%	100%	100%	100%	100%	100%	100%	100%	100%	95%	90%	95%	90%

Source: Urban Land Institute, DESMAN Inc.



Table 12: Applied Presence Factors for Time of Day on a Weekday

Land Use	User Group	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM	12:00 AM
Standard Retail (Typical)	Customer	1%	5%	25%	35%	45%	65%	75%	100%	95%	90%	90%	90%	80%	75%	65%	60%	45%	15%	0%
	Employee	10%	15%	50%	65%	70%	80%	90%	100%	100%	100%	100%	95%	95%	95%	90%	75%	40%	15%	0%
Standard Retail (December)	Customer	1%	5%	30%	30%	55%	75%	85%	95%	100%	100%	100%	95%	80%	75%	75%	50%	30%	10%	0%
	Employee	10%	15%	55%	75%	85%	95%	100%	100%	100%	100%	100%	95%	95%	95%	90%	75%	40%	15%	0%
Standard Retail (Holidays)	Customer	1%	5%	30%	20%	40%	65%	90%	100%	100%	100%	95%	85%	70%	55%	55%	35%	25%	10%	0%
	Employee	10%	15%	55%	75%	85%	95%	100%	100%	100%	100%	95%	95%	95%	95%	90%	75%	40%	15%	0%
Standard Grocery	Customer	9%	17%	33%	71%	92%	100%	88%	63%	54%	42%	35%	56%	70%	54%	31%	18%	4%	0%	0%
	Employee	10%	20%	40%	80%	90%	100%	100%	100%	100%	100%	100%	90%	80%	50%	35%	20%	15%	10%	5%
Fine/Casual Dining	Customer	0%	0%	0%	0%	15%	40%	75%	75%	70%	40%	50%	75%	100%	100%	95%	90%	85%	75%	25%
	Employee	0%	20%	50%	60%	80%	90%	90%	90%	90%	75%	75%	100%	100%	100%	95%	90%	90%	85%	35%
Fast Casual Dining	Customer	25%	50%	60%	70%	80%	90%	100%	90%	65%	45%	50%	65%	75%	80%	80%	75%	60%	50%	25%
	Employee	50%	75%	90%	90%	90%	100%	100%	100%	100%	75%	75%	85%	85%	85%	85%	75%	60%	50%	35%
Café/Take Out	Customer	5%	10%	55%	60%	50%	60%	100%	100%	95%	70%	75%	80%	85%	85%	75%	65%	50%	25%	15%
	Employee	15%	20%	50%	60%	70%	80%	100%	100%	95%	70%	70%	70%	80%	80%	80%	60%	50%	25%	20%
Bank	Customer	5%	10%	25%	45%	55%	80%	90%	95%	100%	95%	100%	90%	40%	20%	0%	0%	0%	0%	0%
	Employee	20%	35%	50%	75%	90%	100%	95%	100%	100%	100%	100%	100%	60%	30%	25%	15%	10%	5%	0%
Hotel	Visitor	95%	90%	80%	70%	60%	60%	55%	60%	60%	65%	70%	75%	75%	80%	85%	85%	95%	100%	100%
	Employee	5%	30%	90%	90%	100%	100%	100%	100%	100%	100%	90%	70%	40%	20%	20%	20%	20%	10%	5%
Health Club	Customer	70%	40%	90%	70%	70%	80%	60%	70%	70%	70%	80%	90%	60%	55%	40%	20%	5%	0%	0%
	Employee	75%	75%	75%	75%	75%	100%	100%	100%	100%	100%	100%	100%	100%	75%	75%	75%	75%	50%	33%
Institutional	Visitor	5%	15%	45%	50%	55%	60%	45%	30%	30%	30%	50%	70%	80%	90%	95%	80%	35%	10%	0%
	Employee	10%	20%	65%	80%	100%	100%	100%	100%	100%	85%	75%	75%	80%	85%	80%	60%	30%	15%	5%
Residential - Rental	Resident	100%	95%	90%	80%	75%	65%	55%	55%	60%	65%	70%	70%	65%	75%	80%	90%	90%	95%	100%
Residential - Owned	Resident	100%	95%	90%	80%	75%	65%	55%	55%	60%	65%	70%	70%	65%	75%	80%	90%	90%	95%	100%
	Reserved	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
General Office	Guest	50%	40%	30%	25%	20%	20%	20%	20%	20%	20%	30%	40%	60%	80%	90%	100%	100%	80%	50%
	Visitor	1%	7%	40%	80%	85%	100%	95%	90%	85%	70%	60%	25%	5%	1%	0%	0%	0%	0%	0%
Performing Arts Theater	Employee	5%	40%	90%	95%	100%	100%	90%	95%	100%	100%	90%	40%	15%	5%	4%	3%	2%	1%	0%
	Visitor	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%	50%	75%	100%	100%	90%	60%	30%
Light Industrial	Employee	0%	10%	10%	20%	20%	30%	30%	30%	30%	30%	30%	30%	100%	100%	100%	100%	90%	60%	30%
	Visitor	3%	30%	65%	85%	95%	100%	95%	95%	90%	90%	90%	50%	25%	10%	7%	3%	1%	0%	0%
Library	Employee	5%	40%	90%	95%	100%	100%	90%	95%	100%	100%	90%	40%	15%	5%	4%	3%	2%	1%	0%
	Visitor	0%	0%	0%	25%	45%	65%	95%	95%	100%	100%	100%	100%	50%	75%	80%	35%	0%	0%	0%
Church	Employee	5%	10%	25%	55%	75%	95%	100%	100%	100%	100%	100%	100%	75%	55%	15%	0%	0%	0%	0%
	Visitor	1%	7%	40%	80%	85%	100%	95%	90%	85%	70%	60%	25%	5%	1%	0%	0%	0%	0%	0%
Medical Office	Employee	5%	40%	90%	95%	100%	100%	90%	95%	100%	100%	90%	40%	15%	5%	4%	3%	2%	1%	0%
	Visitor	70%	40%	90%	70%	70%	80%	60%	70%	70%	70%	80%	90%	60%	55%	40%	20%	5%	0%	0%
Warehouse	Employee	75%	75%	75%	75%	75%	100%	100%	100%	100%	100%	100%	100%	100%	75%	75%	75%	50%	33%	0%
	Visitor	0%	0%	10%	70%	100%	80%	60%	75%	90%	85%	75%	25%	10%	0%	0%	0%	0%	0%	0%
	Employee	0%	20%	60%	95%	100%	100%	90%	95%	97%	95%	75%	45%	25%	10%	5%	3%	2%	0%	0%

Source: Urban Land Institute, DESMAN Inc.



Table 13: Applied Presence Factors for Time of Day on a Weekend

Land Use	User Group	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM	12:00 AM
Standard Retail (Typical)	Customer	1%	5%	10%	30%	40%	65%	80%	90%	95%	100%	95%	90%	80%	75%	70%	50%	35%	15%	0%
	Employee	10%	15%	40%	75%	80%	90%	95%	100%	100%	100%	100%	95%	85%	80%	75%	65%	45%	15%	0%
Standard Retail (December)	Customer	1%	5%	10%	35%	60%	70%	85%	95%	100%	100%	95%	90%	80%	75%	70%	50%	35%	15%	0%
	Employee	10%	15%	40%	75%	85%	95%	100%	100%	100%	100%	100%	95%	85%	80%	75%	65%	45%	15%	0%
Standard Retail (Holidays)	Customer	1%	5%	10%	20%	40%	60%	80%	95%	100%	100%	95%	85%	70%	60%	60%	30%	20%	10%	0%
	Employee	10%	15%	40%	75%	85%	95%	100%	100%	100%	100%	100%	95%	85%	80%	75%	65%	45%	15%	0%
Standard Grocery	Customer	7%	23%	48%	78%	100%	94%	75%	51%	47%	35%	27%	48%	62%	58%	33%	22%	13%	4%	0%
	Employee	15%	35%	70%	85%	100%	100%	100%	100%	85%	75%	60%	55%	45%	40%	30%	20%	10%	10%	5%
Fine/Casual Dining	Customer	0%	0%	0%	0%	0%	15%	50%	55%	40%	45%	45%	60%	100%	100%	100%	85%	80%	75%	50%
	Employee	0%	20%	30%	50%	60%	75%	75%	75%	75%	75%	75%	100%	100%	100%	100%	95%	90%	85%	50%
Fast Casual Dining	Customer	10%	25%	30%	60%	80%	90%	100%	85%	60%	45%	45%	60%	80%	80%	90%	80%	65%	45%	30%
	Employee	50%	60%	70%	80%	90%	100%	100%	100%	90%	75%	75%	95%	95%	95%	95%	80%	65%	65%	35%
Café/Take Out	Customer	10%	20%	40%	50%	55%	75%	100%	100%	90%	60%	55%	60%	85%	80%	80%	50%	30%	20%	5%
	Employee	15%	30%	60%	65%	70%	80%	100%	100%	95%	70%	60%	70%	90%	90%	80%	60%	40%	25%	20%
Bank	Customer	5%	10%	20%	45%	100%	80%	60%	55%	50%	40%	30%	10%	0%	0%	0%	0%	0%	0%	0%
	Employee	10%	10%	25%	50%	100%	100%	90%	100%	100%	90%	70%	50%	0%	0%	0%	0%	0%	0%	0%
Hotel	Visitor	95%	90%	80%	70%	60%	60%	55%	55%	60%	60%	65%	70%	75%	75%	80%	85%	95%	100%	100%
	Employee	5%	30%	90%	90%	100%	100%	100%	100%	100%	100%	90%	75%	60%	55%	55%	45%	45%	30%	30%
Health Club	Customer	80%	45%	50%	50%	50%	50%	50%	30%	30%	30%	55%	100%	95%	60%	30%	10%	1%	1%	0%
	Employee	75%	75%	75%	75%	75%	75%	100%	100%	100%	100%	100%	100%	100%	75%	75%	75%	75%	50%	33%
Institutional	Visitor	10%	50%	100%	100%	95%	80%	60%	55%	50%	45%	55%	70%	60%	50%	30%	15%	5%	0%	0%
	Employee	15%	50%	100%	100%	100%	90%	80%	75%	70%	65%	65%	70%	75%	75%	50%	35%	20%	10%	5%
Residential - Rental	Resident	100%	99%	97%	89%	83%	75%	70%	75%	85%	85%	87%	85%	85%	90%	97%	98%	99%	100%	100%
Residential - Owned	Resident	100%	99%	97%	89%	83%	75%	70%	75%	85%	85%	87%	85%	85%	90%	97%	98%	99%	100%	100%
	Reserved	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Guest	90%	80%	70%	60%	55%	40%	50%	50%	60%	65%	65%	65%	75%	80%	90%	95%	95%	100%	100%
General Office	Visitor	0%	5%	60%	80%	100%	85%	70%	60%	50%	40%	30%	20%	5%	0%	0%	0%	0%	0%	0%
	Employee	0%	10%	85%	90%	100%	100%	80%	75%	65%	55%	45%	35%	20%	15%	5%	1%	0%	0%	0%
Performing Arts Theater	Visitor	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%	50%	75%	100%	100%	90%	60%	30%
	Employee	0%	10%	10%	20%	20%	20%	30%	30%	30%	30%	30%	30%	30%	100%	100%	100%	100%	90%	60%
Light Industrial	Visitor	0%	20%	40%	60%	90%	100%	80%	50%	40%	40%	20%	10%	5%	5%	0%	0%	0%	0%	0%
	Employee	25%	30%	45%	65%	95%	100%	100%	100%	100%	100%	95%	90%	85%	70%	60%	40%	20%	0%	0%
Library	Visitor	0%	0%	25%	45%	65%	95%	100%	100%	100%	95%	75%	50%	45%	40%	35%	5%	0%	0%	0%
	Employee	5%	10%	25%	55%	75%	100%	100%	100%	100%	95%	75%	65%	55%	50%	45%	15%	0%	0%	0%
Church	Visitor	5%	10%	25%	55%	75%	95%	100%	100%	100%	100%	100%	100%	100%	75%	55%	15%	0%	0%	0%
	Employee	5%	40%	90%	95%	100%	100%	100%	100%	100%	100%	90%	40%	15%	5%	4%	3%	2%	1%	0%
Medical Office	Visitor	80%	45%	50%	50%	50%	50%	50%	30%	30%	30%	55%	100%	95%	60%	30%	10%	1%	1%	0%
	Employee	75%	75%	75%	75%	75%	75%	100%	100%	100%	100%	100%	100%	75%	75%	75%	75%	75%	50%	33%
Warehouse	Visitor	0%	20%	40%	60%	90%	100%	80%	50%	40%	40%	20%	10%	5%	5%	0%	0%	0%	0%	0%
	Employee	25%	30%	45%	65%	95%	100%	100%	100%	100%	100%	95%	90%	85%	70%	60%	40%	20%	0%	0%

Source: Urban Land Institute, DESMAN Inc.



Peak Projected Demand – Current Conditions

The parking demand model is designed to project parking demand by the hour, from 6:00 AM until midnight, for a typically busy weekday and weekend (Saturday) for each of the 12 months of the year, plus the two-week period between Christmas and New Year’s Day (termed the “Holidays” in the model). This output allowed DESMAN to identify the busiest hour of the busiest day of the year for the study area, without performing hourly occupancy counts across the length of an entire calendar year. This ‘peak’ hour became the standard for evaluating the impact of future developments.

According to the model, peak demand on a weekday is projected to occur at 5:00 PM on a September weekday, when there will be demand for up to 4,135 parking spaces across the study area, under current conditions. **Table 14** shows peak hour demand projections for each month under current conditions.

Table 14: Peak Hour Demand Projections for a Weekday (Current Conditions)

Land Use	User Group	WEEKDAY												HLDYS
		JAN 5:00 PM	FEB 5:00 PM	MAR 1:00 PM	APR 5:00 PM	MAY 5:00 PM	JUN 1:00 PM	JUL 1:00 PM	AUG 1:00 PM	SEP 5:00 PM	OCT 5:00 PM	NOV 1:00 PM	DEC 12:00 PM	
Standard Retail	Customer	529	451	376	543	606	370	335	329	705	564	440	423	423
	Employee	131	147	122	147	131	82	75	68	163	147	109	122	122
Standard Grocery	Customer	14	14	12	15	15	12	11	10	16	15	12	18	18
	Employee	5	5	4	5	5	4	4	4	6	5	5	5	5
Fine/Casual Dining	Customer	129	133	93	124	130	83	84	91	124	130	95	101	101
	Employee	29	29	21	29	29	20	20	21	29	29	21	21	21
Fast Casual Dining	Customer	295	298	345	325	343	309	299	281	325	308	327	395	395
	Employee	68	68	63	68	68	57	54	50	68	68	63	63	63
Café/Take Out	Customer	197	209	193	232	232	152	142	132	220	232	193	183	183
	Employee	30	32	39	36	36	31	29	27	34	36	41	41	41
Bank	Customer	139	139	110	139	147	99	93	87	147	139	110	88	88
	Employee	75	75	60	79	79	54	50	47	79	79	63	54	54
Hotel	Visitor	2	2	2	3	3	2	2	2	3	3	2	2	2
	Employee	1	1	1	1	1	1	1	1	1	1	1	1	1
Health Club	Customer	33	32	17	27	25	13	12	13	23	25	17	15	15
	Employee	2	2	2	2	2	2	2	2	2	2	2	2	2
Institutional	Visitor	686	652	298	686	686	109	109	686	686	298	420	420	420
	Employee	112	112	118	112	112	59	53	57	112	112	118	118	118
Residential - Rental	Resident	390	390	243	390	390	207	194	177	370	390	231	219	219
Residential - Owned	Reserved	0	0	0	0	0	0	0	0	0	0	0	0	0
	Guest	22	22	9	22	22	9	8	8	21	22	9	8	8
General Office	Visitor	44	43	121	44	42	119	113	116	42	44	125	128	128
	Employee	668	662	1,222	668	635	1,197	1,134	1,172	668	668	1,260	1,158	1,158
Performing Arts Theater	Visitor	15	16	0	16	15	0	0	0	15	15	0	0	0
	Employee	4	4	3	4	4	3	2	2	4	4	3	3	3
Light Industrial	Visitor	23	23	33	23	22	32	31	30	21	23	33	33	33
	Employee	58	58	109	58	56	104	102	99	55	58	109	104	104
Library	Visitor	86	90	65	94	92	61	57	54	90	90	61	57	57
	Employee	14	14	11	14	14	10	10	9	14	14	11	10	10
Church	Visitor	13	13	38	15	13	34	30	25	12	13	38	45	45
	Employee	2	2	4	2	2	4	4	4	2	2	4	4	4
Medical Office	Visitor	41	43	28	41	38	24	22	24	41	43	28	22	22
	Employee	22	21	17	21	20	15	15	14	20	21	16	17	17
Warehouse	Visitor	16	15	34	15	16	36	32	36	17	16	36	30	30
	Employee	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal Customers		2,284	2,195	1,774	2,364	2,447	1,464	1,380	1,357	2,508	2,368	1,824	1,968	1,968
Subtotal Students		0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal Employees		1,221	1,232	1,796	1,246	1,194	1,643	1,555	1,577	1,257	1,247	1,826	1,723	1,723
Subtotal Residents (Unreserved)		390	390	243	390	390	207	194	177	370	390	231	219	219
Subtotal Reserved		0	0	0	0	0	0	0	0	0	0	0	0	0
Total		3,895	3,817	3,813	4,000	4,031	3,314	3,129	3,111	4,135	4,005	3,881	3,910	3,910
Planned Supply		7,330	7,330	7,330	7,330	7,330	7,330	7,330	7,330	7,330	7,330	7,330	7,330	7,330
Surplus/(Deficit)		3,435	3,513	3,517	3,330	3,299	4,016	4,201	4,219	3,195	3,325	3,449	3,420	3,420

Peak occupancy observed in the field was 3,969 vehicles in the early evening on Tuesday, April 16, 2019, which is within 4% of the projected peak hour of 4,135. Against the existing total parking supply of 7,330 parking spaces across the study area, a surplus of over 3,195 spaces is indicated (7,330 – 4,135).

Peak demand on a weekend is projected to occur at 12:00 PM on a September Saturday, when there will be demand for up to 3,804 parking spaces across the study area, under current conditions, as shown in **Table 15**.



Table 15: Peak Hour Demand Projections for a Weekend (Current Conditions)

Land Use	User Group	WEEKEND												HLDYS
		JAN 12:00 PM	FEB 12:00 PM	MAR 12:00 PM	APR 12:00 PM	MAY 12:00 PM	JUN 12:00 PM	JUL 12:00 PM	AUG 12:00 PM	SEP 12:00 PM	OCT 12:00 PM	NOV 12:00 PM	DEC 12:00 PM	
Standard Retail	Customer	595	507	507	610	682	499	452	444	793	634	595	674	634
	Employee	162	182	182	182	162	121	111	101	202	182	162	192	192
Standard Grocery	Customer	27	27	29	30	29	27	26	24	31	29	28	29	29
	Employee	5	5	5	5	5	5	5	5	6	5	6	6	6
Fine/Casual Dining	Customer	110	113	106	105	111	95	96	104	105	111	109	115	115
	Employee	26	26	26	26	26	25	25	26	26	26	26	26	26
Fast Casual Dining	Customer	737	746	831	814	857	746	720	677	814	771	788	857	857
	Employee	130	130	130	130	130	117	111	104	130	130	130	130	130
Café/Take Out	Customer	277	293	310	326	326	245	228	212	310	326	310	293	293
	Employee	42	44	47	49	49	37	34	32	47	49	49	49	49
Bank	Customer	107	107	107	107	112	95	90	84	112	107	107	90	90
	Employee	74	74	74	77	77	66	62	58	77	77	77	70	70
Hotel	Visitor	1	1	2	1	2	2	1	1	2	2	1	1	1
	Employee	1	1	1	1	1	1	1	1	1	1	1	1	1
Health Club	Customer	18	17	15	14	14	12	11	12	13	14	15	16	16
	Employee	2	2	2	2	2	2	2	2	2	2	2	2	2
Institutional	Visitor	208	197	187	208	208	69	69	75	208	208	187	197	197
	Employee	40	40	40	40	40	20	18	19	40	40	40	40	40
Residential - Rental	Resident	424	424	424	424	424	360	339	309	402	424	402	381	381
Residential - Owned	Resident	0	0	0	0	0	0	0	0	0	0	0	0	0
	Reserved	0	0	0	0	0	0	0	0	0	0	0	0	0
	Guest	31	31	31	31	31	29	27	27	29	31	29	27	27
General Office	Visitor	13	13	13	13	13	13	12	12	13	13	13	13	13
	Employee	146	144	141	146	138	138	131	135	146	146	146	141	141
Performing Arts Theater	Visitor	0	0	0	0	0	0	0	0	0	0	0	0	0
	Employee	4	4	4	4	4	4	3	3	4	4	4	4	4
Light Industrial	Visitor	36	36	36	36	35	34	33	33	34	36	36	36	36
	Employee	146	146	146	146	142	139	136	133	139	146	146	146	146
Library	Visitor	39	41	42	43	42	39	37	34	41	41	39	37	37
	Employee	6	6	6	6	6	6	5	5	6	6	6	6	6
Church	Visitor	58	54	58	64	58	51	45	38	51	58	58	64	64
	Employee	6	6	6	6	6	6	6	6	6	6	6	6	6
Medical Office	Visitor	6	6	7	6	6	6	5	6	6	6	6	6	6
	Employee	6	6	6	6	6	5	5	5	6	6	6	6	6
Warehouse	Visitor	3	3	3	3	3	3	3	3	3	3	3	3	3
	Employee	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Subtotal Customers</i>		2,266	2,192	2,284	2,411	2,529	1,965	1,855	1,786	2,565	2,390	2,324	2,458	2,418
<i>Subtotal Students</i>		0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Subtotal Employees</i>		796	816	816	826	794	692	655	635	837	826	807	825	825
<i>Subtotal Residents (Unreserved)</i>		424	424	424	424	424	360	339	309	402	424	402	381	381
<i>Subtotal Reserved</i>		0	0	0	0	0	0	0	0	0	0	0	0	0
Total		3,486	3,432	3,524	3,661	3,747	3,017	2,849	2,730	3,804	3,640	3,533	3,664	3,624
Planned Supply		7,330	7,330	7,330	7,330	7,330	7,330	7,330	7,330	7,330	7,330	7,330	7,330	7,330
Surplus/(Deficit)		3,844	3,898	3,806	3,669	3,583	4,313	4,481	4,600	3,526	3,690	3,797	3,666	3,706

Source: DESMAN, Inc.

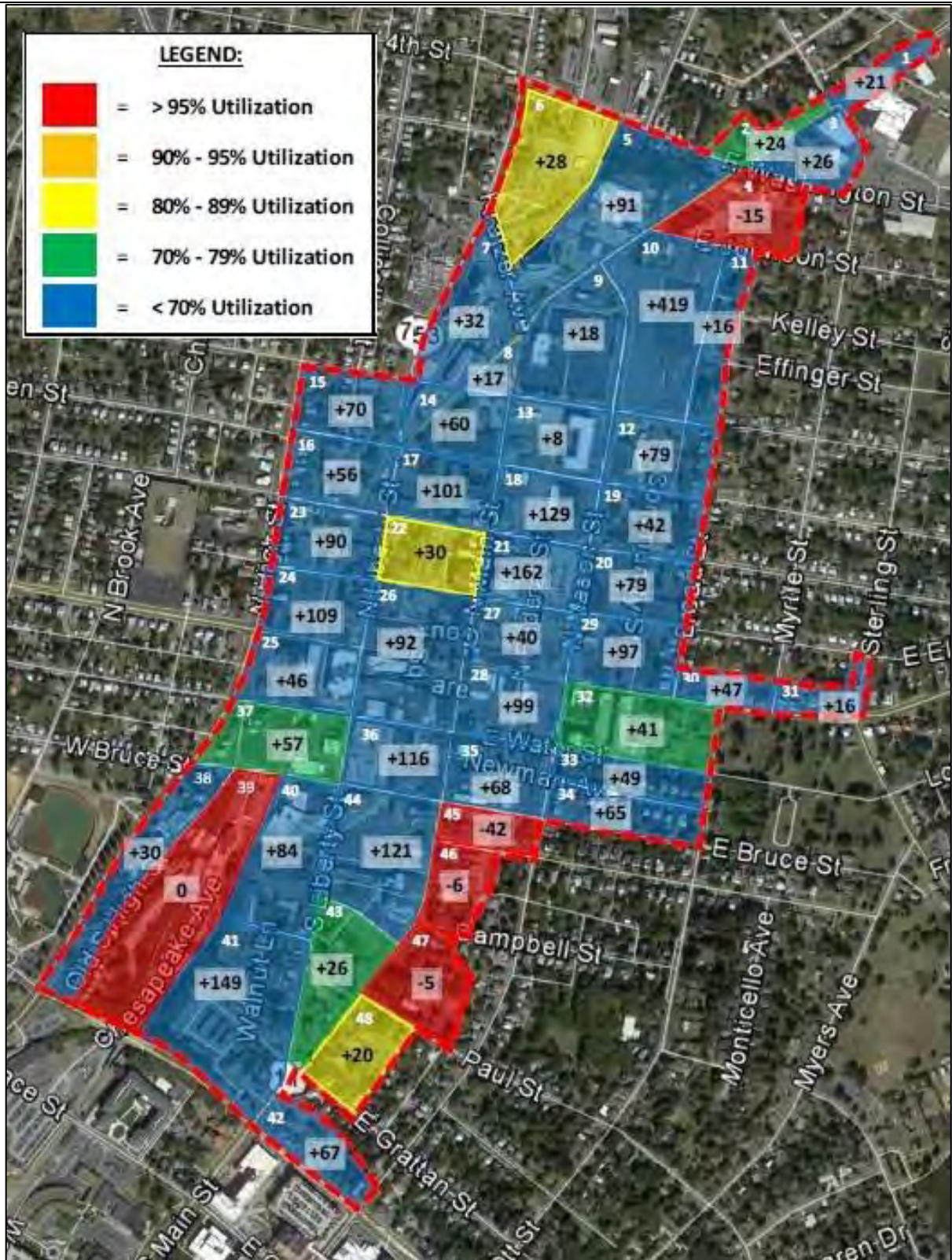
In addition to allowing DESMAN to model demand reflective of actual utilization, this approach also allows DESMAN to project parking demand specific to land uses. **Figure 14**, on the next page, shows the distribution of projected peak hour adequacy (**black numbers**) on a block-by-block basis under current conditions, according to existing land uses.

As the figure shows, there are some blocks where supply exceeds demand. This is normal for an urban environment where one or more centralized parking facilities can support multiple adjacent blocks with little or no parking contained within. For example, shortfalls on Blocks 45-47 can be met by the surplus on Block 44, which is within reasonable walking distance. If the figure showed a cluster of contiguous blocks near, at or over capacity with no surplus within a two-block radius, then a quantitative issue – requiring additional supply – would be present. This does not mean there are not challenges on individual blocks at various times of the day or week, as demand driven by a single business or group of attractions ebbs and flows. However, in these instances, the issue may be better addressed through management practices.

Detail regarding peak hour existing parking demand and adequacy is included as **Appendix F** at the end of this document.



Figure 14: Peak Hour Projected Demand under Existing Condition



Emerging Developments and Future Demand

There are 17 potential developments in the downtown area which may impact parking dynamics in the near future. The location of these developments is illustrated in **Figure 15** and further explained on the following page in **Table 16**.

Figure 15: Emerging Developments Map

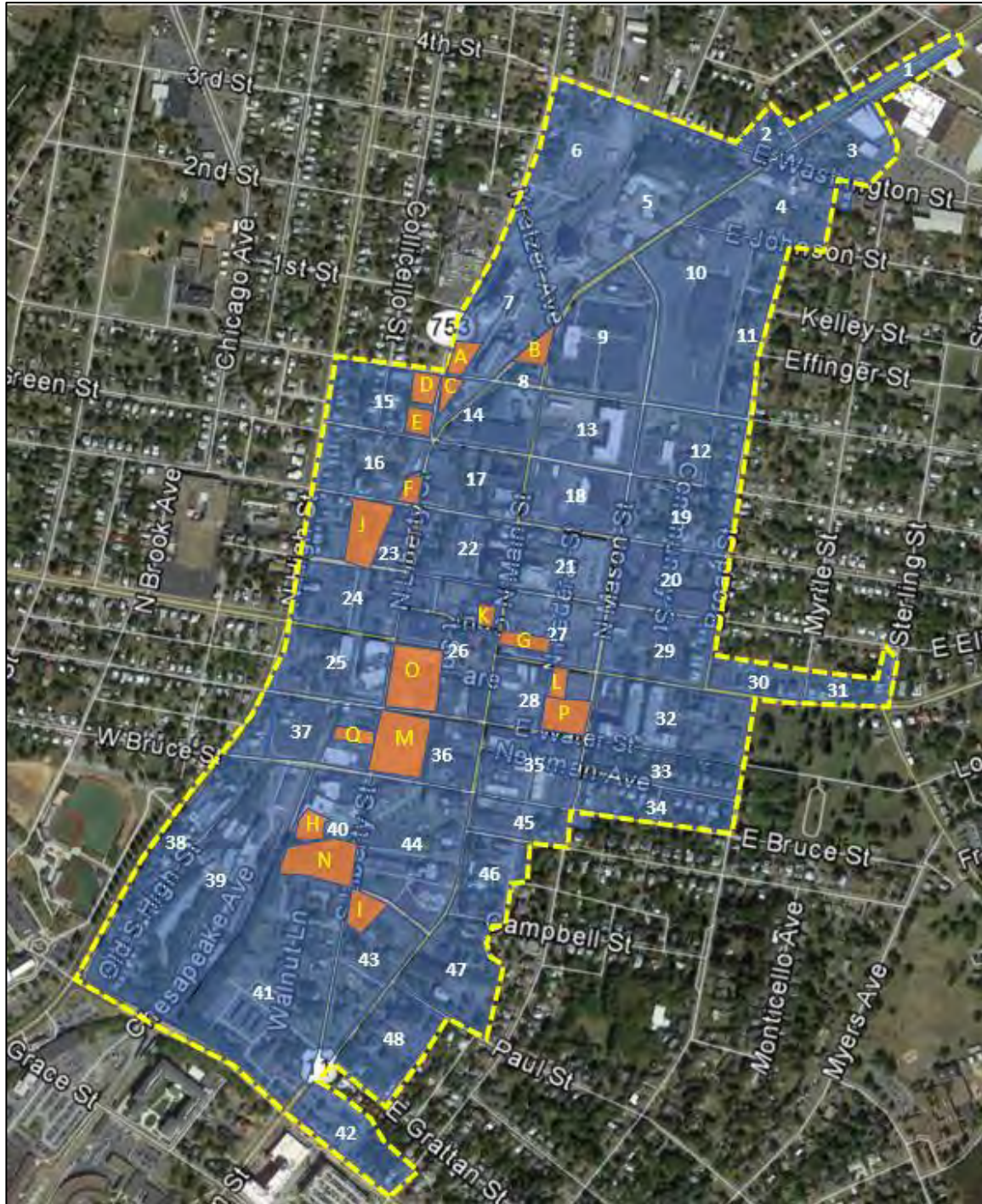


Table 16: Emerging Developments

Id	Blk	New Land Use	Address	Total (sf)	Retail (sf)	F/C Dining (sf) ¹	Café/TOR ²	Residential ³	Office (sf) ⁴	Institutional (sf) ⁶	Industrial (sf) ⁷	Other ⁸	Parking Added	Parking Lost	New Demand	Net Impact	Notes/Comments
A	7	Apartments	76 W Gay St	0				22					13		14	(1)	15,197 SF warehouse, 22 apartments assumed
B	8	New Coffee Shop	425 N Main St	1,050		1,050									14	(14)	New Coffee Shop
C	14	Retail & Professional Office	85 W Gay St	4,829	2,829		1,000		1,000						15	(15)	Assume 4,829 SF - office, bakery/café/diner, coffee roaster
D	15	Townhomes	99 W Gay St	0				5						(50)	6	(56)	New Townhomes
E	15	New Cidery	325 N Liberty St	3,030		3,030							7		39	(32)	Assume 3,030 SF building size, likely split between two buildings(Retail/Office)
F	16	Apartments	205-245 N Liberty St	0				50						(14)	31	(45)	Parcels to complete Triangle of (4,365 + 1,850 + 6,224) SF for 50 micro apartments
G	27	Old Furniture Store	20 N Main St	13,010	3,252				9,758						25	(25)	3-story Office 13,010 SF
H	40	Ice House Development	217 S Liberty St	0				38							23	(23)	38 apartments total, a mix of studio, one bedroom, and two bedroom layouts.
I	43	Employee Gravel Lot - Park	276 S Liberty St	22,146								22,146		(24)	0	(24)	Total of 4 parcels will constitute park
J	23	Block Development: Church	136 W Elizabeth St	18,000						18,000					80	(80)	Assume 18,000 SF developed as Institutional (Church)
Total Near-Term				62,065	6,081	4,080	1,000	115	10,758	18,000	0	22,146	20	(88)	247	(315)	
K	26	Fauls and Julius Buildings	9 Court Square	4,390	1,000		1,000		1,000	1,390					18	(18)	Demolition of Fauls Building - Replaced with courtyard; Julius - 4,390 SF Office/Worship Space
L	28	Child Care - New Building	111 E Market St	16,128						16,128					53	(53)	16,128 SF
M	36	Water Street Garage	154 S Liberty St	13,500	3,500	5,000		100	5,000				324	(324)	125	(125)	84,517 SF of existing garage. Mixed-use Office building and potential Residential may be up to 5 floors
N	40	Daily News Record	231 S Liberty St	30,000	5,000	5,000		100	20,000						132	(132)	100 Residential DU; 30,000 SF: 20,000 SF Office; 5,000 SF Retail; 5,000 SF F/C Dining
Total Mid-Term				64,018	9,500	10,000	1,000	200	26,000	17,518	0	0	324	(324)	328	(328)	
O	26	Courthouse Expansion	53 Court Square	10,962	1,000					9,962					35	(35)	Harrisonburg General District Court, Assume 10,962 SF
P	28	Old Bank - Drive-Thru Lot	107 E Water St	5,000	5,000										13	(13)	Existing Building is 5,000 SF
Q	36	Addition - 2nd Building	181 S Liberty St	14,400	2,000				12,400						19	(19)	New Parking Lot and building layout, existing building 14,400 SF
Total Long-Term				30,362	8,000	0	0	0	12,400	9,962	0	0	0	0	67	(67)	
GRAND TOTAL				156,445	23,581	14,080	2,000	315	49,158	45,480	0	22,146	344	(412)	642	(710)	

- Notes:**
1. Fine/Casual Dining would include any establishment which offers a separate bar area and/or liquor service to the table.
 2. Café/Take-Out Restaurant may have limited seating and will not include a separate bar area or liquor service. This is usually short stay, high turnover traffic.
 3. Residential Property showing number of dwelling units (DU)
 4. Office is based on Gross Floor Area.
 5. Hotel Rooms.
 6. Institutional, including community centers and areas of worship
 7. Light Industrial
 8. Other Land Use.
 9. The existing capacity in the Water Street Garage is assumed replaced; additional spaces may be added as well. However, during the period of construction, the existing 265 peak vehicles would need to be accommodated offsite.



These development sites were identified by City leaders and development scenarios were informed by prior planning studies and efforts previously undertaken in the downtown. From this information, DESMAN developed a series of assumptions that were run through the model to project future demand conditions on a block-by-block basis. The development program assumptions used by DESMAN in this effort are presented in the table on the preceding page. As the table indicates, emerging developments were grouped into three different classes: *near-term* (in the next 3 years), *mid-term* (in the next 3-5 years), and *long-term* (in the next 6-10 years).

Near-term developments include occupation of existing vacant spaces (e.g. the Chanello’s Pizza property), conversion of existing buildings to new uses (such as the development of a cidery where an automotive repair shop once stood), and development over existing private surface parking lots. **Figure 16** illustrates the timeline of proposed near-term developments.

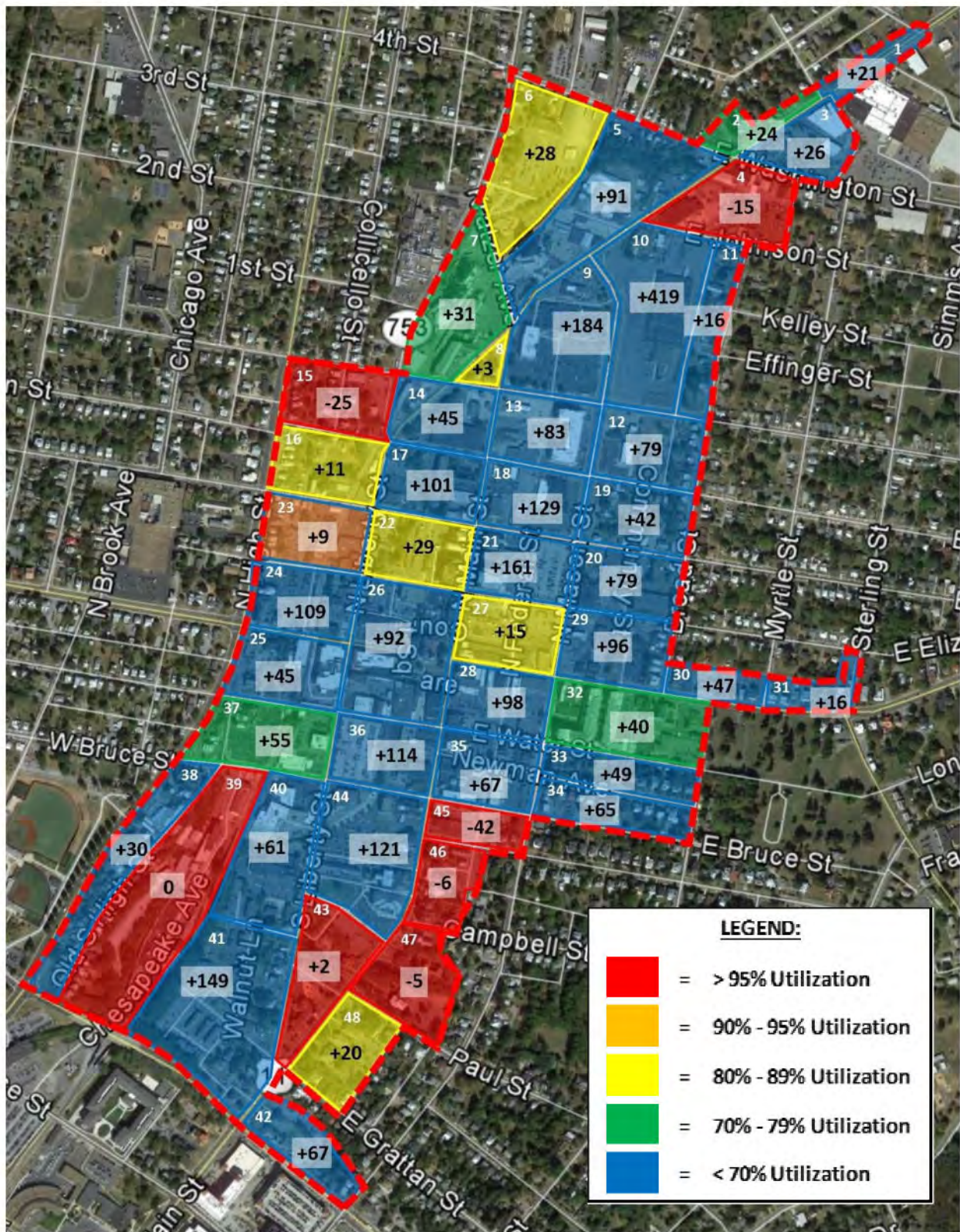
Figure 16: Near-Term Development Timeline



Near-term developments are projected to introduce more than 44,000 square feet of new commercial or institutional space to downtown Harrisonburg and 121 new residential units. The projects will add 20 new parking spaces, but eliminate 88 existing parking spaces, and introduce demand for 167 additional parking spaces, creating a net shortfall of 235 spaces across the study area. As **Figure 17**, next page, illustrates, this new development will exacerbate existing shortfalls under current conditions in Blocks 4, 39 and 45-48, introduce a shortfall to Block 15, and increase utilization of a half-dozen other blocks, many of which are arrayed around the Courthouse Square. Utilization rates and/or shortfalls around Blocks 43 and 45-48 can still be corrected by accessing the surplus of spaces on Block 43, but only when the Farmer’s Market is not in session. (Note: the demand from this was not accounted for in the April occupancy counts nor modeled by DESMAN as it is not a fixed land use, but rather a transient event.)



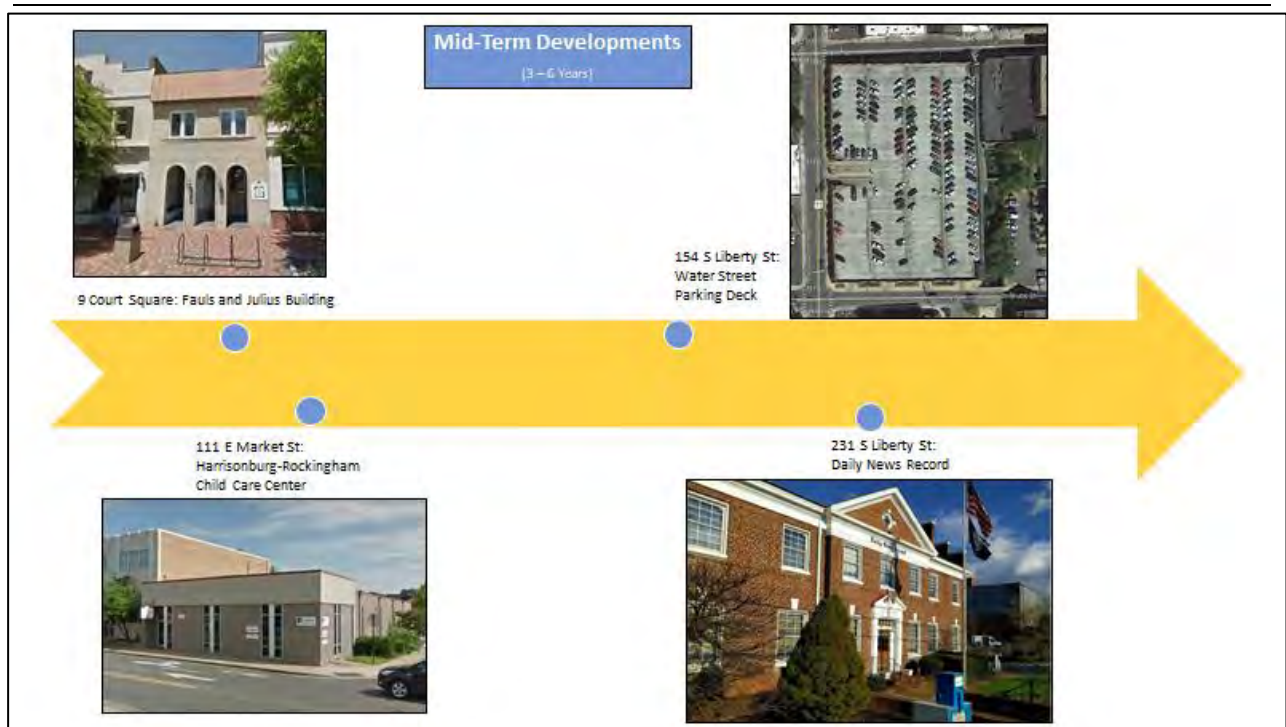
Figure 17: Near-Term Peak Hour Demand



Detail regarding peak hour parking demand and adequacy under Near-Term conditions is included as **Appendix F** at the end of this document.

Mid-term developments include occupation of existing vacant spaces and conversion of the Water Street Parking Structure to a potential public/private venture. For this analysis, DESMAN assumed the Water Street Parking Structure would be rebuilt with at least the same number of spaces. Additionally, DESMAN assessed the impending loss of the capacity of this facility, which will impact the parking supply while the parking structure is under construction. During the Water Street Parking Structure renovation, this will eliminate 324 existing public parking spaces. The redevelopment of the Daily News Record was assumed to introduce up to 100 residential units and 30,000 sq. ft of new use. The land uses were assumed at 20,000 sq. ft of Office; 5,000 sq. ft of Retail and 5,000 sq. ft of restaurant space. These mid-term developments are projected to introduce more than 64,000 square feet of new commercial and institutional space to downtown Harrisonburg and up to 200 new residential units. The projects will introduce demand for 328 additional parking spaces. Taking into account the absence of the Water Street Parking Structure, there will be a deficit up to 652 spaces. **Figure 18** illustrates the timeline of proposed mid-term developments.

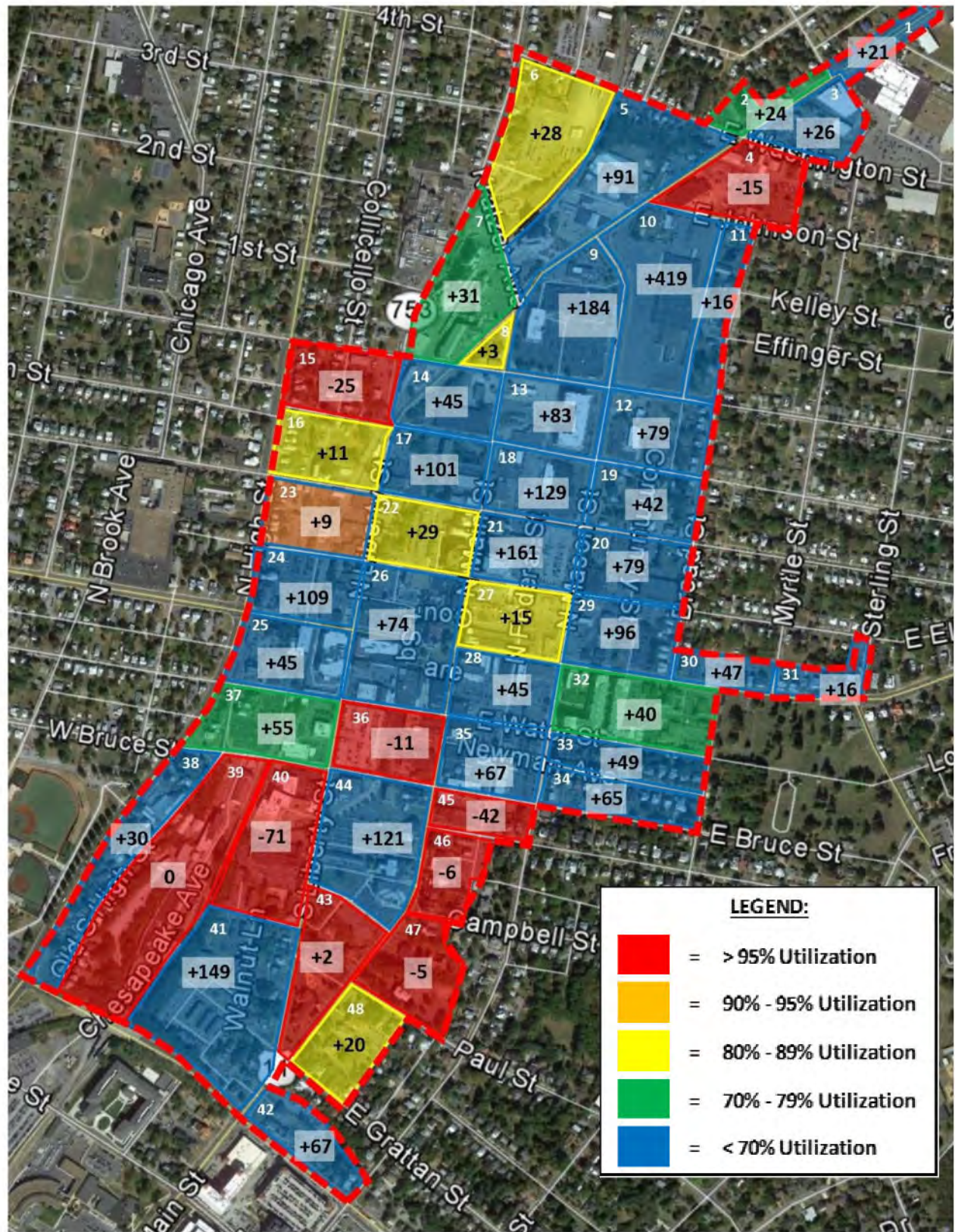
Figure 18: Mid-Term Development Timeline



As **Figure 19** on the next page shows, these mid-term developments will create a massive shortfall in Block 36 that could potentially absorb any available capacity in the blocks surrounding the site. In point of fact, if the lost capacity in the existing deck is not replaced, the reduction in supply could impact all the blocks between Wolfe and Grattan Street within the study area negatively as vehicles spill over into areas with available capacity. As part of our “long list” options for consideration, DESMAN has prepared conceptual design concepts for the replacement of the Water Street and/or Elizabeth Street parking structures to inject adequate capacity to offset these conditions. Detail regarding peak hour parking demand and adequacy under Mid-Term conditions is included as **Appendix F** at the end of this document.

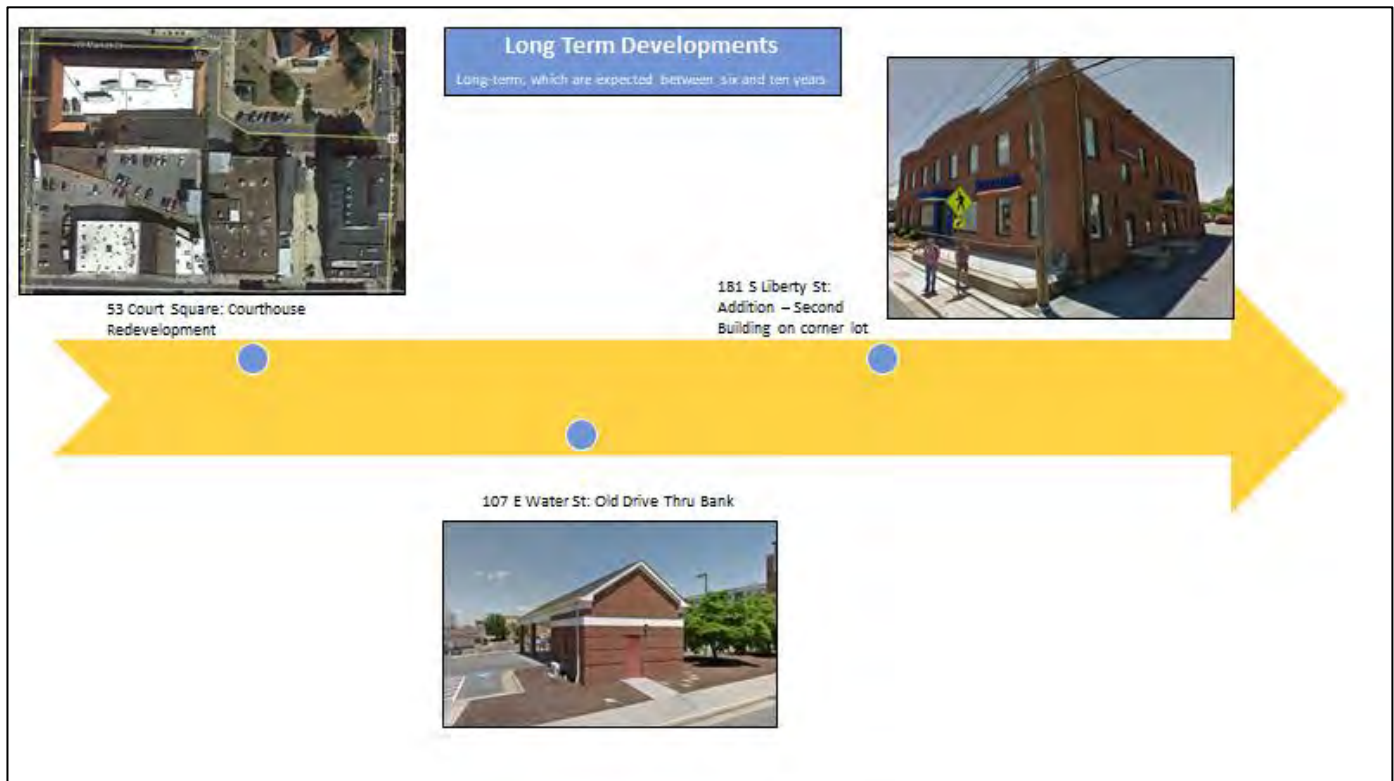


Figure 19: Mid-Term Peak Hour Demand



Long-term developments include redevelopment of existing structures. For this analysis, DESMAN did not assume the loss of any existing parking facilities, although this could potentially come to pass as the concepts behind the projects evolve. These developments are estimated to introduce more than 30,000 square feet of new commercial or institutional space to downtown Harrisonburg and introduce demand for 67 additional parking spaces. **Figure 20** illustrates the timeline of proposed long-term developments.

Figure 20: Long-Term Development Timeline

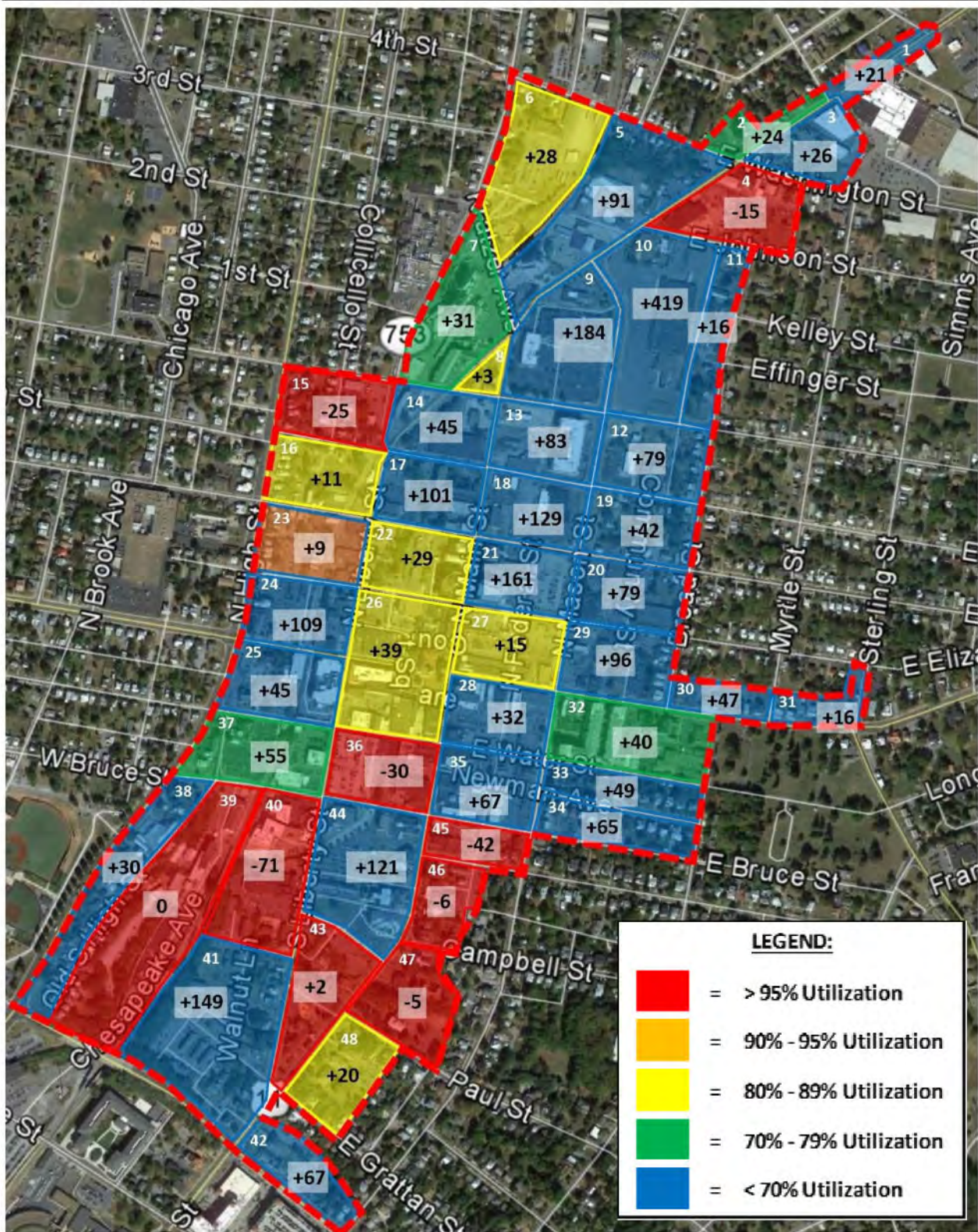


As **Figure 21** on the next page shows, these long-term developments will not create any massive shortfalls within the study area, but will continue to add pressure to the blocks surrounding Court Square and the core of downtown Harrisonburg and reinforce the need to replace any capacity lost during the development of the Water Street deck site and consider augmenting or expanding capacity in the Elizabeth Street deck as well.

Detail regarding peak hour parking demand and adequacy under Long-Term conditions is included as **Appendix F** at the end of this document.



Figure 21: Long-Term Peak Hour Demand



6. PARKING PLAN

Long-List Initiatives

DESMAN has identified a series of initiatives which address current or future anticipated issues within downtown Harrisonburg. These initiatives include:

- Instituting parking requirements for new development in downtown Harrisonburg that support the City's goals and objectives for continued redevelopment.
- Improving current facility maintenance and management practices to maximize utilization.
- Investing in improved wayfinding and technology systems to assist the general public in better locating available public parking facilities in downtown.
- Introducing new public parking capacity in downtown to absorb future growth and development.
- Promoting shared parking agreements as a mechanism to maximize the use of existing assets.
- Simplifying existing on- and off-street parking time limits to create a system that is more user-friendly to the general public and easier to enforce.
- Investing in new technologies to improve enforcement of existing regulations.
- Improving public infrastructure to better support use of alternative modes of transportation.
- Investigating fee-for-use (e.g. "paid" parking) as a mechanism for influencing parker behavior.

In the following section, the content of each initiative is further explained by describing; the issue that gave rise to its recommendation; what caused the issue and what indication DESMAN has noted that an issue exists; how the initiative proposed to address the issue; how DESMAN would propose to implement the initiative; what kind of supporting actions or mechanisms the initiative would require to succeed; the pros and cons of implementing the initiative; and examples of where the initiative has been successfully implemented previously. The listing and introduction of these initiatives is not to be the final listing, but rather all options that were considered for the city.

Parking Enterprise Fund

All of the proposed initiatives to follow have some capital and/or operational costs associated with them; several present opportunities for the City to collect new or additional revenues to help offset those expenses. In either case, municipal parking best practices strongly recommends creation of a specific fund to pool both existing and future parking-associated revenues to support the delivery of parking and mobility services. In some cases, municipalities have established a fund in tandem with designation of a particular geographic area, sometimes known as a "Parking Benefit District," from which revenues are derived and within which those revenues must be reinvested. The latter practice is more political than pragmatic, so DESMAN can neither condemn nor condone it specific to Harrisonburg, but rather highlights it for consideration of City leaders as they move forward with plans in the future.

As a general practice, deposits into the fund may include:

- New and/or existing parking violation fines;
- New and/or existing parking permit fees;
- New and/or existing parking meter revenues;



- New and/or existing parking facility transient revenues;
- New and/or existing parking tax income;
- New and/or existing payments in lieu for parking waivers;
- New real estate or other tax income via Tax Incremental Funding (TIF) or other sources.

Some of these potential revenue sources are examined and discussed in the following section. The decision to divert existing parking-associated revenues, while recommended as a best practice, must be considered against where those funds are currently directed and/or what services and programs they are currently supporting. It is not unusual for a municipality to pledge incremental increases over existing or historical income from fines and fees to a designated fund, retaining existing revenue streams to support other preexisting commitments.

As a general practice, expenditures from a parking enterprise fund are limited to supporting the design, development, construction, operation and/or maintenance of public parking assets within the municipality or some defined sub-district. However, some communities have broadened definitions to allow for expenditures to:

- Support and/or expand new and/or existing transit programs.
- Support and/or expand new and/or existing mobility programs.
- Support streetscape improvements to better support pedestrian travel.
- Support infrastructure improvements to better support bicycle use.
- Support programs to enhance the quality, walkability, and/or safety in a particular district.

These parameters typically leave wide latitude for interpretation. For example, one community in Vermont allows for payment of crossing guards near public schools from their fund. A city in Colorado supports the maintenance and upkeep of a pedestrian mall from parking revenues, as well as subsidized transit passes. Several California municipalities have supported large-scale streetscape improvements including the provision of benches for pedestrians, bike lanes along major thoroughfares, and raised and signalized crosswalks over busy streets from their parking funds. That said, parking enterprise funds should never be diverted to subsidize a municipality's general fund or other functions outside parking, transit, transportation, mobility, or access.

A critical aspect of parking fund governance is the creation of documented allowable expenditures as well as some form of public oversight over fund disbursements. The most effective models utilize a board of overseers made up of municipal officials, representatives of key stakeholders in the community, and members of the general public who meet regularly (i.e. every 30 to 60 days) to review the state of the fund and evaluate and approve proposed fund expenditures.

The composition of these boards and number of members varies widely from community to community. For Harrisonburg, DESMAN would recommend a board of not more than seven members total, which should include representatives from the Department of Public Works, the Police Department, and the Downtown Harrisonburg Renaissance as well as stakeholder representatives⁶ and members of the general public as appointed by City Council.

⁶ Which may include representatives from James Madison University, the various courts located in downtown, museum administrators, downtown property and/or business owners, local developers, leaders of civic organizations, etc.



PARKING REQUIREMENTS FOR DOWNTOWN DEVELOPMENT

Proposed Initiative

DESMAN proposes instituting downtown zoning requirements for parking, but allowing exemptions to the requirements if the developer: 1) can prove through the use of the Urban Land Institute's Shared Parking Methodology or similar analysis that their project requires less parking than dictated by code; 2) pays the City a fee in lieu of providing the required number of spaces, or; 3) enters into an agreement for the shared use of existing private parking capacity associated with another area building or land use to satisfy the needs of their project.

Statement of Issue

The City of Harrisonburg does not currently require developers and property owners to provide parking to support their downtown projects and onsite uses. By waiving parking requirements, the City eliminates the issue of required off-street parking from the development equation, which at times can be a barrier. Historically, the removal of parking requirements in struggling downtowns has been a valuable mechanism for spurring growth and new development in the short-term. The trend of removing parking minimums is growing throughout the United States.

However, this policy is not sustainable in the long-term, as the existing available capacity of public parking spaces can be exhausted by parking demand from these developments' users eventually. In certain areas of downtown, particularly in the vicinity of City Hall and the Icehouse, constraints on the public parking supply have resulted in increased instances of downtown visitors and employees being unable to find an available space within reasonable walking distance.

Cause/Indications

As outlined in the Existing Conditions Analysis, six blocks were identified within the downtown area that were parked in excess of their effective capacity at some point during the course of a typical April weekday. Moreover 34% (12 out of 35) short-term on-street parking areas surveyed during the survey day exceeded their practical capacity at some point on the survey day and 25% (3 out of 12) of public off-street facilities were parked over their effective capacity.

DESMAN's Future Demand Analysis indicates that roughly 18% (9 out of 48) blocks in downtown will be parked at 95% or more over their effective capacity at the peak hour on a typical weekday in the next three years as new development is introduced downtown. Furthermore, DESMAN projects emerging developments in downtown will add 315 spaces worth of net new demand in the near-term (i.e. next three years), another 328 spaces in the mid-term (4-6 years), and an additional 67 spaces in the long-term (7-10 years).

Anecdotally, the issue of localized shortages in the supply of public parking was raised by nearly every group of stakeholders DESMAN spoke with. A number of downtown property and business owners consulted during stakeholder meetings cited the lack of zoning requirements, specifically regarding required parking, as the primary cause of public parking shortages. Respondents to the online survey stated their second greatest concern with parking in downtown was the availability of parking spaces near popular destinations. Among the issues raised by the participants in the first public meeting, the lack of downtown parking zoning requirements for new development was cited as the 5th most important issue out of the 14 issues raised, with 7 of 41 exercise participants (14%) selecting it as a major concern.



Potential Solution

If the City chooses to institute zoning requirements for parking in downtown, those requirements should be based on current parking industry and development best practices for each particular land use, which are developed through the empirical study of existing land uses. The requirements should be set across all areas and districts so as not to encourage excessive construction of parking supply, but to right-size parking based on the anticipated needs of each individual project. The most recent version of the Urban Land Institute’s *Shared Parking*, the Institute of Transportation Engineers’ *Parking Generation*, and other studies of real-world parking demand dynamics should be used as a starting point for establishing parking requirements in downtown, which would then be adjusted to fit the unique characteristics of downtown Harrisonburg.

The table at the right presents the ULI’s base parking demand ratios for a number of common land uses, which the City **could** adapt for use in their zoning requirements. However, DESMAN would strongly recommend the City develop ratios specific to Harrisonburg through direct research into actual parking demand exerted by existing land uses and vet these ratios through a focus group of concerned stakeholders prior to implementation.

DESMAN recognizes that wholesale adoption of parking requirements on new development could slow or even halt the momentum enjoyed in downtown to date. Therefore, we also recommend that the City introduce a number of alternatives if a developer does not wish to provide the number of parking spaces required per code, which could include the following options:

- 1) A developer could seek a credit against these requirements by demonstrating that there are unused public parking facilities within reasonable proximity of their proposed development that could be employed to offset some or all of their requirement. Under this option, the developer would hire an independent third-party to conduct a study of

Table 17: Industry Parking Demand Ratios

Land Use	Base Spaces	Unit
Retail		
Retail (<400 ksf)	4.00	ksf
Retail (400 to 600 ksf)	3.00	ksf
Retail (600 ksf to 1,000 ksf)	4.50	ksf
Retail (1,000 ksf to 2,000 ksf)	5.00	ksf
Retail (over 2,000 ksf)	4.00	ksf
Supermarket/Grocery	4.75	ksf
Pharmacy	3.40	ksf
Discount Stores/Superstores	4.75	ksf
Home Improvement Stores/Garden	4.35	ksf
Food and Beverage		
Fine/Casual Dining	17.75	ksf
Family Restaurant	17.40	ksf
Fast Casual/Fast Food/Food Court/Food Halls	14.70	ksf
Bar/Lounge/Night Club	19.00	ksf
Entertainment and Institutions		
Family Entertainment	2.75	ksf
Active Entertainment	2.00	ksf
Amusement Park/Water Park	3.30	ksf
Adult Active Entertainment	11.20	ksf
Cineplex	0.25	seats
Specialty Movie Theatre	0.30	seats
Live Theater	0.40	seats
Outdoor Amphitheater	0.40	seats
Public Park/Destination Open Space	5.50	acre
Museum/Aquarium	5.00	ksf
Arena	0.33	seats
Pro Football Stadium	0.31	seats
Pro Baseball Stadium	0.35	seats
Health Club	7.00	ksf
Public Library	2.25	ksf
Convention Center	6.00	ksf
Hotel and Residential		
Hotel-Business	1.15	keys
Hotel-Leisure	1.15	keys
Restaurant/Lounge	9.00	sf
Residential, Urban		
Studio Efficiency	1.00	units
1 Bedroom	1.05	units
2 Bedrooms	1.80	units
3+ Bedrooms	2.65	units
Active Senior Housing	0.83	units
Office		
Office <25 ksf	3.80	ksf
Office 25 to 100 ksf	3.94	ksf
Office =100 ksf	3.40	ksf
Office 100 to 500 ksf	3.54	ksf
Office >500 ksf	2.80	ksf
Open Plan/High Density Office	6.00	ksf
Medical/Dental Office	4.60	ksf
Day Care Center	3.50	ksf
Bank (Drive In Branch)	6.00	ksf



the area surrounding their proposed development to document the use and availability of the existing supply of public parking. This study should document the use of publicly-available spaces over a defined time period which corresponds to the proposed development's peak needs and accounts for variations in demand according to time of day and day of week. Additionally, the study should analyze the impact that the development is expected to have on the demand for parking, factor in variations in demand due to seasonality, and make a conclusion as to the adequacy of the current supply. This analysis could then be provided to the City as justification for a reduction or waiver to the parking requirements dictated by the zoning code.

- 2) A developer could apply for a reduction on the basis that the parking requirements will result in too much parking supply to support their project. In this instance, the developer could hire an independent consultant to conduct an analysis of the project using the Urban Land Institute's Shared Parking Methodology (or similar analysis), demonstrating that the actual demand from the project that is likely to be generated under peak conditions is materially lesser than the supply required by code or proposed alternatives to the parking standards which highlight methods to ensure compliance in accordance with the city's needs.
- 3) A developer could purchase a reduction or waiver against the number of required parking spaces by contributing to a fund established to help pay for the development of public parking by the City. Under this option, the developer would pay the City a fee 'in lieu' of providing the required number of spaces. The dollar value of in lieu payments charged by municipalities vary widely, according to how much of the cost of development the City is willing to subsidize. The per space cost of structured parking is commonly in the range of \$15,000 - \$25,000 per space, but many municipalities offset the cost per space through application of other revenue streams⁷ to reduce the cost per space to a figure which does not constitute a major barrier to prospective developers.
- 4) A developer could also seek a reduction or waiver against parking requirements by demonstrating that they have access to available private parking capacity in the immediate area that meets some or all of their requirement. Under this option, the developer would enter into a Shared Use Agreement with another property owner to access existing private parking capacity associated with another building. This agreement would be required to identify the parcel or parcels that the developer is relying-upon, prove that there is sufficient capacity in these locations to satisfy the project's parking needs, and be in force for at least 10 years from the completion date of the project. The cited 10-year requirement serves as an industry recommendation and best practice for a set term. The term can be extended based on anticipated future needs or periodic reassessments. Additionally, if the private parking that the project relies upon is taken offline or otherwise becomes unavailable for use by the development within the 10-year time period, the developer should be required to find replacement capacity.

All exemptions to the City's zoning requirements would be granted at the discretion of the City and based on the evidence presented by the developer of each particular project.

Conceptual Implementation

Despite the localized existing shortages of parking documented and the input received from the public and stakeholders, there appears to be significant available parking capacity on most blocks within downtown at most times of the day. Additionally, the City is still actively pursuing new development in downtown and attempting to continue densifying, with a number of projects expected to be undertaken

⁷ Such a TIF District funds, parking citation fines, permit sales, meter incomes, infrastructure grants, etc.



within the next three years. Given the existing available parking capacity in downtown, especially in the northwest quadrant of downtown where a significant portion of the near-term development is anticipated to occur, DESMAN does not recommend instituting zoning requirements for parking in downtown immediately. However, as development continues and the existing supply of parking continues to become more constrained, this recommendation should be considered as a potential solution to projected mid- or long-term shortfalls.

If and when the City chooses to pursue this change to the zoning code, any proposed changes would need to be approved by City Council. According to Sec. 2-1-2 of the City's Code of Ordinances, any proposed changes would first have to be introduced at a meeting of the Council and, at a subsequent meeting, be brought up, discussed, and adopted by Council according to defined procedures.

Due to their integral involvement with downtown development, DESMAN would recommend that either the City's Community Development and/or the Economic Development departments act as the champions of this initiative going forward. These departments are in a good position to monitor how continued development in downtown impacts the supply of and demand for parking on an ongoing basis, as well as maintaining a comprehensive understanding of potential future projects and their anticipated impacts.

Necessary Supports/Mechanisms

Rewriting the City's zoning code to introduce parking minimums would likely require little in the way of hard costs, aside from hiring a consultant to help refine the parking demand ratios to be included in the code. The City's existing ratios in other zoning districts can be used or the ratios can be revised depending on how stringent the conditions for development are going to be. A majority of the implementation time and effort would be borne by the City, in particular the City Attorney and other parties responsible for making the actual changes to the code. The City's Community Development Department may need to contract additional labor initially to vet applications for reductions or waivers, especially those requesting a variance based on use of underutilized public supply. These requests for variance should be documented meticulously, especially any conditions associated with a grant of waiver or reduction.

Should the City choose to allow in-lieu payments to satisfy parking requirements, a separate Enterprise or Parking Fund would need to be established by the City which segregates these dollars from the General Fund. Any money paid into the fund would be restricted to supporting the construction of new public parking facilities or to grow the capacity of existing public parking facilities. The enabling legislation used to establish the fund must include this provision as any deviation from this purpose is likely to result in backlash from both developers who have paid into this fund and from the general public who often most acutely feel the impact of parking shortages. Many municipalities actually appoint an individual within City government or a body of concerned citizens to function as a trustee of the fund, monitoring expenditures to confirm they are allowable and valid.

It is imperative that the instituted parking requirements be reviewed at least every five years to ensure that they remain valid and responsive to the needs of downtown. Historically, zoning requirements have been instituted by cities which are then not updated or reviewed for decades. In many cases, this has resulted in developments being constructed with far too much parking, based on how a community has changed over time. This review should include field occupancy counts and comparisons against representative land uses to confirm that each requirement is still a valid representation of actual peak demand. These periodic audits may be conducted by the Community Development Department or a



qualified independent entity contracted by the City. Regardless of who the responsible party may be, there should be a small team established to keep track of the zoning regulations as they are changed as well as the details of waivers on file to ensure these obligations are being upheld.

In addition to periodic reviews of the zoning requirements, the City would also need to conduct periodic audits of the executed shared use agreements between parties used to attain a reduction or waiver against requirements to ensure that they are still valid. These audits should occur at least every two years and should seek to confirm that the private parking that a project relies upon still exists and is still available for use by the developer filing the application for reduction or waiver. These audits can be as simple as contacting the private property owner sharing out their facility and verifying the agreement is still in effect with both parties. In addition, the City's Community Development Department should be tracking all granted reductions or waivers to ensure that an enterprising property owner is not committing their property to more partners than they have capacity to spare.

When these zoning requests are received and subsequently vetted, the City should have a dedicated team to conduct focus group sessions that solicit unbiased feedback from the public to approve or deny any changes to certain land uses. The public and downtown stakeholders should be afforded the opportunity to provide input on the zoning process and happenings within these meetings should be shared with the appropriate City departments for review.

Benefits/Liabilities

Benefits: Instituting zoning requirements for parking in downtown will put the responsibility for providing parking squarely on the private developers, as opposed to the City bearing all the cost. Requiring developers to prove that the existing public parking supply is sufficient to satisfy the demand generated by their projects, or allowing an exemption based on one of the above scenarios, will help to prevent parking from being overbuilt by either developers or the City.

Liabilities: Additional costs associated with building parking or paying in lieu fees will make some development projects not feasible, which could stall development momentum. Additionally, if the requirements in the zoning code are not carefully considered, there is the potential for parking to be overbuilt. Finally, as development continues downtown, it may become difficult for the City to track the agreements that are in place between different developers and owners of private parking without consistent due diligence.

Supporting Analysis

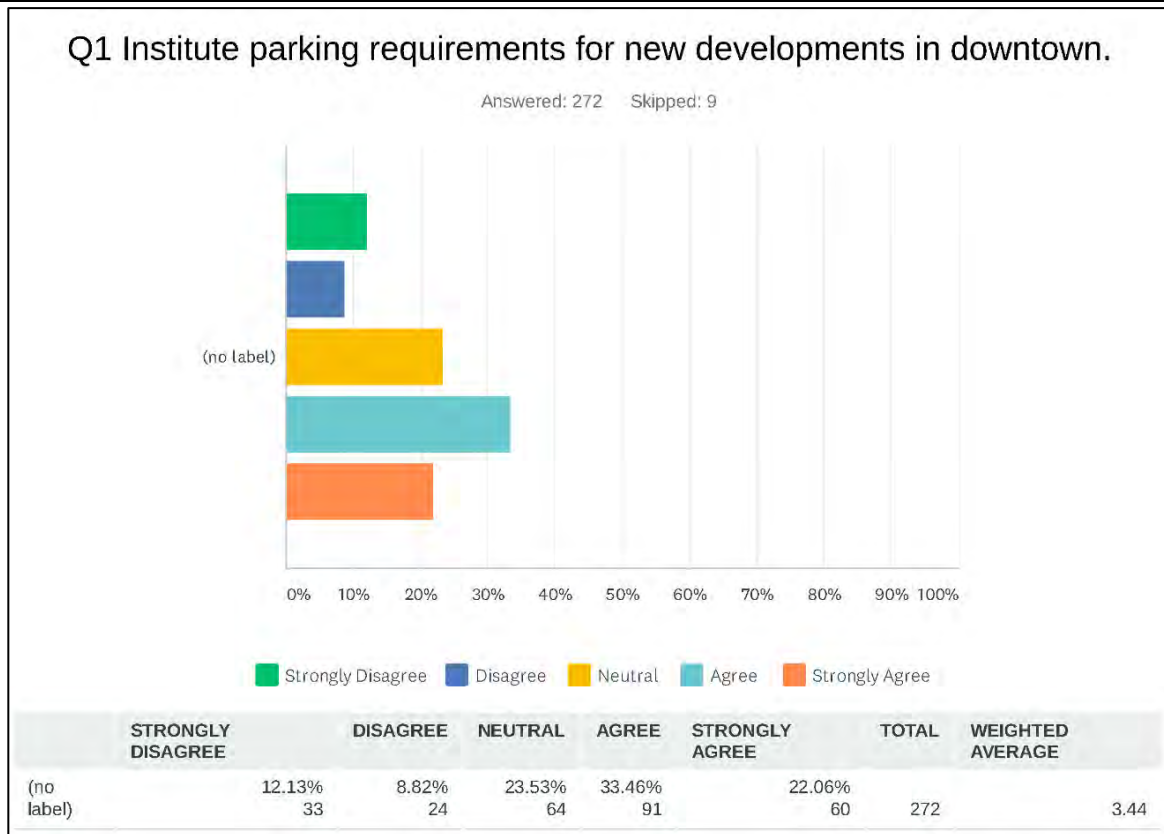
As part of the public outreach process, the City administered a survey to collect initial responses to various initiatives considered during the study process. When asked to respond to the proposal to institute parking requirements for new developments in downtown, roughly 22% of respondents indicated they would 'strongly agree' with an initiative requiring new developments to provide parking on-site, as shown in **Figure 22** on the next page. Approximately 33% indicated they would 'agree' to support this initiative, with the majority of respondents indicating they would support the initiative if it did not inhibit new development and if it did not curtail residential parking rights or displace existing parkers without providing an alternative facility in which they could access parking.

In the comments received for those who 'agree' or 'strongly agree' with this initiative, the examples provided centered on how the newer developments in the downtown, specifically residential, do not



provide their own onsite parking have impacted the availability of visitor or short-term parking. Residential developments were more clearly identified as the main contributor to lack of parking availability as residents will always need a parking space. The responses were more lenient to commercial businesses as they often are limited to smaller spaces and do not have a need for designated parking spaces at all times of day.

Figure 22: Survey Responses to Instituting Parking Requirements



About 23% were neutral on the issue, neither endorsing nor opposing the initiative at this time. Based on the review of additional comments from the survey, DESMAN interpreted this response to mean that these individuals held no strong opinion at this time and would reserve providing an opinion until they understood the specifics of how the initiative might be implemented and its potential impacts on their neighborhood. Approximately, 8% of respondents stated they would disagree with the initiative; roughly 12% of respondents strongly opposed the initiative under any condition. 9 respondents, or 3% skipped this question.

Based on the comments from those who either ‘disagree’ or ‘strongly disagree’ the consensus was that there may be more creative approaches, such as “in-lieu fees,” which could contribute funding to the City to build parking facilities that could accommodate all users. Others believe that if there are requirements in the B1 zone, the developers may seek properties outside of downtown or even outside of Harrisonburg.

Case Studies

The **City of Houston, Texas** has embraced the idea of removing parking requirements to create new infill development, however, they have done so carefully. The City’s Planning Department is only willing to



scale back the requirements on a case-by-case basis. Property owners in West Midtown and parts of East Downtown get to decide how much parking their customers need instead of following guidelines from the City. If the developments are deemed to provide enough parking through existing parking assets, no new parking is required. The decision is vetted by the Planning Department to ensure that the parking needs are met by the existing parking supply. The process for approval takes into account the parking demand attributed to land use and other factors including the potential for shared parking or proximate parking availability.

The **City of Toronto, Canada** uses maximum parking requirements as a starting point and then offers reductions as a bargaining chip to negotiate the desirable features in the development-approval process. These deals may not meet the minimum parking requirements for a specific land use, but the City can gain other amenities or features that serve the area better than providing additional parking spaces.

The **City of Miami, Florida** allows property owners in the Coconut Grove Improvement Trust Fund Area (BID) to obtain a Certificate of Waiver, by making payments in lieu of providing required off-street parking spaces. The waiver of required off-street parking spaces shall be applicable only to the structure and use for which it is issued. New developments, or any construction generating additional square footage of floor space or increasing the floor area ratio, shall be required to comply with the parking requirements for said additions or obtain waivers. Fee in lieu of providing required off-street parking for the SD-21 zone, as provided by article 6 of zoning Ordinance No. 11000 of the City of Miami: \$1,500.00 per space, which fee shall be inflation adjusted annually through the consumer price index—urban consumers (CPI-U). The fee may be paid either by a one-time payment, or by periodic payments calculated to yield the principal sum of the required fee in five years at the current DSOP interest rate.

If a new use cannot meet minimum off-street parking requirements, then the **Town of Braintree, Massachusetts** may require, as part of a special permit, the payment of a fee by the applicant to allow the Town to provide such additional required off-street parking in lieu of the applicant providing required off-street parking. The fee to be charged shall be an annual fee (to be determined by the Planning Board at a public hearing) per space for each parking space required. The fee shall be payable in accordance with the Planning Board's administrative policies.

The **City of Northampton, Massachusetts** makes special provisions for the Central Business District for meeting off-street parking requirements: payment of a fee in lieu of providing required off-street parking is allowed by right. The one-time fee of \$2,000 per space is used to add parking spaces, improve the utilization of existing spaces, or reduce the need for new parking in the CBD.

The **City of Orlando, Florida** requires developers to pay fees in lieu of the first required space per 1,000 square feet of floor area, and allows them to choose whether to pay fees or supply the parking for the rest.

In 2018, **City of Bozeman, Montana** commissioners approved a parking cash-in-lieu fee hike from \$5,000 to \$25,000 in order to recover the cost of building parking. The change was brought about due to a spur in infill development in Downtown. The City had earlier built a garage in 2009 to accommodate leased parking spaces for the then-new developments, which was successful.

The **City of Lake Forest, Illinois** established a fee-in-lieu policy which has been in effect for about 15 years. All funds generated must specifically pay for parking acquisition or development. The impetus was a desire



to preserve the historic character of the downtown. The one-time fee was recently increased from \$14,000 to \$22,000 per stall. The parking requirements are also relatively high in Lake Forest, which is comprised of a smaller suburban environment, at four spaces per thousand square feet. Still, developers want to use the option because of the scarcity of developable land. The city considers the program effective, and developers use the option frequently. Originally, it was an automatic opportunity for developers to pay instead of building. However, due to limited opportunities for the city to provide new facilities, they recently restricted the fee-in-lieu option to a special use permit.

The **City of Skokie, Illinois** adopted its fee-in-lieu policy in 1976. It was used primarily in the early 1980s, and once in the 90s, but not since. The impetus for the policy was a desire to maintain the urban landscape, and to keep employee parking in the periphery of the core. The fee was set at \$3,500. There were no specific guarantees regarding proximity, timeline, etc., but the money was limited to parking only. Developers do not have an option to variance out: they must either build parking or pay the fee. With adoption of a downtown redevelopment plan, the parking requirements were modified to a uniform one stall per 400 sf (commercial) and one per unit (residential). Most of the development recently has been mixed use with residential, so developers have provided parking.

The **City of San Diego, California's** Development Services Department encourages developers to complete a Shared Parking Agreement deferring some or all of the project's parking requirements per code. The agreement is included in the title documents for each property.

Link: <https://www.sandiego.gov/sites/default/files/legacy/development-services/pdf/industry/forms/ds267.pdf>

The cities of **Fairfax and Charlottesville, Virginia** as well as both **Arlington and Fairfax Counties** have all adopted ordinances which allow shared parking agreements to be used to meet some or all of mandated parking requirements for new development.



IMPROVED FACILITY MAINTENANCE AND MANAGEMENT PRACTICES

Proposed Initiative

DESMAN proposes changing the current maintenance and operational program for all publicly-owned, publicly-accessible off-street parking facilities to improve lighting in the City’s parking garages and surface lots, clean the facilities with greater frequency, and install security cameras and/or increase the frequency of Police patrols.

DESMAN also proposes discontinuing preferential treatment of the City's employees in publicly-owned, publicly-accessible off-street parking facilities.

Finally, DESMAN proposes changing the methodology for managing permit parking in publicly-owned, publicly-accessible off-street parking facilities.

Statement of Issue

487 of 1,112 respondents to an online survey indicated that a “public parking deck with non-permit spaces” was their first choice of parking options when arriving downtown and 75% of respondents indicated their parking primarily in publicly-owned and -accessible off-street parking facilities in downtown Harrisonburg. In contrast, only 12% of respondents indicated parking in an on-street space was their first preference and only 9% of respondents stated they preferred parking in a privately-owned and/or -accessible off-street facility. Based solely on these results, DESMAN would surmise that anything that could be done to improve conditions, operations, or availability in publicly-owned and -accessible off-street parking facilities in the area would benefit the largest proportion of potential users.

As new development and redevelopment has occurred in downtown Harrisonburg, there is a growing pool of potential users who are vying for the same number of parking spaces in the City’s public parking facilities. This has led to parking in some areas of downtown becoming more constrained, particularly in the area of the Ice House and Harrisonburg City Hall. A number of the spaces in this area are signed for “City Employee Parking Only,” making these spaces unavailable for use by a majority of the downtown parking population. For members of the general public who cannot find an available parking space in this area, the perceived preferential treatment afforded to City employees is a bone of contention. While this issue was not quantified in the online survey efforts, it was brought forth a number of times in stakeholder and public meetings.

Finally, the City’s parking enforcement personnel have noted that the current policy requiring permit holders parking in the City’s garages is somewhat flawed as it requires permit holders to self-identify when parking by hanging a tag off their mirror. The credential was adopted by the City for its relative low cost to issue, simplicity of use, and portability between multiple vehicles and has been a serviceable mechanism for years. However, it has been noted that permit holders who do not care to park in areas of the garage set aside for their use, but rather park in time-limited areas set aside for transient parkers, need only secrete their hang tag to avoid being identified as scofflaws. The City notes this violation impacts operations doubly by taking up a parking space intended for other users while still maintaining an effective reservation of the permit-area parking space set aside for the violating permit holder.



Cause/Indications

Of the 1,112 respondents to an online survey conducted by the City of Harrisonburg regarding current parking conditions in downtown, roughly 70% rated the quality of public parking facilities are just average or less; in this instance, the measure of quality was defined as “cleanliness, maintenance, lighting, etc.” In a separate question asking respondents to rate a series of issues from “major” (7 on a 7-point scale) to “no issue” (1 on a 1-point scale), individuals participating in the survey rated the condition of the parking facilities at a 3.41 out of 7, indicating it was a moderate concern. An additional 17 respondents to this question specifically identified that they felt unsafe or insecure when parking in public facilities downtown.

The designation of “City Employee Parking Only” was not identified as a major issue during the online survey, but was raised multiple times during both stakeholder meetings and the public forum. More critically, it runs counter to parking management best practices.

The question of how to assign parking spaces among multiple and competing user groups has always been a challenging one, especially when parking supply is constrained or parking facilities are not located equidistant from various destinations. The first issue begs the question of “who gets parking” and the second asks “who gets the best (i.e. closest) parking”. Within the parking industry, allocation of parking rights or locations is usually determined by the user’s status as a *discretionary* or *mandatory* parker.

Discretionary parkers are those individuals who patronize a particular business, institution, or agency by choice and can conceivably go elsewhere to acquire the goods or services they are seeking. In a retail setting, this general rule means customers – shoppers, diners, tourists, guests, visitors, etc. These individuals represent a population that may be unfamiliar with the area and needs to park close to their destination and have their movement between parking and destination well supported by strong wayfinding systems to feel their experience was a positive one. If a discretionary user has a positive first experience, they are likely to return and will express positive perceptions to others; a negative experience will reduce the likelihood of repeat visits and positive word of mouth endorsements.

Mandatory parkers are typically mandated to be present in the area and are therefore more likely to tolerate or accommodate less than premium parking arrangements. These individuals are present on a regular basis, are very familiar with the location of both parking facilities and common destinations, as well as the pedestrian pathways between them, so wayfinding is not a critical concern, nor is proximity (although it is always desired). In a commercial setting or urban area, employees are typically mandatory parkers who can be compelled to park in less desirable, more remote parking areas, although there are sometimes exceptions made for individuals of a particular position or seniority. Note that in urban centers, business owners and residents are also considered mandatory parkers.

Currently, the perception in downtown Harrisonburg is that mandatory parkers (e.g. City employees) are being afforded preferential parking in areas where discretionary parkers are seeking accommodation and supply is limited.

Similarly, it was suggested that monthly passholders (e.g. mandatory parkers) in the City’s two parking structures are parking in areas set aside for transient parking, effectively displacing discretionary parkers, in order to access covered spaces or spaces closer to their intended destination.



Potential Solutions

The U.S Department of Justice's Bureau of Justice Statistics conducted an evaluation of the National Crime Victimization Studies conducted from 2004 to 2008, which spanned roughly 5.5 Million violent crimes and 18 Million property crimes nationwide. The survey found that roughly 7.3% of all violent crimes and 11.2% of all property crimes occurred in parking lots or garages. In point of fact, the survey found that of those crimes occurring in parking facilities, the majority occurred in privately-owned and -accessible parking lots and garages; only 2.0% of violent crimes and 2.3% of property crimes occurred in commercial (i.e. publicly-accessible) parking facilities. In reality, individuals were four times more likely to suffer a violent crime and six times more likely to suffer property crime in or near their own home than in a parking facility.

Despite these statistics, parking facilities continue to carry the stigma of being unsafe. However, this perception can be mitigated through diligent maintenance efforts and upgrades in key systems and procedures. CPTED (Crime Prevention Through Environmental Design) provides a series of guidelines and standards in building and operational design to create environments that reduce risk of criminal behavior. CPTED advances strategies which promote:

- Natural Surveillance – Criminals will naturally seek out areas that are secluded and empty to act within as a way to reduce potential detection and apprehension. Anything that increases visibility, improves sightlines, or introduces more traffic through a facility improves its security. For example, the use of glass-backed stair towers and elevator shafts not only lets in more natural light from the outside, but also makes individuals in those areas visible to other persons outside the facility. Facilities designed so that each access way is subject to observation by security or operations personnel is another example of CPTED in action.
- Natural Access Control – A criminal's first priority is to be able to enter a facility undetected and escape it unhindered if they are detected. Good perimeter control includes limiting the number of access points for a facility for both drivers and pedestrians and forcing all parties to pass through portals, which are actively staffed or observed. Good facility design includes creating lower level openings, which allows for light penetration and ventilation, but will not allow a body to pass in or out of the facility. In facilities already constructed with open windows at lower levels, adding screening to these windows to prevent access into the facility is another example of CPTED in action.
- Natural Territorial Reinforcement – Criminals will always seek out environments where they can blend in or believe they can pass through without being confronted. Features which assist in identifying intended or authorized users from the general public aid in creating space improved security. For example, signage that indicates the authorized users of a particular parking structure should have their identification badge on display at all times helps promote an impression that only designated users will be allowed to pass through the facility. In facilities open to the public, the use of motion-activated lighting systems in key areas can also make the environment uninviting to criminal activity.
- Maintenance – Facilities that are poorly maintained indicate a lack of presence of both management and maintenance personnel and create conditions that are conducive to criminal activity. Burnt-out lights, malfunctioning door locks or latches, and broken call boxes all create gaps in the active security systems within a facility. Spalls and excessive cracking in slabs, missing or barely visible paint on floors or curbs, and broken or missing directional signage all contribute to a higher risk for tripping incidents as well as vehicular accidents. Inversely, facilities that are well-maintained are, perceptively and in actuality, more secure.



Lighting is also a critical consideration to the security of a parking facility. There are five common lighting elements used in most modern parking structures, each with their own benefits and liabilities. The Illuminating Engineering Society (formerly the Illuminating Engineering Society of North America) develops standards for lighting quality for various environments. The Illuminating Engineering Society (IES) measures the quality of lighting from three perspectives. These are:

- Minimum Horizontal Illuminance (MHI) - This is the measure of how much light is falling on the surface of a parking area directly below a lamp. Measures are taken by a light meter in lux or foot-candles at multiple locations across an area being surveyed.
- Minimum Vertical Illuminance (MVI) – This is the measure of how much light is being cast by a lamp at the edge of its cone of illumination at a distance of 1.5 meters above the surface of the facility. Measures are taken by a light meter in lux or foot-candles at multiple locations across an area being surveyed.
- Uniformity – This is the measure of the contrast between the highest recorded MHI divided by the lowest recorded MHI in a particular surveyed area. The ratio between the two should never exceed the prescribed ratio recommended by IES.

IES uses lux or foot-candle to measure lighting. A lux or foot-candle are a measure of light falling across a defined area. Ten lux is roughly equivalent to one foot-candle. In layman’s terms, areas that are lit to between .05 and .3 lux would equate to being outside on a clear night with a full moon overhead. An office building hallway would be operating at roughly 80 lux, whereas the actual offices would be lit to between 320 and 500 lux. Standing in full daylight, but not in direct sunlight, would equate to 10,000 to 25,000 lux.

MHI and MVI are important measures because they determine how effective the light sources are within the facility (e.g. is there enough light). Uniformity is important because it speaks to the quality of the light as perceived by the average user. A parking facility may have very effective lighting fixtures, but if there are not enough of them, it may still be poorly illuminated. Pooling of light and shadows in a parking facility can cut down on an individual’s ability to see clearly at a distance and promote a perception of the facility as shadowed and potentially dangerous.

The smaller the uniformity ratio, the more uniform the light distribution is across the area being surveyed, resulting in an environment where the user can see clearer at a distance and perceive as safer.

IES provides a scale of recommended lighting levels for parking structures depending on whether measures are being taken at night (when the facility’s lighting system must provide all illumination) or during the day (when the facility’s lighting system may be supplemented by natural daylight) as well as where the measures are taken within the facility. As a general rule, the parking facility’s lighting system must provide for an MHI of 10 lux, an MVI of 5 lux, and a uniformity ratio of 10:1 across the bulk of the facility during nighttime operations and an MHI of 20 lux and an MVI of 10 lux in stairways.

There were a wide variety of best practices recommended among the publications issued by the various insurance and federal agencies. They could be generally grouped into one of three categories: *Perimeter Control*, *Communications*, and *Surveillance*. Best practices under each of these categories included the following:



Perimeter Control

- ✓ All interior doors, especially those accessing mechanical/electrical/plumbing systems, within a facility should be secured with an operational lock.
- ✓ Doors opening onto exterior streets and walkways should come equipped with safety glass and lighting that allows exiting pedestrians to see oncoming traffic, loitering individuals, etc. before opening the door.
- ✓ Exterior doors intended for use in emergencies only should be alarmed and that alarm should be functioning at all times.
- ✓ All exterior doors should include a functioning self-closing and latching mechanism.
- ✓ Structures should be equipped with mechanisms (i.e. overhead doors, gates, etc.) that would allow the facility to be secured when not in use.
- ✓ Exterior windows or other openings from the second supported level down should include mechanisms that prevent individuals from passing in or out of the facility.
- ✓ Pedestrian pathways to and away from the facility (along the facility's perimeter) should be illuminated to a quality equal to or better than lighting within the facility.
- ✓ Plantings along the perimeter of the facility should be maintained such that they do not obscure exterior lighting, do not impede pedestrian pathways, provide a manner to access the upper stories of the garage, and/or do not provide a place for an assailant to hide.
- ✓ Areas within the facility that could be used as a hiding space or refuge, such as the space under a terminating flight of stairs, should be secured.

Communications

- ✓ Identifying signage, which assists drivers in remembering where they parked, should be in good condition and prominent throughout the facility.
- ✓ Signage directing drivers to the nearest elevator and/or stair tower should be provided throughout the garage and should be visible from any parking space on any floor.
- ✓ Pedestrian exit signs should be internally lit, located near the point of egress, and be mounted to be highly visible to the majority of parking spaces within a bay or floor.
- ✓ If call boxes are included in a facility, they should be located along the most commonly travelled pedestrian pathways or in areas of refuge, and identified by a universal lighting and signage system.
- ✓ Signage indicating emergency egress routes should be posted prominently throughout the facility.

Surveillance

- ✓ Wherever possible, garage operations and maintenance personnel should be positioned to observe pedestrian access points or provide a presence within the facility.



- ✓ Post signage indicating CCTV systems are in use within a facility **only** when all CCTV elements are fully functional. Do not indicate in signage that CCTV systems are staffed in real time unless they are in fact staffed by dedicated, full-time monitors⁸.
- ✓ CCTV should not be a substitute for good perimeter control and/or facility design and should be employed first to prevent personal crimes, then property crimes.
- ✓ If CCTV is being used as an active element⁹, a trained observer and dispatcher should be monitoring the system whenever the facility is open and operational.
- ✓ If CCTV is being used as a passive element¹⁰, recording should be routinely audited at least once every thirty (30) days and retained for a minimum of thirty (30) days after execution of audit. This audit should be completed by the security team to verify no incidents occurred in any of the garages.
- ✓ Security patrols should occur regularly, at random intervals and along varying routes, and traverse all areas of each facility.

DESMAN did not observe any of the City's facilities operating in a manner counter to these principles and recommendations, but would still recommend the City consider hiring a security specialist and/or an illumination engineer to perform a comprehensive risk assessment of all City facilities in the near future and present a prioritized list of recommended improvements that may be invested in by the City. Additionally, should the City move to replace their existing parking structures or construct new facilities, care should be taken to engage a designer familiar with CPTED and IES standards.

The simplest solution to the issue of reserving spaces for City employees would be to terminate the practice and inform those individuals to park on a first-come, first-served basis. Alternately, reserved parking areas set aside for City employees could be located to areas a greater distance from popular uses and destinations, or to other, underutilized facilities altogether such as the Elizabeth Street Deck.

To address the other issue regarding permit parkers purposefully failing to display hangtags so they can park in transient areas, the most immediate solution would be to convert credentials to window sticker or other apparatus permanently affixed to a vehicle. This may necessitate issuing multiple credentials to permit holders with more than one vehicle, but will eliminate the ability of permit holders to circumvent current regulations easily. In the longer term, DESMAN would recommend the City convert over to the use of 'virtual' permits where in the individual simply registers their license plate(s) as their permit credential(s). This conversion would presumably be part of a larger initiative to adopt License Plate Recognition (LPR) technology to facilitate more effective parking enforcement across the downtown.

Conceptual Implementation

There is no current triggering event anticipated to cause a comprehensive risk assessment of parking facility security and lighting; this initiative may be undertaken at any time as the City's budget and

⁸ If an owner indicates a system is being monitored in real-time and an incident occurs on the property, the owner may be sued and found guilty of gross negligence in civil court.

⁹ Defined as supplementing security in real-time by providing constant monitoring of activity within the facility with the ability to summon personnel to respond if an incident occurs.

¹⁰ Defined as supplementing security by providing a record of activity within the facility, which may be used for identification and/or prosecution should an incident occur.



procurement process allow. DESMAN would recommend the City initiate this process as soon as possible for the following reasons:

1. A risk assessment could identify potential liabilities and/or conditions that expose the City to potential litigation and require immediate correction. There are members of the Harrisonburg Police Department with CPTED training who could execute a preliminary assessment.
2. A risk assessment will prioritize actions and/or investments, which can be in turn incorporated into the budget and procurement process in both the near- and long-term.
3. Completion of a risk assessment will demonstrate to the community that the City is responding to stated concerns regarding safety and security.
4. Should the risk assessment return a finding that the City is compliant with current standards in all practices and procedures, this document can be used to defend the City against frivolous claims.

The Harrisonburg Police Department has also indicated they would be willing to meet with employers with evening or late-night employees to discuss short-term improvements that would make the Elizabeth Street Deck more attractive to these users, freeing up capacity in the Water Street Deck for customers and patrons.

Similarly, changes to current operations to enhance the appearance of facilities can occur at any time. Increasing the frequency with which trash is emptied, stairwells and other elements are cleaned, and the parking surfaces themselves are cleaned will go a long way to improving the look and feel of the parking facilities. A motorized sweeper should be used on the parking surfaces to remove built-up dirt and grime. A power washer could be used to clean the stairwells and walls of the parking garages, with follow-up painting to refresh the look of the facilities. The National Parking Association recently issued *Parking Facility Maintenance Manual: 5th Edition* that would provide clear guidelines regarding the frequency and extent of recommend maintenance tasks.

The issue of credentialing for permit holders has already been addressed by the Harrisonburg Police Department, which converted from hang tags to window stickers earlier this year. The Police Department has also reduced the oversell of parking permits in City facilities to create more capacity for transient parkers. Acquisition of LPR technology will be subject to budget approval and public procurement processes. The Harrisonburg Police Department has this included in their budget request for the upcoming fiscal year.

Necessary Supports/Mechanisms

The following related, but ancillary items or actions may be required to implement these recommended initiatives:

- An official Request for Proposals to solicit qualified security and/or lighting specialty firms to conduct the recommended risk assessment. DESMAN assumes that the Department of Public Works would develop technical requirements for applicants and the scope of work to be bid in collaboration with the Police Department and the City Attorney's Office, while the City's Finance and Purchasing Office would manage the procurement process.
- Responsibility for managing the selected firm performing the risk assessment would fall under the Department of Public Works.



- Review and implementation of the risk assessment would be shared equally between the City Attorney's office, the Police Department, and the Department of Public Works.
- The Department of Public Works would bear primary responsibility for assessing and revising, as needed, current maintenance efforts. In addition to purchasing the NPA manual or some other technical guide, the department may wish to consider investing in a power sweeper to perform periodic maintenance on facility floors or slabs, power washing units to clean facility walls and other vertical surfaces semi-annually.
- The City Attorney and City Manager would presumably be responsible for reviewing the implications of removing any city employee reservations in public parking facilities and/or relocating these spaces to other locations.
- The Police Department would lead the effort to acquire and implement LPR technology. Based on DESMAN's experience, a vehicle mounted LPR system costs \$50,000 to \$80,000 for cameras, hardware and software and continuing support services.

Benefits/Liabilities

Benefits: Improving the cleanliness of the parking facilities, upgrading the lighting systems, and improving security systems will all go a long way to improving the look and feel of not only the parking facilities themselves, but also the downtown as a whole. Brighter and cleaner parking facilities are more inviting to potential parkers, especially infrequent visitors to downtown. Additionally, parking facilities that are cleaned more frequently and maintained more diligently tend to remain in good condition for longer and require fewer major repairs over the long term; washing and/or sweeping road salts and other chemicals off of driving surfaces reduces the pace at which these surfaces deteriorate.

Modern lighting systems are often more energy efficient than their legacy counterparts, resulting in ongoing cost savings for the City. In addition, the coverage and light output of modern lighting technology is often far superior to legacy lighting systems, resulting in more well-lit and welcoming facilities. Enhanced security features will improve both the perceived and actual safety of all people who come downtown and use the City's parking facilities. There is also the potential for these enhancements to reduce the frequency with which crimes are committed within the parking facilities. Revised permit practices will send a clear message that the City values its discretionary parkers while still servicing its mandatory parkers. Adoption of vehicle-mounted LPR technology has the potential to be a force multiplier for the police department, allowing one individual driving the ability to cover several times the same distance covered by a traditional patrol officer with much higher rates of detection and accuracy.

Liabilities: A typical risk assessment for a portfolio of Harrisonburg's size typically costs between \$25,000 and \$40,000, depending on the provider and scope of engagement. Lighting enhancements can run into the tens of thousands or even hundreds of thousands of dollars, depending on the extent of the project. Commercial power cleaning equipment such as power washers and motorized sweepers can run from as little as \$10,000 up to \$100,000 per unit; contracting these services out could cost the City between \$5,000 and \$20,000 annually if performed by a third-party. Changing permit policies and procedures will be time-intensive for City staff and carries some political risk as some permit holders will not necessarily support the new terms. Finally, the \$15,000 to \$25,000 investment in certain LPR technology does not include manpower required to populate and maintain databases of permit holder vehicles, scofflaws, and the like. In addition, adoption of LPR technology may necessitate purchase of additional software and equipment

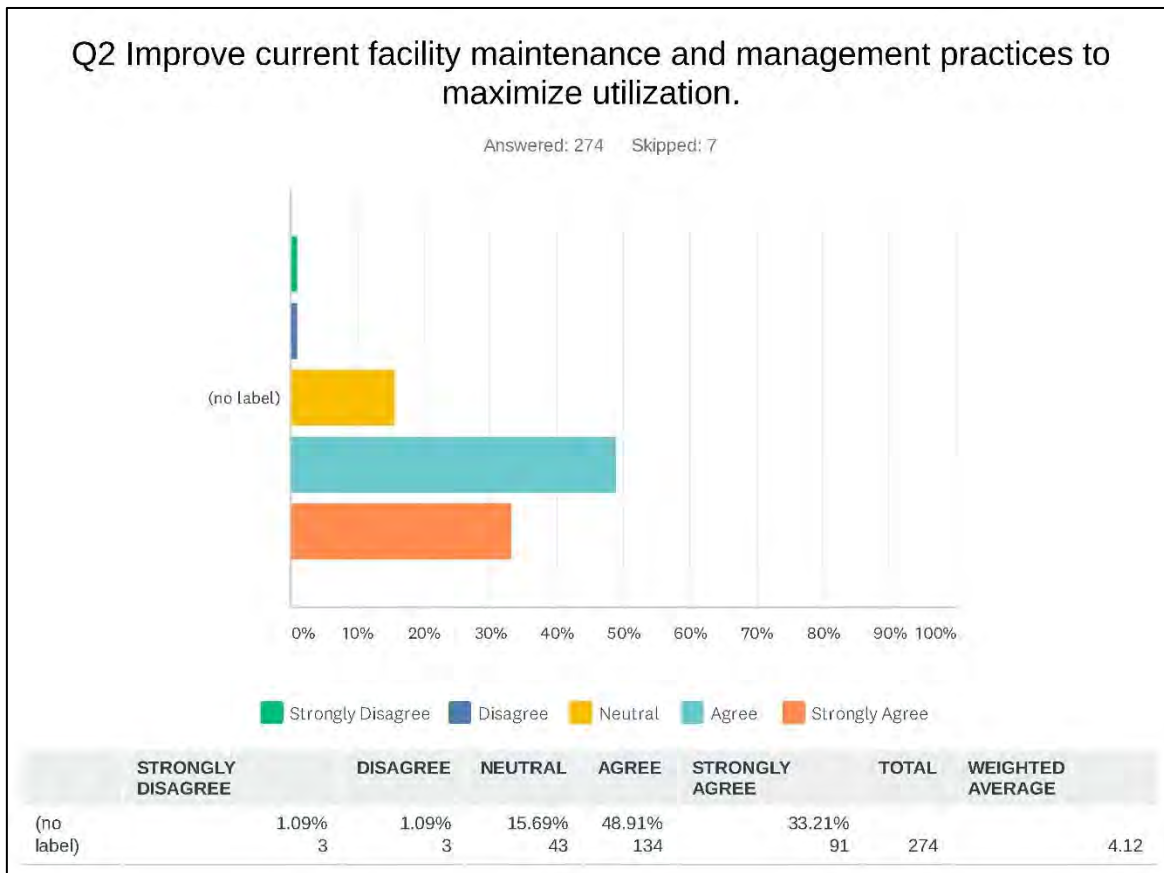


to provide features desired by the community in the future, such as pay-by-phone applications, the ability to reserve parking, and the capacity to virtually issue permits and passes to short-term parkers.

Supporting Analysis

Among surveyed constituents, over half those responding were overwhelmingly in support of improvements to the condition of the parking garages as shown in **Figure 23**.

Figure 23: Survey Responses to Facility Maintenance and Management Practices Improvements



Only 2% of respondents were not supportive of this initiative, but little rationale was received as to why. The 15% of respondents who were ‘neutral’ on the subject indicated they supported these measures, but felt that more could be done to create availability in the City’s surface lots before embarking on an initiative of improving the parking garages.

Among the 49% of those who ‘agreed’ and the 33% of those who ‘strongly agreed’ with this initiative, the largest recurring comment was that the City should be investing in the look, feel, and impression of the city for those visitors who may park at the garage. Many comments expressed concern with the potential for negative impressions when someone visits the parking garages as the lighting and general condition could be improved.

It should be noted that some of the other potential improvements that should be explored are the installation of better directional signage as attendees of the stakeholder meetings expressed frustration with existing garage signage, which is carried over into the next initiative. Specifically, the ability to determine a valid parking space at the garage without the fear of receiving a parking citation. Safety was



not of particular concern expressed in the survey responses, however improvements to lighting were mentioned as a supported upgrade.

Case Studies

The **City of Great Falls, Montana** replaced the lighting in their City-owned parking garages in order to increase the level of safety. In addition, the garages underwent reconditioning as well as installation of new security cameras. The total cost to overhaul the two City garages was \$860,000 but addressed many concerns with the garages, not just the lighting component. Additionally, while about \$265,000 of the project cost went to lighting upgrades, the more energy-efficient LED systems that were installed are estimated to save the City about \$17,000 annually in electricity costs.

The **City of Aspen, Colorado** is home to only 5,200 residents, it holds over 25,000 hotel and inn beds, and imports around 13,000 workers per day. The city's parking department oversees around 850 commercial on-street parking spaces in the city center, a 340-space public parking garage, and around 3,000 residential parking spaces. It was estimated that between 400 and 800 cars were shuffling between parking spots in the residential districts every day to beat the two-hour time limit. With a residential area approximately 12 blocks long by 18 blocks wide, the three-person team allocated to Aspen's residential parking enforcement was not physically able to patrol the entire area in a single day. The city adopted LPR technology to enhance enforcement efforts. With specialized cameras mounted on enforcement vehicles, the LPR system automatically reads surrounding vehicle plates, compares them to a database, and alerts parking enforcement staff when they need to take action. The solution is also integrated with pay-by-phone and permit database management systems.

The **City of Boulder, Colorado's** 11th & Spruce Parking Structure is a six-story, 350-space public parking facility. The facility was lit with 175-watt metal halide garage style luminaires with vertical lamp orientation in the drive and parking areas and 50-watt metal halide luminaires with black honeycomb baffles along the outer perimeter. Lighting measures were 60 foot-candles at the entrance and the general lighting throughout the garage was 40 foot-candles, directly below the 175-watt metal halide fixtures, to 0.3 foot-candles between those fixtures, giving a maximum to minimum light level ratio of about 133 to one. The perimeter walls were dark and signage was very difficult to read. The City replaced these elements one for one with 79- and 55-watt LED elements, achieving an average of 4 foot-candles across the facility with a maximum to minimum light level ratio of 11 to 1 and an average to minimum light level ratio of 3.8 to 1. These light levels and light level ratios exceed Illuminating Engineering Society (IES) recommendations. The lighting improvement was accomplished while reducing energy consumption in the areas remodeled from the original 70,000 watts to 32,000 watts. With savings of 32 kilowatts and energy at +/-0.07 per kilowatt hour, the total savings per hour being \$2.66 when all luminaires are on. The city saved at least \$15,000 annually on parking fixture energy costs, the majority of which are lit 24 hours per day, seven days a week.

The **City of Richmond, Virginia** invested in a vehicle booting program for its on-street parking to encourage better parking compliance. While the booting program was effective, parking enforcement officers spent their shifts walking up and down parking zones and city streets checking vehicles at random. Enforcing the permitted residential and time-limited zones was also a very time-consuming process. The city researched and ultimately purchased two vehicles with integrated LPR cameras and systems; one to identify scofflaws and another to manage time-limited parking and parking permit programs. Since implementation, the city has seen a 6.5% increase in valid citation issuance and a 13% increase in scofflaw detection and collections.



INVEST IN IMPROVED WAYFINDING AND PARKING GUIDANCE SYSTEMS

Proposed Initiative

DESMAN proposes investigating and potentially equipping the City’s off- and/or on-street facilities with space availability technology and improving the parking wayfinding signage directing drivers to existing public parking facilities.

Statement of Issue

Within the parking industry, parking challenges are generally categorized as ‘quantitative’ and ‘qualitative’. *Quantitative* issues occur when there are simply not enough available parking spaces to meet the collective needs of a particular project, building, or district within reasonable walking distance; in other words, the quantity of parking spaces is less than the demand for them. In the experience of DESMAN personnel working on this engagement, roughly 20% of all parking challenges are quantitative in nature. *Qualitative* challenges occur when there is adequate parking for a project, building or district, but for some reason it cannot be accessed by parkers when needed. The causes of qualitative issues are myriad and can include:

- Failure to clearly communicate where users can and cannot park;
- Failure to identify which spaces or facilities are available for general use;
- Failure to inform prospective parkers where there are available parking spaces;
- Walking paths between available parking and popular destinations that are unreasonably long;
- Walking paths between available parking and popular destinations that are complex or confusing;
- Walking paths between available parking and popular destinations that do not have adequate or safe pedestrian facilities.

As noted in a prior section, discretionary parkers such as tourists, business or institutional visitors, shoppers, diners, and venue patrons, are all likely to be unfamiliar with an area and sensitive to any kind of difficulty in finding available parking. They will want to locate available parking as close to their intended destination as possible, preferably within line of sight of their destination so that their walking path from parking to destination is clear and simple. These discretionary parkers will not intuitively know the regulations for curbside spaces, where the off-street public facilities are located, and which of these is most likely to have open spaces when they arrive. Many of the first-time visitors will be brought to a destination via a GPS unit or printed directions and will not start to look for parking until arriving at their destination.

Mandatory parkers, those employees, business owners, and residents who come downtown on a regular basis, will be familiar with curbside regulations, the location of public parking facilities, and typical occupancy conditions. They may even know those private off-street facilities, which are empty and unused at times, and can be pressed into service as need be. They will know the best walking paths from various parking facilities to their destinations.

The City of Harrisonburg does have some wayfinding components in place to help discretionary parkers find public parking facilities and maneuver from some of those facilities to various destinations, but currently has no mechanism for reporting occupancy or availability in on- and off-street parking spaces. In addition, the way the city identifies public parking assets and supports pedestrian connections between them and popular destinations could be enhanced to provide a better experience for discretionary parkers, there by guaranteeing good referrals and regular repeat patronage. Finally, there are some



publicly owned facilities that have restricted access during business hours, but open access afterhours, which could be better identified.

Cause/Indications

The April 2019 occupancy studies indicated there are almost 700 open spaces in publicly-owned and publicly-accessible off-street parking facilities at mid-day and just under 600 open spaces during evening hours across the same. Only 58% (134 of 232) of on-street time-limited parking spaces were occupied at mid-day and only 59% (136 of 232) were used during the evening hours on the same day. And of the 446 on-street spaces with no restrictions attached to them, only 39% (175) were in use at mid-day and 32% (142) in the evening.

Despite this, over 400 survey respondents indicated that “Not Enough Spaces/Proximate Spaces” was the biggest challenge individuals faced when parking in downtown Harrisonburg. One of the main issues raised during the stakeholder and public meetings was that there seems to be a lack of parking. Additionally, a large number of people indicated that parking options in the downtown are difficult to identify. The disconnect between people’s perceptions and the reality of utilization in downtown seems to indicate that, in most cases, a perceived lack of parking is the issue versus an actual lack of available space.

Additionally, while roughly 45% of survey respondents indicated that the current signage system directing drivers to the City’s parking facilities was clear and easy to understand, roughly 25% felt it was not and the remainder (~ 30%) were unsure if the current wayfinding system is adequate. And roughly 80 survey respondents indicated that they felt a “Lack of / Poor Signage/ Information” was the biggest challenge to the downtown parking system currently.

The easiest way to connect drivers to parking in a downtown is through the municipality’s wayfinding system, an interconnected set of signs designed to direct an inbound driver from major arterial roadways into public parking facilities. Wayfinding systems are generally broken down into four components:

- **Trailblazing signage** placed primarily along arterial roadways leading into an area at key intersections to direct drivers to public parking facilities. Parking industry best practices recommends these signs are placed at every major intersection and/or every half-mile along the arterial roadway and the public facility. Signs should be made of reflective materials to improve visibility after dark, mounted low enough to be in a driver’s natural sight line, and bearing lettering that can be read from distances up to 50 feet by an individual of average eye sight.
- **Identifying signage** placed at the entrances to public parking facilities, identifying them as such to passing motorists. Parking industry best practices recommends these signs are placed prior to or even with the entrance of the public facility. Signs should be internally or externally illuminated to improve visibility after dark, mounted low enough to be in a driver’s natural sight line, and bearing lettering that can be read from distances up to 35 feet by an individual of average eye sight.
- **Instructional signage** that informs users where to park or not to park and the facility’s hours of operation. Parking industry best practices recommends these signs are placed near the entry of the facility for approaching drivers and along natural pedestrian pathways exiting the facility. Signs should be made of reflective materials to improve visibility after dark, mounted low enough



to be in a driver’s or pedestrian’s natural sight line, and bearing lettering that can be read from distances up to 15 feet by an individual of average eye sight.

- **Directional signage** which identifies where the facility is located relative to surrounding businesses, institutions, and other destinations, as well as acceptable foot travel paths. Parking industry best practices recommends these signs are placed near elevator lobbies or locations along the most commonly used path of egress for pedestrians. Signs should be mounted at eye level with sufficient illumination to be read after dark and include the names of major streets, popular destinations in the area, and the facility’s name and location.

The City of Harrisonburg already has a robust **trailblazing signage** package in place (see example to the right). Designed by Frazier Associates and installed by the Department of Public Works in 2008, the signage system was specially designed and branded for the City. While DESMAN did not inventory the location of each of these signs, they appeared to be properly located at each major intersection, denoting both attractions and the general direction of public parking assets. As the sample to the right shows, the current system does not identify parking facilities by name, but rather employs the universal blue “P” to identify the general direction of public parking areas in the area.



The City’s current wayfinding system also includes **identifying signage** following the same general theme. The signs appear to be roughly 24” x 36”. For the parking decks, the name is displayed prominently, along with a listing of applicable parking types (i.e. time-limits, permits, etc.) as shown below. Several of the lots have signs of a similar dimension with a large encircled “P” at the top, followed by the name of the facility, and applicable time limits.



Identifying signage ideally draws a driver who has been sent in a particular direction by a trailblazing sign to the entrance of a public parking facility and announces the name of the facility and any pertinent regulations¹¹ a driver should be aware of before entering. Per best practices, this signage is typically mounted to be visible for approaching drivers for some distance to allow them adequate time to decide whether to enter the facility or not without creating backups in the roadway. Ideally, these signs are illuminated, either externally or internally and are mounted perpendicular to traffic either just over the entrance to the facility or just before it, with supplemental signage indicating the location of the actual entry point.

DESMAN noted some shortfalls with the identifying signage for the public parking facilities in downtown Harrisonburg. First, there were significant gaps between trailblazing signage (i.e. “P”s and arrows) and identifying signs where a driver searching for parking after finding their destination could get disoriented or discouraged. Ideally, trailblazing signage should direct a driver at an intersection to turn on to a street at which time they should be able to visually identify the location of a public parking asset.

¹¹ Such as hours of operations, types of parking allowed (e.g. time-limited, permit only, etc.), and – in municipalities that charge for parking – the fee structure in effect.



Secondly, none of the identifying signs were subject to independent illumination, relying on either streetlamps or the headlights of approaching vehicles to make them visible after dark. Additionally, the size of the signs and colors used for lettering were such that a driver with average eyesight would need to be within 30' or less to make out the name of the facility, and half that distance to see any pertinent regulations posted at the bottom of the sign. At a travel rate of 20-30 MPH, this leaves the average motorist unfamiliar with the area very little time to make an informed decision.

For both the Elizabeth and Water Street Parking Decks, signs were mounted perpendicular to on-coming traffic, but in the case of the Elizabeth Street Deck, signs were mounted between entry and exit lanes, which could create confusion for drivers approaching the facility as both East Elizabeth and East Wolfe Streets are two-way. The current sign mounting location, a comprise intended to serve motorists approaching from either direction, is likely to cause confusion for first-time visitors to downtown as the sign sits between entrance and exit lanes for both streets. For the Water Street Deck, the signs on West Water and West Bruce Streets are better placed, mounted between entry lanes off both streets. For both decks, the signage indicating the location of upper story permit parking areas is adequate, given that these will be repeat (i.e. mandatory) parkers, but the signage off Liberty Street announcing free public parking on the upper section of the Water Street Deck is poorly placed and too small to be easily read by approaching transients unfamiliar with the area.

Observations of identifying signage in the public parking lots owned by the City were as follows:

- Signage for the North Liberty Street Lot¹² appears to be properly located to be visible to approaching drivers, but lacking in independent illumination.
- Signage for the West Elizabeth Street Lot¹³ is poorly placed for approaching motorists, being located in the back of the lot, where it cannot be easily seen by approaching motorists.
- DESMAN could not locate any signage along West Water Street identifying the public parking lot at 121 South Liberty Street¹⁴.
- Signage identifying the large Municipal Parking Lot¹⁵ around the Farmer's Market was mounted inside the lot, facing out onto Liberty Street, but would not be visible to an approaching motorist.
- There was no signage identifying public parking outside City Hall for motorists approaching along South Main Street.
- Signage for the South Main Street Lot¹⁶ appears to be properly located to be visible to approaching drivers, but lacking in independent illumination.
- DESMAN could not locate any signage along Newman Avenue or East Water Street identifying the Newman Avenue Lot¹⁷.

¹² Also identified as 268 North Liberty Street Parking on Google Earth.

¹³ Also identified as 86-92 West Elizabeth Parking on Google Earth.

¹⁴ Also identified as 125 West Water Street Parking on Google Earth.

¹⁵ Also identified as 156-218 US-11 Parking on Google Earth.

¹⁶ Also identified as 121 US-11 Parking on Google Earth.

¹⁷ Also identified as 56 Newman Avenue Parking on Google Earth. It should be also noted that the surface parking lot due east of this facility (1-99 East Water Street Parking) is also identified as a public parking lot on Google Earth.



- DESMAN could not locate any signage along East Water Street or South Federal Street identifying the East Water Street Lot¹⁸.
- Signage for the North Main Street Lot¹⁹ appears to be properly located to be visible to approaching drivers, but lacking in independent illumination.

DESMAN also noted that the parking lot adjacent to the Valley Turnpike Museum, identified by City officials as a publicly-owned and -accessible parking asset, does not have any identifying signage. Finally, City officials noted that some facilities owned by the City, like the Clark and Bradshaw Lot at 144 North Liberty Street and the Harrisonburg Electric Commission Lot at 89 West Bruce Street, are supposed to be available for public use outside of standard business hours. However, the signage on these facilities does not indicate this availability.



Existing **instructional signage**, telling drivers where they may or may not park (i.e. 10-hour parking, 2-hour parking, permit only, etc.) and a facility’s general rules of operation appears to be adequate for both on- and off-street facilities. (See example to the right.) In the smaller off-street facilities, these messages are included as part of the identifying signage; in the larger facilities, it may be posted as additional signage relative to one or more spaces within the facility.

The **directional signage** that assists individuals in orienting themselves within downtown relative to where they have parked and various popular destinations is limited to installations in the two parking decks near stair towers. The signage is functional yet basic, identifying the general location of other public parking facilities, surrounding streets, and Court Square.

There is no current apparatus on- or off-street for monitoring or reporting current or historical occupancy rates in any public parking facility in downtown Harrisonburg.

Potential Solutions

At a minimum, DESMAN would recommend the City consider the following actions:

1. Install lighting elements for all identifying signage on each public parking facility to improve visibility;
2. Move the signs at the 121 Liberty Street Lot and Municipal Lot such that they are near the entrances of these facilities and perpendicular to oncoming traffic to ease identification for approaching drivers;
3. Install signs along roadways and near entrances for the City Hall, Newman Avenue, and East Water Street Lots.

DESMAN estimates it will cost \$5,000 or less to implement these recommendations.

While not a critical initiative, DESMAN would also recommend the City research the process to have Google Earth and other virtual mapping services identify their public parking assets using the same

¹⁸ Also identified as 14 East Water Street Parking on Google Earth.

¹⁹ Also identified as 90 North Main Street Parking on Google Earth.



(universal) nomenclature employed by the City. Currently, this is a minor annoyance, but as integration of navigation services becomes a standardized and universal feature in new vehicles, the ability of a driver to confirm the instructions provided by their vehicle’s navigation systems with the signage posted by the City will become more critical. Using a universal identifier for each facility will also facilitate the use of technology in the future to communicate facility status and, eventually, guide automated vehicles point to point. To DESMAN’s knowledge, there is no cost associated with establishing universal names on their facilities for use by commercial navigation services.

The City could strengthen its wayfinding system, address potential gaps between trailblazing and identifying signage systems, and address the noted lighting issues with the addition of ‘marquee’ or ‘blade’ sign systems like those shown below. These signs are typically mounted near the entrance of a facility, either between the roadway curb and sidewalk (for parking lots) or on the face of a structure. They are internally lit and visible during day or night hours from distances up to 100’, creating strong connections between trailblazing signage near intersections and the facilities themselves. As shown within the examples below, these signs can also be part of a ‘monument’ installation, which includes LED displays providing real-time space availability information. Costs per unit vary widely by manufacturer and design; at this juncture, DESMAN would recommend the City budget \$2,500 per sign, pending a competitive bid process and consultation with an approved vendor.

Figure 24: Examples of Marquee/Blade Parking Facility Signs



As noted previously, the current instructional signage for the facilities is adequate and functional, although in some instances the application of standard signs for each space or a row of spaces, indicating a designation as time-limited or permit only parking, is not the most aesthetically pleasing approach. Pending restrictions imposed by the Manual on Uniform Traffic Control Devices (MUTCD) the City could designate parking assignments or restrictions on individual spaces through templated applications in each stall (see example to the right) or use of alternative colors for stall striping, such as the green commonly used to indicated parking spaces for electric vehicles or the blue templates and paint used to denote ADA



permit spaces. Depending on the extent of implementation this initiative could cost as little at \$25 per space up to several hundred dollars per stall.



As noted, the City currently employs a basic graphic on both directional signage in the decks and their website to identify the location of public parking assets across downtown and assist individuals in orienting themselves (see example left). DESMAN believes this presentation could be improved through the following actions:

1. Adding the name of each public parking facility to the graphic.
2. Adding the location and names of public structures (i.e. City Hall, the Farmer’s Market, Police Department, court buildings, etc.) across downtown.

The City may also want to consider adding the names of cultural attractions (e.g. the Discovery Museum, the Valley Turnpike Museum, the Massanutten Regional Library, etc.) as local laws and regulations allow. In some communities, private businesses and institutions have been included on these graphics, typically in return for some investment in sponsoring the manufacture and installation of the signs or contribution to some beneficial community fund. DESMAN does not have a cost estimate to revise or expand these existing graphics at this time. Finally, the Harrisonburg Downtown Renaissance should take steps to introduce supplemental parking information to their website for visitors, patrons, businesses and property owners, including a Frequently Asked Questions (FAQ) section.

Automated Parking Guidance Systems (APGS) is the common name for any type of technology that tracks the occupancy of a particular parking space, area or facility and reports that data to one or more sources. APGS technology has been employed in parking structures, most commonly those serving airports or hospitals, where owners have sought to reduce the time drivers spend searching for available parking spaces during periods of peak demand, for over 50 years. These original systems used inductive loops buried in travel lanes to conduct a running count of the number of vehicles passing a fixed point, usually the entrance into or exit from a particular facility or floor within that facility, which was then translated into a running count of vehicles parked within the facility or floor. This figure was in turn deducted from the parking capacity of the facility or floor and converted to the number of parking spaces available, which was displayed on signage near the entry of the facility.

Modern APGS applications work much the same way, but can now be employed on- or off-street, using induction loops or individual stall sensors (“pucks”), sonic detectors, infrared sensors, or cameras mated to LPR and/or spatial recognition software, and can monitor occupancy down to the individual parking space if desired. The newest systems not only report occupancy and availability in real-time, but also track utilization historically and can push data out to dynamic signage, websites, and even smartphone applications. APGS can also be used to pinpoint parking violations, such as staying over the posted time limit in a particular space, area or facility, and making parking enforcement more efficient and effective.

The greatest advances in the field have been through systems using cameras and spatial recognition technology to monitor occupancy on a space-by-space basis across entire block faces and surface parking lots within just one camera, mounted high on a utility pole. Many of these systems, which were originally developed in Europe, have the capacity to not only feed real-time parking space availability data to



dynamic signage, web pages, and smart phone applications, but also vehicle navigation systems, allowing a driver to enter in the name or address of their intended destination and then be guided to the closest open parking space.

DESMAN would recommend the City investigate APGS through a pilot program, inviting multiple vendors to bid on limited product demonstrations in small surface lots, portions of parking decks, and/or select block faces. This would allow the City to test different technologies (i.e. induction, sonic, camera-based, etc.) and vendors before committing to a particular system. Should the City find a system that is accurate and cost effective, they should work with that vendor to explore mechanisms for communicating real-time availability to the general public through dynamic signage, the City's website, smartphone applications, and collaboration with third-party navigation services. In DESMAN's experience, most APGS technology vendors will engage in pilots at a nominal fee (or sometimes no cost) in order to better position themselves to win a contract.

Conceptual Implementation

Given the value of wayfinding and parking signage to the potential users of the City's parking system, especially infrequent visitors to downtown, DESMAN recommends implementing the recommendations to enhance or expand current identifying signage installation in the near-term. Investigation of the feasibility of adopting the marquee-style signs could be a mid-term initiative, but since the City recently completed a comprehensive assessment of signage, it should be fairly straightforward to evaluate the resulting recommendations and make adjustments to the plan prior to its implementation. The firm that conducted the signage evaluation, along with the City's Community Development, Public Works, and Police departments can all work together to determine the best locations to install signage and decide on color/design in coordination with the City's larger signage system. The designs should also be discussed with Harrisonburg Downtown Renaissance to confirm that the look and feel of the signs is in line with other branding initiatives.

Should the City choose to reengineer its existing system of instructional signage in the parking facilities to indicate which drivers can park where, the choice must be made whether to use individual signs on each space, unique paint schemes to indicate parking privileges, or a combination of the two. If individual signs are chosen to differentiate permit parking from general timed public parking, the Police and Public Works departments should work together to ensure that all of the signs are consistent across the City's parking facilities and that all spaces are properly signed. If the City chooses to use paint colors or designs to indicate parking privileges, it is possible to get the community involved in deciding what colors or designs should be used. This can create engagement with the users of downtown parking and also begin to inform citizens of the coming signage changes.

For the directional signage showing parking users where they are in relation to major destinations in downtown, Harrisonburg Downtown Renaissance should play an integral part. The existing signs provided by HDR at the City's two garages can be used as a starting point for developing signage to be used at the City's other parking facilities and, potentially, in other key locations in downtown. The City and HDR should work together to determine the content for these signs, where they are ideally located, the potential to incorporate advertising on the signs, and how to split the cost of producing, installing, and maintaining the signs.

Another method to bolster the availability of parking information to those looking for parking downtown would be additional website materials. The City's website has a dedicated website for parking information;



however, other entities of downtown could also provide parking information. Specifically, HDR would benefit from offering parking recommendations and guidance on their website, which could include smaller lots that those unfamiliar with downtown may not be aware of. The information could help them plan their trip details, including parking prior to arriving downtown. The more information available to the public, the more positive the parking experience will be.

A pilot of APGS options can be conducted in the near-term. If the resulting cost/benefit assessment of options does not support immediate adoption of APGS technology, DESMAN recommends that the City consider procuring and installing advanced space counting and space availability technology when a new parking garage is constructed in downtown. Like the upgrades to the lighting and security systems in the City's existing garages, installing space availability technology may not make sense at this time given the current ages of the Water Street and Elizabeth Street garages.

However, when either of these facilities are redeveloped and replacement parking is constructed, the new facility(s) should be designed to incorporate space counting technology. By planning for this technology during the initial design of a new parking garage, the City can ensure that the technology it chooses will function properly with the design of the garage. Additionally, the City will have the ability to set expectations for the performance of the technology, the types of information that will be gathered, the look of the display signs, and how the information is integrated with the City's website or other online platforms.

Whatever changes the City chooses to make to its parking wayfinding and related signage, these changes should be communicated to the public in advance of being implemented. Through a mix of social media, the City's website, and traditional print media, the City can communicate any changes to the parking facility and wayfinding signage and, hopefully, avoid most confusion among the users of the parking facilities.

Necessary Supports/Mechanisms

As mentioned previously, the City recently completed an evaluation of the signage and wayfinding throughout downtown. For this reason, improving the wayfinding and informational signage related to parking should not require significant time or effort on the part of the City. Working together, the Community Development, Public Works, and Police departments can evaluate the City's most recent signage plan and decide where additional parking signage should be placed. Additionally, as mentioned, HDR should be involved in the discussions about signage, including being intimately involved in the creation of the signs related to downtown points of interest.

If dynamic parking availability signage is procured in the future, at a minimum, Community Development, Public Works, and the Police departments should be involved with the procurement process. In addition to their involvement in the planning and procurement processes, the Police Department will also need to understand the purpose, function, and operation of the new equipment, so that they can make use of the equipment post-installation. Depending on the technology that is chosen, there may be occasions where resetting the capacity figures or troubleshooting components may be required.

Benefits/Liabilities

Benefits: The most significant benefit of enhanced wayfinding and parking signage is the increased awareness of the public of the various public parking options available. By knowing where parking is and



where that parking is located in relation to major destinations within downtown, people will be more comfortable coming to downtown, especially infrequent visitors. Additionally, by more effectively directing potential parkers to off-street facilities this can lead to a reduction in the number of drivers circling the streets looking for an on-street space, as well as the availability of on-street spaces. Finally, if users are more frequently able to easily find a parking space in one of the City's existing facilities, this may lead to fewer complaints related to a lack of parking, reducing the pressure on the City to construct additional parking capacity.

Liabilities: The cost associated with implementation is the main liability of these initiatives. While the additional wayfinding and parking signage is relatively inexpensive when compared to the parking space availability technology and signage, high-quality, well-designed, and durable static wayfinding signs will likely cost several thousand dollars to purchase and install. Similarly, there is a cost to the City to produce or purchase and install signs denoting parking rules and regulations. Should the City choose to use a creative paint scheme in the facilities to denote parking privileges, the cost of implementation may be slightly less than installing a sign in every space, but there is still a cost.

The most significant cost comes if the City decides to install space counting systems and the associated signs. As mentioned previously, the most sophisticated of these systems can cost several hundred dollars per space, with individual display signs costing several thousand dollars. Even the systems that use magnetic detection loops to count cars will still cost over \$1,500 per entry and exit lane, plus the cost of signs to display the information on the exterior of the facilities and the software necessary to push this information to an online platform. In order to minimize the cost associated with purchasing one of these systems, when the City decides to pursue this recommendation, it is important to be methodical in evaluating what degree of technology is necessary to manage parking demand in Harrisonburg; the technology should not necessarily be the same as that which an airport might choose to manage their parking garages.

Supporting Analysis

Among surveyed constituents, over half those responding were in overwhelming support of improvements to the wayfinding in the City as shown in **Figure 25**, next page.

Among the 21% of respondents who 'strongly agree' and the 38% of those who 'agree' with the initiative noted that some areas of the City do not have appropriate signage, such as the areas near Court Square. If clear wayfinding signage could help orient visitors to the downtown, including public parking assets, the improvements would help those unfamiliar with the area. Other comments of support noted that signage was not clear on how to navigate from one parking facility to another in the case that a specific parking facility was full. Supporters expressed their understanding of the costs associated with these initiatives. Many comments praised the space available signage at JMU as helpful, but understood the costs of implementation of these dynamic counting systems.

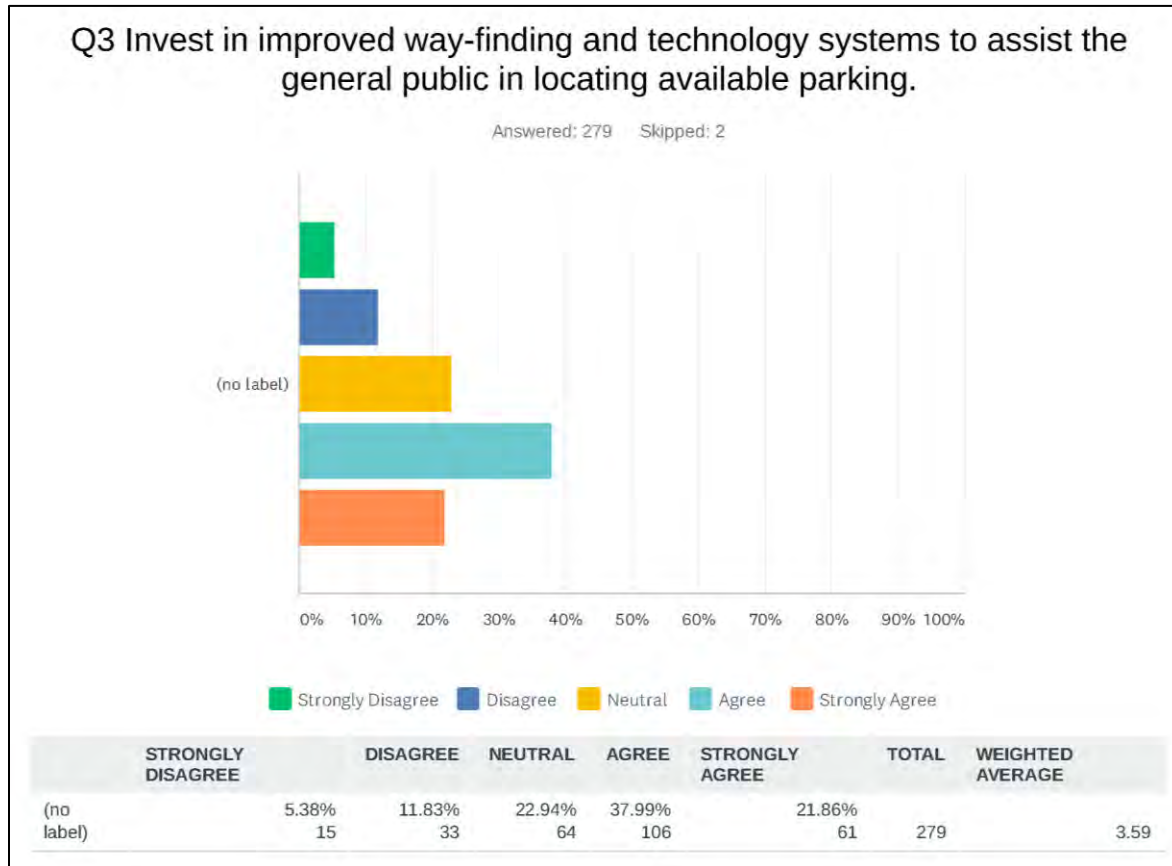
The 23% of respondents who were 'neutral' on the subject indicated they supported these measures, but did not believe the large expenses were necessary as some supplemental static signage could show where additional parking is located. Others believe there is adequate signage that directs drivers to the available parking garages, and the availability of parking spaces throughout downtown is sufficient.

Among the 5% who 'strongly disagreed' with the initiative cited other improvements as more valuable and impactful than adding more signage clutter to the streets and parking garages. The remaining 12%



added that these improvements should be included with the new parking garages developments that are slated to commence in the next five years.

Figure 25: Survey Responses to Wayfinding Improvements



Case Studies

Many cities are adding comprehensive wayfinding signage packages to brand and identify available parking. **Atlanta, Georgia, Durham, North Carolina, and Charlotte, North Carolina** all have included parking signage and arrows to provide direction to select facilities in the downtown to assist visitors with finding a parking space quickly and efficiently. This is in addition to the directional and information signage, which guides visitors to major attractions. (Links provided below)

Atlanta, Georgia: <https://www.atlantadowntown.com/files/docs/wayfinding-overview-presentation.pdf>

Durham, North Carolina: <https://durhamnc.gov/3828/Downtown-Durham-Wayfinding-Project>

Charlotte, North Carolina: <https://charlottenc.gov/Transportation/PlansProjects/Documents/WayfindingAndParkingGuidanceSystem.pdf>



When developing the signage package for their downtown garages, the **City of Battle Creek, Michigan** (<https://www.valleycitysign.com/battle-creek>) offered local business one of three different graphic options for identifying their location. The first was a free, but basic, listing of the name of the business on the proper block. The second option, for a small fee, allowed the business owner to highlight the building profile on the map so the pedestrian could see where the business was located on the block. The third, and slightly more expensive option, allowed for inclusion of the business's logo or other special graphic on the map. Roughly 40% of downtown businesses chose the third option, which generated enough revenue to pay for the entire signage package for all of the City's garages.

In **Naperville, Illinois** the City equipped its garages with ultrasonic counting mechanisms to display the number of available parking spaces on large signs in front of the garages. In addition to the physical parking signage, the parking availability for each of the three downtown garages is updated on the City's website in real-time(<https://www.naperville.il.us/about-naperville/transportation-and-parking/downtown-parking/>).

The City of **Bastrop, Texas** implemented a new wayfinding system that was effective and well received it was the subject of a case study at the 2013 Texas Downtown Development and Revitalization Conference (https://www.texasdowntown.org/pdf_files/6913_Wayfinding-C%20Roberts.pdf). In particular, the directional signage included in the city's parking facilities and on-street kiosks was heralded as exemplary for its incorporation of key information.

The **City of Asheville, North Carolina** offers a smartphone application (<https://www.buncombecounty.org/transparency/buncombe-government/public-parking.aspx>) that provides real-time parking occupancy data.

The Cities of **Santa Barbara, California** (<https://www.santabarbaraca.gov/gov/depts/pw/dtp/pmap.asp>), **Madison, Wisconsin** (<https://www.cityofmadison.com/parking-utility/garages-lots/current-hourly-parking-availability>), **Ann Arbor, Michigan** (<http://rpsa2.com/availability>), and **New Haven, Connecticut** (<https://parknewhaven.com/>) all offer real-time occupancy reports on their websites.



INTRODUCE NEW PUBLIC PARKING SUPPLY INTO DOWNTOWN

Proposed Initiative

DESMAN recommends the City begin investigating opportunities to increase the supply of public parking in downtown through the construction of additional spaces.

Statement of Issue

Downtown Harrisonburg continues to grow steadily through a combination of policy incentives (which include waiving parking requirements on new development and change of use) and a strengthening local economy, which puts increasing pressure on the parking system. However, this same parking system contains two structures (the Water Street and Elizabeth Street Decks) nearing the end of the original service life²⁰ and a series of surface parking lots, which could potentially support higher and better land uses, if they were not needed as public parking facilities. If Harrisonburg is to continue their downtown renaissance, they must begin to consider how to replace capacity, which may be lost to increasing density and demand or redevelopment of existing assets.

Cause/Indications

The Water Street Deck has been under consideration for redevelopment for some time. In fact, the 2018 Urban Land Institute Technical Assistance Panel Report (“Downtown Harrisonburg Evaluation of City Owned Parcels”) focused on the redevelopment parcel for the property. The panel supported replacement of the existing structure with a newer facility, which would feature activated spaces at grade-level to energize the surrounding City streets, particularly Liberty Street and include upper story residential and/or commercial space. Specifically, the panel endorsed any design that sought to ‘wrap’ the newer parking facility in other land uses.

The 2014 Downtown Streetscape Plan prepared for the City of Harrisonburg contemplates a series of proposed improvements, which would make downtown more accessible to bicyclists and pedestrians, but also has the potential to remove some existing curbside parking capacity in the process. Finally, the Build Our Park proposal to redevelop the area around the farmer’s market plaza from a 181-space surface parking lot into a village green and outdoor performance venue also has the potential to radically reduce the public parking supply.

A preliminary analysis of known emerging developments in downtown Harrisonburg executed by DESMAN suggests that planned projects anticipated over the next three years (“near term”) will introduce demand for 247 spaces but only supply 20 spaces and eliminate 88 existing spaces creating a net deficit of 315 spaces. In the mid-term (4-6 years), projected development will require up to 328 spaces, with no plans to replace any capacity other than that contained within the existing Water Street Deck. Finally, in the long-term (7-10 years), planned development will require 67 additional spaces, but provide no new supply, creating a net ten-year potential deficit of 710 spaces.

²⁰ A precast parking structure typically has an initial service life of 25-40 years depending on maintenance efforts and local weather conditions before time and natural forces begin to degrade the structural integrity of the facility. This lifespan can be extended through major repair and replacement efforts, but at substantial cost.



Potential Solution

The current parking market in downtown Harrisonburg will not generate adequate gross revenues to fund the development of a new parking garage, but with assistance from a public agency or a private investor the necessary funding could be secured. In the past, the City has provided parking infrastructure as a tool to support the economy of downtown through expenditures from the City's General Fund. If the City desires to add public parking capacity downtown, two options are available: 1) the City can finance and construct an additional parking garage on an existing City-owned surface lot in downtown or replace the existing Water Street or Elizabeth Street garages with a new facility of greater capacity or 2) the City can develop a new or replacement garage through a public/private partnership.

In the first scenario, the City would use General Fund dollars, tax increment financing, a special tax assessment, or some combination of revenue sources to fund the construction of a new facility. This method of financing a new or expanded parking garage would require the City to divert funds from other uses such as schools, roads, other infrastructure, etc. However, this would allow the City to control all aspects of the development of the facility and allow it to retain all ownership and control of how the facility is used.

In the second scenario, the City would partner with a private developer and jointly develop additional parking capacity, likely in conjunction with some other development. This type of arrangement would allow the City to share the cost of developing additional public parking capacity. One potential arrangement would be for the City to allow a private developer to build on the site of the existing Water Street or Elizabeth Street garage, in exchange for the developer replacing the current public parking capacity, adding additional public parking capacity, and building spaces to accommodate new demand generated by the development itself. This arrangement would provide the developer with a valuable piece of property on which to build, while the City would gain valuable additional public parking supply in a brand-new parking facility.

Whether a purely public project or a public/private venture, the City will want to incorporate many of the recommendations from the ULI TAP report into the design of a new facility, which includes providing active uses at grade-level to encourage vitality and pedestrian activity along abutting City streets. In addition, in the event of a public/private venture, the private developer will most likely want upper story space on any parcel to introduce residential, office, or retail space into the market.

In DESMAN's experience, different land uses require different dimensions to support their development. Residential facilities require at least 36' of depth on any parcel, which assumes an 8'-10' hallway and residential units of 25' or greater depth to one side. Office uses respond to the same dimensional requirements, although within the 36' span there may be a 6' central hallway flanked by offices on either side of 12'-14' in depth. Retail stores and restaurants commonly need at least 60' of depth to service the combination of floorspace for customers and back-of-house space for operations and inventory.

In addition to factoring in these minimum requirements to support other land uses, DESMAN had to consider the dimensional requirements of structured parking. As a general rule, an efficient parking facility with two-way flow and perpendicular (i.e. 90-degree stalls) parking on either side requires a 60' depth; 18' for the stalls on either side of a 24' drive aisle. A parking structure actually needs two of these 60' bays side-by-side to function, as at least one of the bays must be sloped to allow a vehicle to climb the 10' between floors. In addition, this structure needs a footprint of at least 210' in length to ensure that the slope of the floor to create vertical circulation is still shallow enough to allow driver's to comfortably park



upon it²¹. Finally, DESMAN assumed that any new facilities would need to provide enough capacity to replace any existing parking displaced in development of the structure, plus another 150-200 spaces against anticipated shortfalls driven by future development.

From these three parameters, DESMAN developed a series of design concepts for four sites identified in the downtown. The following is not an exclusive or exhaustive list of options; other options for feasible sites may currently exist or become available in the future within the greater area. For the purposes of this analysis, DESMAN focused strictly on the four sites as presented. The Water Street and Elizabeth Street Deck sites were the most scrutinized, as DESMAN assumed that these locations were most probable for replacement as a mixed-use project in the foreseeable future. The design concepts were as follows:

- **Water Street Option 1:** (See **Figure 26**, next page) This concept features a 102' x 330' footprint for a commercial building (office, residential, or restaurant) at grade fronting South Liberty Street with active corners at Water Street and Bruce Street. As a single-floor development, this would provide 33,600 square feet of commercial space on the site and limit the parking component at grade to just 120' of frontage along Water and Bruce Streets, plus 10' service alley between the two structures²². This design would feature one-way entry off Water Street and one-way egress onto Bruce Street. If the City and/or developer only elected to develop the grade-level portion of the site set aside for commercial uses, the parking facility could be extended over the top of the commercial structure at the first supported level by one additional bay (60'). As the existing facility currently contains 324 parking spaces and the design target was replacement of existing capacity plus another 150-200 spaces, this structure would need three floors to make the minimum target capacity²³.
- **Water Street Option 2:** (See **Figure 27**, following page) This concept features two 66' x 234' buildings on either end of the site and a three-bay parking structure in the middle. Vehicular access and egress would be from and onto South Liberty Street, but the corners would be activated, as well as the street frontages on Water and Bruce Streets. These building footprints would be acceptable for any commercial use and would offer 15,444 square feet of grade-level space at either end of the block. The parking structure would need to be at least four stories high to hit design capacity targets, assuming the structure was restricted to its grade-level footprint. This design does not activate South Liberty Street, but would support development of one or both commercial building sites over the grade-level without impacting the target design capacity of this option.
- **Water Street Option 3:** (See **Figure 28**, following pages) This concept maximizes activation of the parcel along Liberty, Water, and Bruce Streets and would 'wrap' the parking structure in another land use, as suggested in the ULI TAP report. However, the dimensions of this 'liner' building would only be acceptable for residential uses. The parking facility would be a three-bay structure

²¹ As a general rule, any slope greater than 6% is considered too great to park a vehicle upon, as the driver and passengers cannot comfortably and safely enter and exit the vehicle beyond this grade. As the bay with the slope can take up to half of each floor of the garage, designing facilities with ramps too steep to park upon is considered inefficient.

²² This space is needed for ventilation of the parking structure, to allow for light intrusion into the lower levels, and to create necessary separation between the commercial building and the parking structure in case of a vehicle fire, as well as allow access to the back of the commercial building, if needed. This 10' clearance between parking and adjacent buildings is included as standard feature of all concepts developed.

²³ If the developer determined that they wanted to increase the height of the commercial structure, this would reduce capacity of the parking structure above grade by roughly 77 spaces per floor, requiring greater vertical expansion to meet design targets.



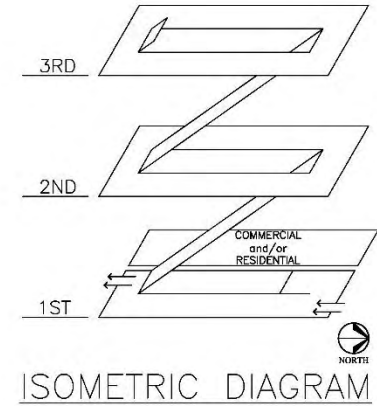
with access off of Water Street and egress onto Bruce Street and a four-story height to make the design target capacity.

- **Elizabeth Street Option 1:** (See Figure 29, following pages) This concept proposes the face of the project site set along North Mason Street for a commercial structure of some type and preserving the remainder of the site for a two-bay parking structure at grade, and a three-bay structure above grade, reaching design capacity in three levels. The concept can replace the 324 spaces in the existing Elizabeth Street Deck and introduce an additional 138 spaces across three levels if the parking structure's footprint can be extended over the top of the commercial space at the first supported level. However, should the developer elect to building vertically on the commercial pad, the structure would need to be at least five levels and possibly higher to replace the existing capacity and provide adequate parking to meet new demand or make up for lost capacity elsewhere in downtown.
- **Elizabeth Street Option 2:** (See Figure 30, following pages) This concept seeks to activate the Wolfe Street block face in addition to Mason Street by reducing the grade-level footprint of the parking structure and limiting upper floors of the garage to just the two bays closest to Federal Street. The design concept could be divided into two individual commercial pads with one pad having a large grade-level footprint along Wolfe Street conducive to virtually any type of commercial use and the second pad along Mason Street of adequate dimensions to support multiple story residential or office space. The garage concept assumes that the upper story footprint can be extended all the way up to Wolfe Street to the width of two bays, but reserves the air rights, or along Mason Street to other uses. This concept can provide over 500 spaces in four supported levels of parking.
- **Elizabeth Street Option 3:** (See Figure 31, following pages) This concept proposes to maximize no parking land uses across all three of the outward directed block faces, reducing the dimensions of the space along Wolfe Street relative to Option 2, but introducing more commercial space along Elizabeth Street, including a small, standalone space between the parking structure's main points of access and egress and the southwestern stair tower. Like Option 2, it is assumed that the parking structure will extend all the way between Elizabeth and Wolfe Streets on the upper floors but reserve the air above the commercial parcel fronting Mason Street for commercial development.
- **Public Safety Building:** (See Figure 32, following pages) Development of other sites with dimensions suitable for structured parking could also be explored in the downtown study area. Most notably, the existing parking lot bordering the Public Safety Building could be used to create additional public supply. The site was explored in 2009 as concepts were produced in response to an RFP released by the City of Harrisonburg. While nothing has come of the exercise to date, the site still offers dimensions ideal for an efficient parking structure, which would provide additional parking supply for the north end of the downtown. The concept displayed in the preceding pages highlights the addition of alternative space that could be incorporated into the structure design.

The additional square footage incorporated into the project could serve as office uses or commercial uses. Due to the proximity of this site to the public safety building, any garage built here could also house designated parking spaces for applicable public safety department's vehicles. The design concept used for this example would offer about 500 parking spaces on five levels of structured parking.



Figure 26: Water Street Option 1



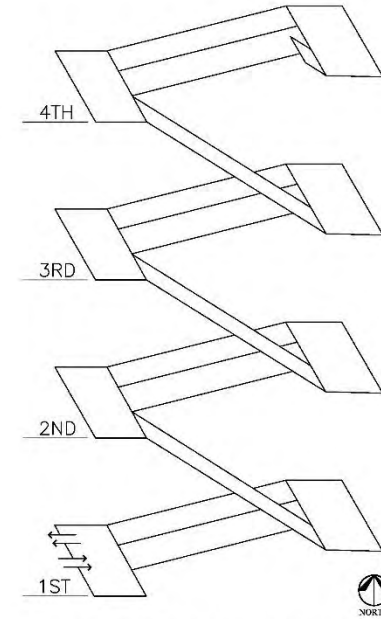
PARKING SPACE TABULATION

Level	Standard	Accessible	Total
1	112	0	112
2	199	0	199
3	180	0	180
Total	491	0	491

Water Street Parking Garage - Option 1
Concept Site Plan, Isometric Diagram & Space Tabulation Chart
Harrisonburg, VA



Figure 27: Water Street Option 2



ISOMETRIC DIAGRAM

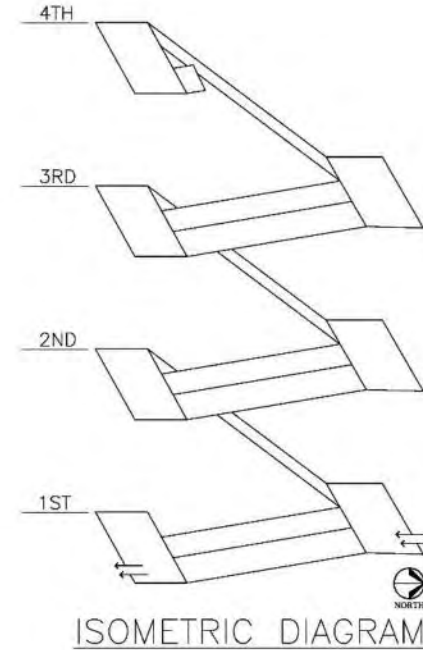
PARKING SPACE TABULATION

Level	Standard	Accessible	Total
1	115	0	115
2	134	0	134
3	134	0	134
4	126	0	126
Total	506	0	506

Water Street Parking Garage - Option 2
Concept Site Plan, Isometric Diagram & Space Tabulation Chart
Harrisonburg, VA



Figure 28: Water Street Option 3



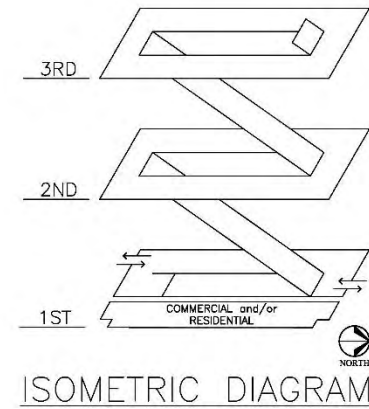
PARKING SPACE TABULATION

Level	Standard	Accessible	Total
1	118	0	118
2	139	0	139
3	139	0	139
4	130	0	130
Total	526	0	526

Elizabeth Street Parking Garage - Option 3
Concept Site Plan, Isometric Diagram & Space Tabulation Chart
Harrisonburg, VA



Figure 29: Elizabeth Street Option 1



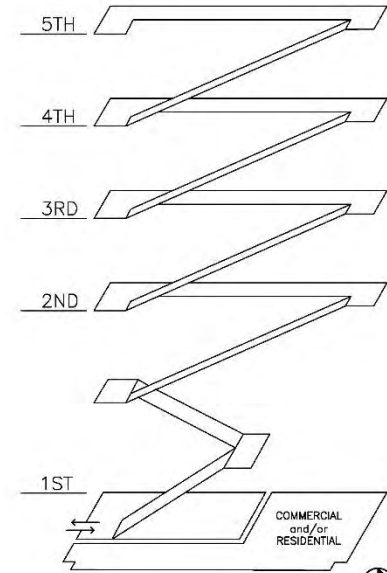
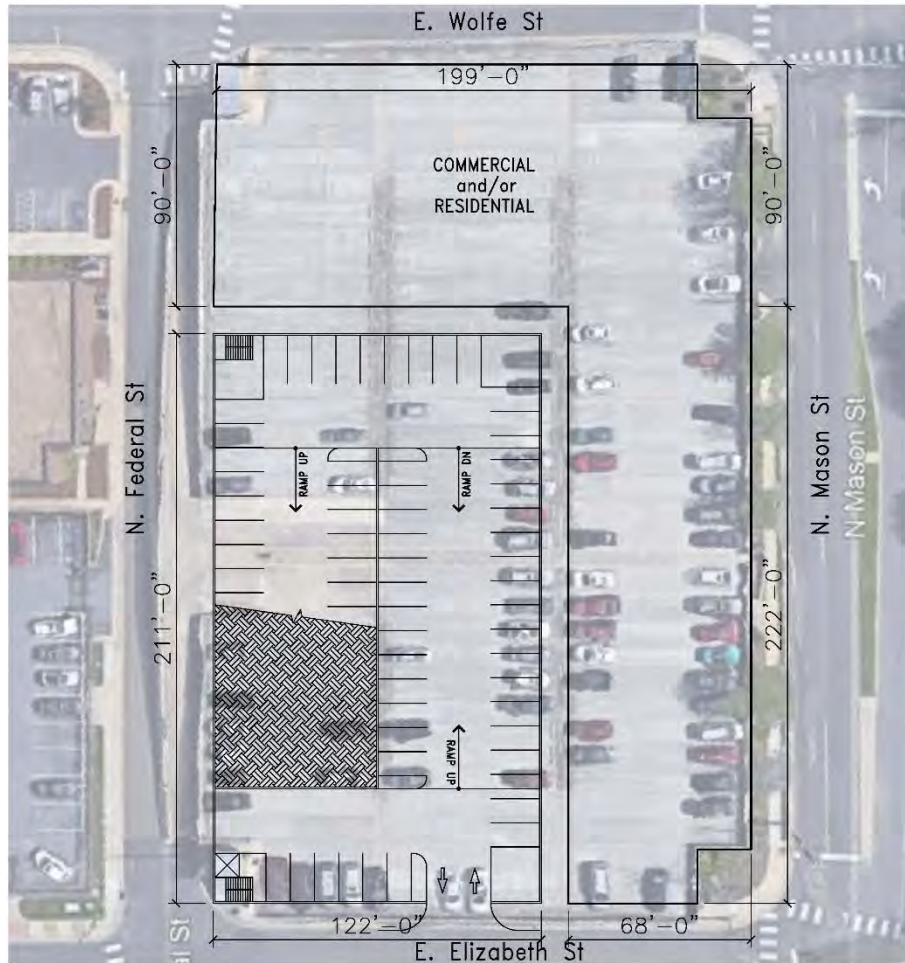
PARKING SPACE TABULATION

Level	Standard	Accessible	Total
1	107	0	107
2	187	0	187
3	168	0	168
Total	462	0	462

Elizabeth Street Parking Garage - Option 1
Concept Site Plan, Isometric Diagram & Space Tabulation Chart
Harrisonburg, VA



Figure 30: Elizabeth Street Option 2



ISOMETRIC DIAGRAM

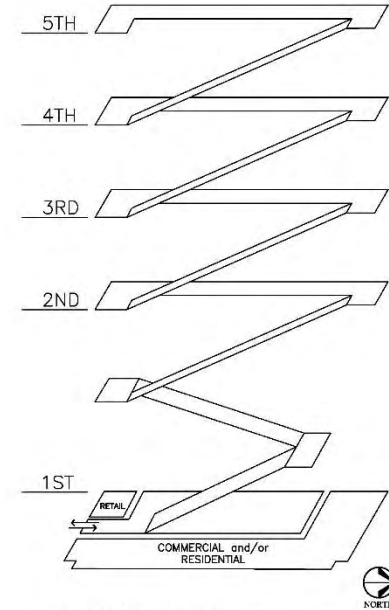
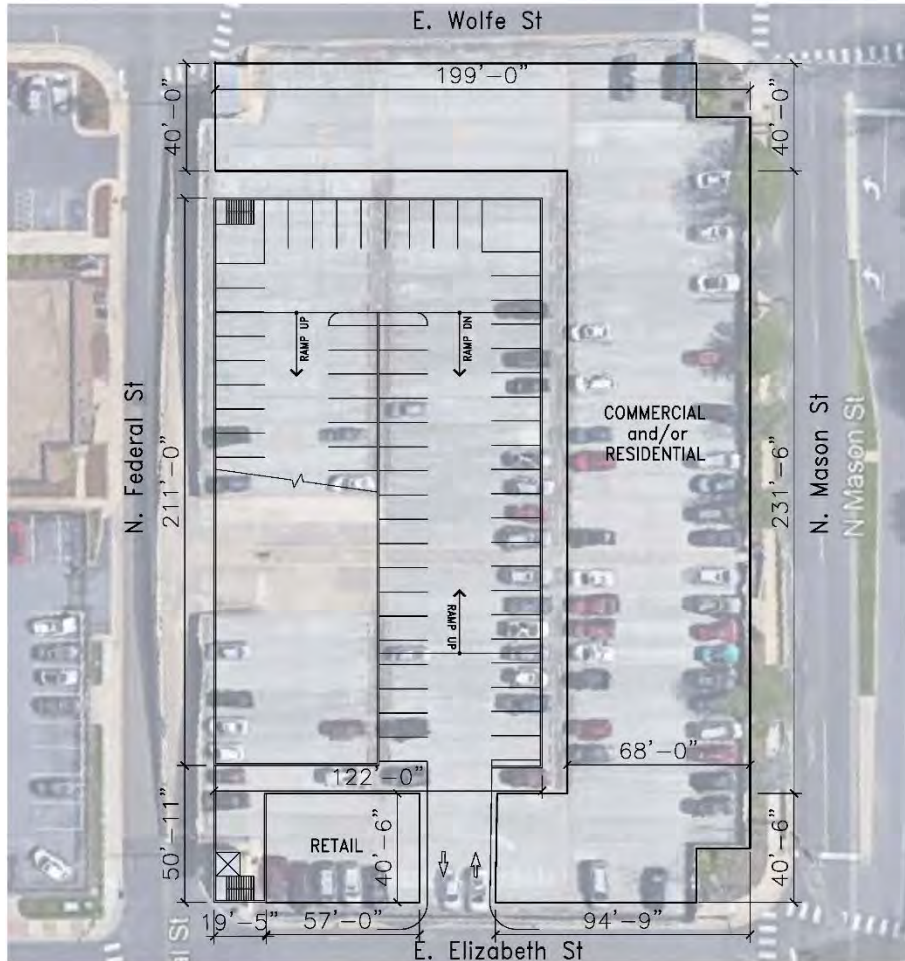
PARKING SPACE TABULATION

Level	Standard	Accessible	Total
1	63	0	63
2	125	0	125
3	125	0	125
4	125	0	125
5	86	0	86
Total	524	0	524

Elizabeth Street Parking Garage - Option 2
Concept Site Plan, Isometric Diagram & Space Tabulation Chart
Harrisonburg, VA



Figure 31: Elizabeth Street Option 3



ISOMETRIC DIAGRAM

PARKING SPACE TABULATION

Level	Standard	Accessible	Total
1	63	0	63
2	125	0	125
3	125	0	125
4	125	0	125
5	86	0	86
Total	524	0	524

Elizabeth Street Parking Garage - Option 3
Concept Site Plan, Isometric Diagram & Space Tabulation Chart
Harrisonburg, VA



Figure 32: Public Safety Building Site

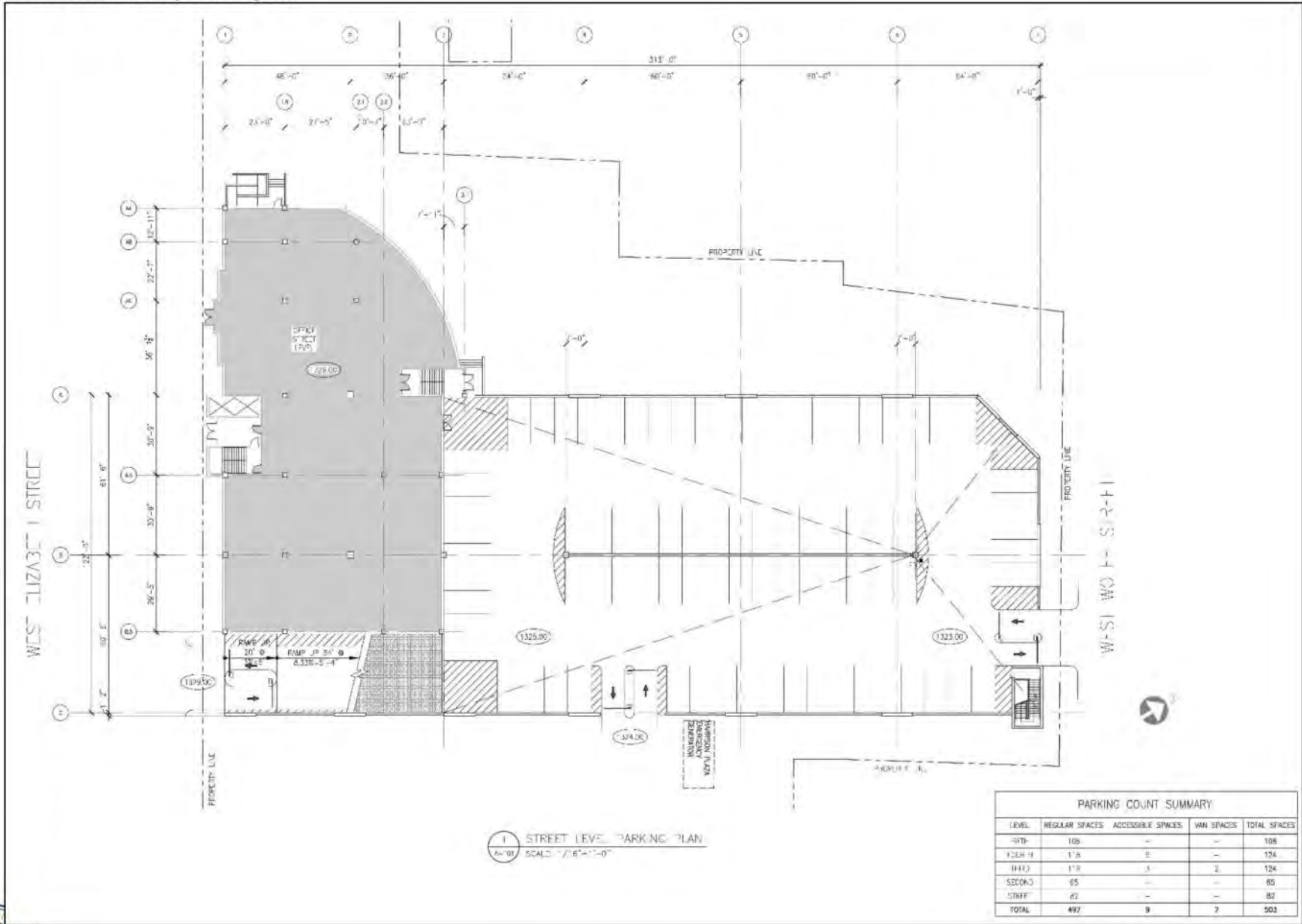
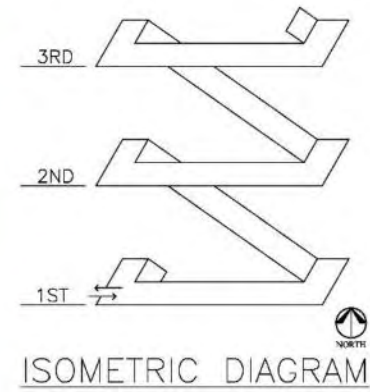


Figure 33: Municipal Lot Option 1



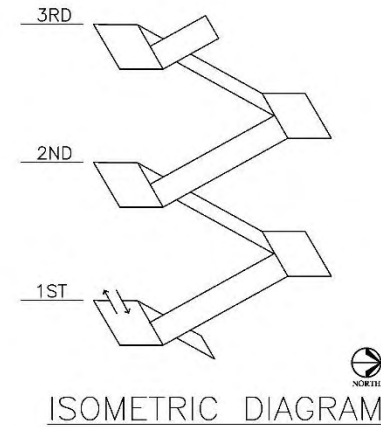
PARKING SPACE TABULATION

Level	Standard	Accessible	Total
1	87	0	87
2	106	0	106
3	38	0	38
Total	231	0	231
Displaced			(91)
Net Gain			140

228 S. Liberty Street Parking Garage - Option 1
Concept Site Plan, Isometric Diagram & Space Tabulation Chart
Harrisonburg, VA



Figure 34: Municipal Lot Option 2



PARKING SPACE TABULATION

Level	Standard	Accessible	Total
Surface	52	0	52
1	79	0	79
2	86	0	86
3	47	0	47
Total	264	0	264
Displaced			(127)
Net Gain			137

228 S. Liberty Street Parking Garage - Option 2
Concept Site Plan, Isometric Diagram & Space Tabulation Chart
Harrisonburg, VA



- **Municipal Lot:** (See Figures 33 and 34, preceding pages) Another site that has the potential to accommodate a parking structure is the existing municipal parking, bordering the farmers market pavilion. The concepts shown in the preceding pages would displace the surface parking spaces, but would replace those spaces with additional supply. While the site for these concepts is not quite as efficient as other concepts due to the space constraints, there would still be a net gain of about 140 spaces in an area of downtown that experiences the effects of a parking shortage.

Conceptual Implementation

Based on conversations with municipal officials, DESMAN believes it is likely not financially feasible for the City to fund the replacement of either the Water Street or Elizabeth Street garages or to construct a third public parking facility at this time. However, the City understands the roles of each of the facilities, and parking as a whole, plays in supporting the continuing rejuvenation of downtown and wants to support that. Given the ages of both the Water Street and Elizabeth Street garages, it is DESMAN's recommendation that the City immediately begin the process of finding a potential partner with which to develop a replacement parking facility as part of a larger public/private development.

Based on its location in the heart of downtown near many of the most popular destinations in the City, it is our opinion that the site of the Water Street Garage would be the more desirable development site. The Department of Community Development, in conjunction with the Department of Public Works and the Finance Department (Purchasing Division), should begin the process of developing a Request for Proposals (RFP) for a public/private development on the site of the existing Water Street Garage. In the RFP, the City should require that the private developer replace the existing capacity lost from the Water Street Garage, add additional public parking capacity, and build enough spaces to satisfy the demand generated by the proposed new development. In exchange for the private developer providing the replacement and new public parking spaces, the City can provide the developer with a ground lease for the land and/or can contribute funds or provide other financial incentives to help fund the construction of the larger development.

As part of the RFP, the City should also require that the developer include specific design elements in the garage. The City can require that: the garage façade be designed to fit into the historical character of downtown; the facility include a space counting system; the lighting system be comprised of high-efficiency LED lights with occupancy controls; a security system is installed that can interface with the Police Department's existing systems; bike parking be provided, and; electric vehicle charging be accommodated – among other requirements. These requirements will ensure that the City is not only getting replacement and new public parking capacity, but that the facility will meet the needs of downtown into the future.

Necessary Supports/Mechanisms

Given the potential expense associated with constructing the 320+ spaces necessary to replace the Water Street Garage plus additional public parking capacity, even if the City provides a private developer with a long-term ground lease on the site for a nominal cost, it is likely the City will still have to contribute financially to any development in order for it to be successful. For this reason, if the City chooses to pursue a public/private partnership to replace the Water Street Garage, it is recommended that potential funding sources be identified as soon as possible. Any policies or structures that need to be implemented to allow for tax increment financing or other creative financing should be investigated by the City's Finance Department and the City Attorney. While development of the site may be several years in the future, any work that can be done now to prepare the City will help the process proceed more smoothly.



Should the City decide that it wishes to add public parking capacity in downtown and that it can fund the project without entering into a public/private partnership, it is recommended that the City hire a firm to develop plans for the proposed replacement facility as well as more refined cost estimates. Based on rough costs of garage construction in the Harrisonburg area, a theoretical 500-space parking garage will cost the City more than \$11.25M (\$22,500/space). However, the final construction cost of a garage can vary significantly from this per space figure based on the design of the facility, the types of materials used to construct the facility, among other factors.

Regardless of the mechanism by which the City wishes to address this issue, it will be necessary to develop a plan to accommodate the existing parking demand from the Water Street Garage during the period of demolition and construction of a new facility. While some portion of the existing demand can be absorbed by the Elizabeth Street Garage and the City's other off- and on-street inventory, it will also likely be necessary to make arrangements with other property owners in downtown to accommodate some portion of the demand. Based on their sizes and locations, the surface parking lots associated with the Rockingham County building and the Valley Plaza Shopping Center on the north side of downtown are potential temporary satellite parking locations. Additionally, James Madison University may be another source of temporary parking while the Water Street Garage is being developed.

Benefits/Liabilities

Benefits: Constructing additional parking capacity in downtown will ensure that the parking supply has room to accommodate further growth in residential, retail, and restaurant activity. If new capacity is built on the current site of the Water Street Garage, it will help relieve the existing shortages of parking that can and do occur in that area of downtown due to continued development at the Ice House, the demand generated by the Farmer's Market, and other parking demand generators. Additionally, replacing the aging Water Street and/or Elizabeth Street Decks will eliminate the need for the City to pour significant amounts of money into rehabilitating either or both of those facilities.

Should the City choose to partner with a private developer to redevelop the site of either garage, there will be the additional benefit of bringing new residential, office, retail, restaurant, and/or commercial space into downtown. The additional land uses that are constructed will result in new tax revenue for the City, as well as adding to the continued vibrancy of downtown.

Liabilities: The most significant liability associated with either constructing additional public parking capacity on its own or partnering with a private developer to build this capacity is the potential financial cost to the City. As mentioned above, based on recent projects constructed at JMU, a new garage can cost in excess of \$22,500/space to build in this area of Virginia. If the City can successfully partner with a private developer to complete the project, it is likely that the City will still have to contribute funds toward construction, provide tax incentives to the developer, provide alternative funding for the project, or a combination of several of these. In any scenario, it is likely that the City will need to dedicate significant funds to replacing and expanding upon the supply of public parking in downtown.

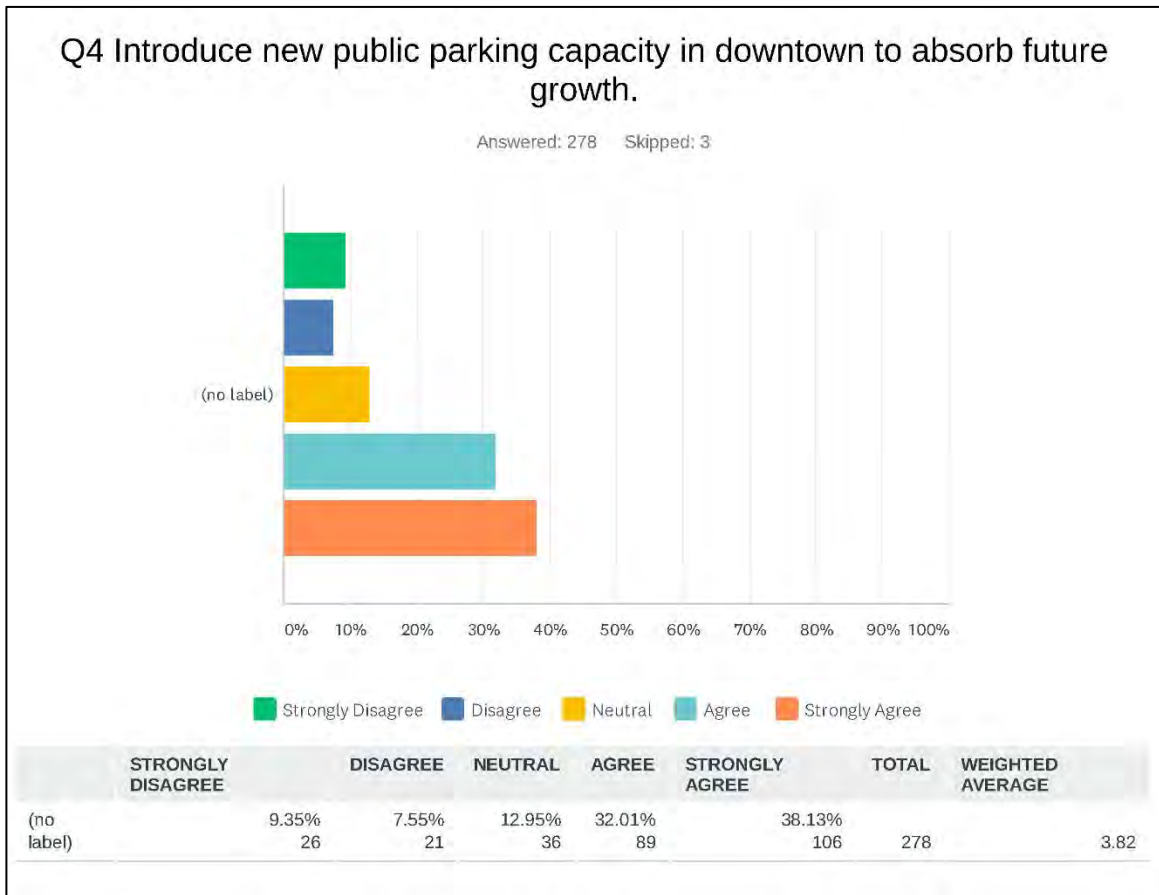
Another potential issue the City may face during the renovation or demolition and construction of a new facility is managing those parkers who refuse to park in the identified satellite parking locations. These parkers may begin to park in unregulated parking spaces in adjacent residential neighborhoods without specified permit zones. The introduction of those parkers into the residential areas could create conditions where residents might not be able to find available parking near their homes.



Supporting Analysis

DESMAN discussed these options with interested constituents during the public process and requested feedback on the concepts through the survey. About 32% of respondents, with an additional 38%, agreed with adding new public parking supply in the downtown. The comments suggested that with the demand for parking in Harrisonburg, the existing supply would likely not be sufficient to accommodate the projected growth. Proponents noted that any new parking garage should be larger than the previous garages, but should be centrally located in the downtown. The 13% who were ‘neutral’ on the initiative also provided comments with the survey, which called for more “satellite” parking at strategic points to intersect with the existing transportation infrastructure.

Figure 35: Survey Responses to Introducing New Public Parking Supply



As shown in **Figure 35**, roughly one-fifth of respondents did not support the initiative, providing comments related to the necessity for higher and better land uses downtown, not parking. Other comments were specifically related to the associated costs to the City of creating more parking. Approximately 17% of respondents indicated they do not approve of such a venture. Others added that there is availability to create new parking spaces on-street throughout the downtown, either parallel or angled parking spaces.

Case Studies

In January 2017, the **City of Missoula, Montana** finalized a P3 (public/private partnership) to redevelop a riverfront property. The project included a conference center, hotel, parking, retail, restaurants, entertainment space, offices, housing and a public plaza. The city sold the riverfront property to



developers and purchased a portion of the conference center and the parking garage once the facilities were built. The total project cost was approximately \$150 million. After getting mired in legal issues pertaining to the formation of a development contract, the project was purchased by a local businessman (<https://nbcmontana.com/news/local/missoula-businessman-joins-effort-to-build-downtown-event-center>) and was recently approved to move forward.

The **City of Newark, Delaware** issued an RFP (<https://newarkde.gov/DocumentCenter/View/6847/RFP-16-03-PARKING-GARAGE?bidid=>) in 2017 to attract developers to create a mixed-use project and supporting parking structure over the site of a surface parking lot. The city received multiple proposals, but rejected all of them due to nonconformance with one or more requirements included in the RFP. The city was preparing to reissue the RFP in 2018 when they were approached by two private developers with unsolicited proposals for private development incorporating public parking components, which would meet the needs outlined in the original proposal. One of these proposals was approved and the second is currently under review.

In 2003, the **Borough of Princeton, New Jersey** formed a public-private partnership with Nassau HKT to redevelop two parking lots into a public garage and a mixed-use building to expand the local library. Princeton Future, a nonprofit citizens' planning group, took a leading role in the conceptual planning process for the site. Today, the 500-space indoor, automated parking garage services area patrons and residents. The face of the garage is hidden by an attached luxury apartment building offering 24 rental units plus retail space on the ground floor. Due to the success of this engagement, a second borough parking lot across the street was redeveloped to offer another 53 apartments and the city's first downtown grocery market in a generation.



PROMOTE SHARED PARKING AGREEMENTS TO MAXIMIZE THE USE OF EXISTING ASSETS***Proposed Initiative***

DESMAN recommends the City work with private property owners to formalize shared parking agreements that would support continued absorption of vacant spaces and better use of private parking assets.

Statement of Issue

Use of shared parking agreements to help satisfy parking requirements (if enacted) will address the demand from new development in downtown. Shared parking is also a viable strategy for addressing parking shortfalls associated with existing buildings, both fully occupied and partially vacant²⁴.

One of the most underutilized sources of parking in most downtowns is privately-owned parking facilities that are restricted for use to only the residents, employees or customers of a particular building or business. In many instances, these parking facilities are surface parking lots that are filled to near capacity during part of the day, but sit virtually empty at other times. In downtown Harrisonburg, there are a number of surface parking lots that serve banks, law offices, other professional offices, and other land uses that, while utilized during standard business hours, sit empty nights and weekends. These spaces are unavailable for use by the general public and often have intimidating signs posted to rebuff prospective parkers.

In downtown Harrisonburg, nearly 4,900 off-street parking spaces are owned by private property owners, restricting nearly 75% of the off-street parking supply for exclusive use of a particular business, institution, or user. While there is some limited public parking allowed in a few private parking facilities or the private owners do not enforce “No Parking” regulations after a certain time of day, these conditions are not widely known to the general public. By and large, privately-owned parking in downtown Harrisonburg is not available for use by the general public.

Causes/Indications

The utilization surveys of all public and private parking facilities in downtown indicate that, as a whole, during the peak hour, private parking facilities in Harrisonburg are less well utilized than either on-street or off-street public parking spaces. Based on the field surveys, the private parking facilities in downtown were 54% utilized during the evening peak period. During the same period, the off-street public parking facilities were 56% utilized, while the short-term on-street spaces were 59% utilized. Additionally, only 27 of the 189 private parking facilities surveyed (~ 14%) exceed their effective parking supply during the evening peak demand period.

In addition to the survey data, DESMAN’s own observations of parking activity in downtown support the conclusion that private parking facilities often have excess capacity, especially during evening and weekend time periods. Throughout the course of our time in the City, private parking facilities were often observed to contain excess capacity when adjacent off-street public parking facilities and segments of on-street parking were highly utilized.

²⁴ It is DESMAN’s assumption that, should the City move to install parking requirements on new development downtown as recommended, existing land uses will be exempted and grandfathered under the existing regulations. This exemption will include change of land uses in existing structures, provided all changes are limited to within the defined envelope of the building as originally permitted and approved.



Potential Solution

One of the more effective ways to reduce congestion in public parking facilities and improve utilization of private assets is through the execution of shared parking agreements. These agreements allow public parkers to make use of spaces in private parking facilities, typically during off-peak hours for those particular businesses. In some instances, if a private parking facility always has available capacity, the owner may be willing to allow a certain amount of public parking at any time of day.

The concept of shared parking is based on the fact that there are inherent differences in parking demand patterns associated with different land uses within a development or neighborhood. In a development or neighborhood with various different land uses (i.e. residential, office, restaurant, retail, etc.), the patrons and employees generated by those land uses demand parking spaces on different days of the week, at various times of the day, and at different times throughout the year. These variations in demand among land uses allows the sharing of the available parking supply, as opposed to each business or institution building sufficient parking to satisfy their individual needs at all times.

When thinking about the parking demand generated by a typical office building in an area where driving is the primary means of transportation, there is usually a very distinct pattern to how cars arrive and park. On weekdays, the number of parkers slowly builds in the early morning hours to a peak around 11 am. There is then a slight dip around the lunch hour, a return to near peak conditions after lunch, and a gradual decrease in the number of parked cars in the early afternoon. Finally, beginning around 4 pm, the number of vehicles drops dramatically, with nearly all of the demand associated with that building having departed by 6 pm. This pattern is typical of most weekdays at an office building, with slight variations in the maximum number of vehicles parked from day-to-day and overall lower levels of demand on Mondays and Fridays. Additionally, significantly less demand is generated by an office building on weekends.

Contrast the parking demand patterns generated by an office building with that of a restaurant and one can begin to see how shared parking can be put into practice. Unlike an office building, a typical sit-down restaurant experiences some demand during the lunch hour on weekdays, but the greatest demand for parking occurs during the dinner hours on weekday and weekend evenings. This demand pattern means that this type of restaurant would require less spaces to satisfy its customers during the daytime on weekdays and more spaces during dinner hours. If this restaurant were located in the same building or in close proximity to typical office space, there is the potential for these two land uses to share the available parking supply, given their varying needs – when the demand for office-related parking drops in the evenings and on weekends, restaurant patrons could use those spaces that were occupied by the office users during the day.

In exchange for allowing public parking in a private facility, the owner of the private facility will typically want a written agreement specifying defined times and days of the week when public parking is permitted. Additionally, these agreements often put the responsibility on the City for monitoring facility use and making sure that the condition of the facility is maintained during the period when public parking is allowed. Finally, these agreements often state that the private owner is not liable for any injuries, damage, or other issues that occur when the facility is being used by the public. In certain circumstances, the private owner will also want to be compensated for use of their parking facility, but these arrangements do not always involve money changing hands.

Several examples of shared parking agreements have been included in **Appendix G** for reference.



Conceptual Implementation

A municipality can play one of three potential roles in promoting Shared Parking between existing uses:

- The municipality can be an **educator**, hosting workshops for parties interested in entering into a shared use agreement and providing templates and other materials to facilitate the formation of an agreement.
- The municipality can play the role of **broker**, identifying private property owners with available capacity and matching them with property owners or developers seeking parking to support an existing (actual) need or change of use.
- The municipality can be a **participant** in a shared use agreement, entering into contracts to offer private facilities or a portion thereof for public use within the boundaries of the negotiated agreement.

City officials have indicated they anticipate acting as an educator and broker primarily, but are not averse to acting as a participant should the appropriate occasion present itself.

In Harrisonburg, the concept of shared parking has been employed in a few parking lots through use of signage and verbal agreements. In order to make this a viable concept in downtown Harrisonburg, these existing agreements should be formalized. DESMAN recommends that the City begin to establish formal shared parking agreements as soon as possible as an educator, sitting down with both parties to develop a formal contract for execution. Working with these owners, the Department of Community Development and the City Attorney should memorialize the basic terms of the agreements including when parking is permitted for each party, the responsibilities of each party, and a how to enforce the terms of the agreement. Once the first of these agreements has been created, it can be used as a guide for establishing additional shared parking agreements between other private property owners.

Both the Department of Community Development and Harrisonburg Downtown Renaissance (HDR) could play the role of a broker of shared parking agreements. In this role, these agencies should next focus on reaching out to private property owners in the vicinity of the most highly-utilized off-street public parking facilities and on-street spaces as well as those near properties with significant vacancies or undergoing changes of use to gauge their interest in participating in a shared use agreement. A database of owners, their available capacity according to time of day and day of week, and the owner's preferred terms of agreement should be developed for reference and one or both agencies should be promoted to the development of downtown business and residential communities as 'gatekeepers' to this process.

Should the City elect to enter into one of these agreements as participant, the Department of Public Works (as the managing body of public parking downtown), the Police Department (as the enforcing body), and the City Attorney should all be involved in negotiating the terms of agreement, which should, at a minimum, define the agreed upon terms of use, indemnity, share risk and liability, maintenance, and enforcement.

If the potential liability associated with allowing public parking is a concern for the private property owners, the City can make a determination as to whether or not it wishes to indemnify the owner against any liability during the hours when public parking is permitted. In addition to providing this assurance to the private property owners, the City can also provide routine maintenance of lots, such as snow and trash



removal, in place of monetary compensation for use of the facility. The City will ultimately need to determine if the capacity gains of making these arrangements justifies the potential costs to the City. For any private parking facilities that agree to allow public parking, the City should provide signage that indicates the hours of availability and lists any restrictions. The benefit of the City providing the signage is that signs for the private facilities can be designed to provide consistency and uniformity with the public parking signs in the City's parking facilities. This will provide potential parkers with greater clarity as to where public parking is and is not allowed.

Necessary Supports/Mechanisms

For city officials acting as educators, case studies of prior successful implementations and agreements, stock templates for forming new agreements, and literature describing the critical steps and considerations for forming an agreement will all be needed. Ideally, this function should be championed through the Department of Community Development, both in terms of labor and budget coverage.

If the City moves to adopt a role as broker, this is better championed through an agency like HDR, an independent non-profit with close ties to the business and development community. The expense of developing and maintaining a database of potential partners and facilitating the execution of party-to-party agreements could be shared by various city agencies as tax laws allow. Tax implications may only be an issue if fees were collected for brokering services, then HDR may not be eligible to serve as the title holder of the broker role. Additionally, HDR or any agency brokering on behalf of the City would hold no responsibility for enforcement of these agreements, as the individual parties would be responsible to determine the details of their agreement.

In addition to time and labor from the City Attorney's office to negotiate an agreement as a participant, the Department of Public Works will need to budget labor and expenses to equip a facility with signage, maintain the facility according to the terms of the agreement, and administer to its management as needed. Labor costs should also be factored in for the Police Department to patrol and enforce applicable policies and restrictions on any facility when functioning as a public asset.

Benefits/Liabilities

Benefits: If some of the private parking facilities in downtown can be incorporated into the available supply of public parking, even during a limited number of hours per day, the high levels of parking demand experienced in certain areas of the downtown can potentially be mitigated. This could allow the City to delay the need to construct additional public parking capacity. Additionally, downtown patrons and visitors are likely to have an easier time finding available parking spaces in close proximity to their desired destinations if there is adequate signage.

Liabilities: From the City's perspective, the most significant liabilities relate to the potential costs associated with managing these agreements and the related physical upkeep costs and/or monetary compensation that some private property owners may demand. There is also the potential that, if the program is not well managed, allowing public parking in many different facilities could lead to user confusion and, potentially, issues with people parking where they are not allowed. Lastly, these agreements typically include the option for the private party to cancel the agreement at any time, meaning that parking capacity the City has been relying on could be taken out of service suddenly and without much notice.



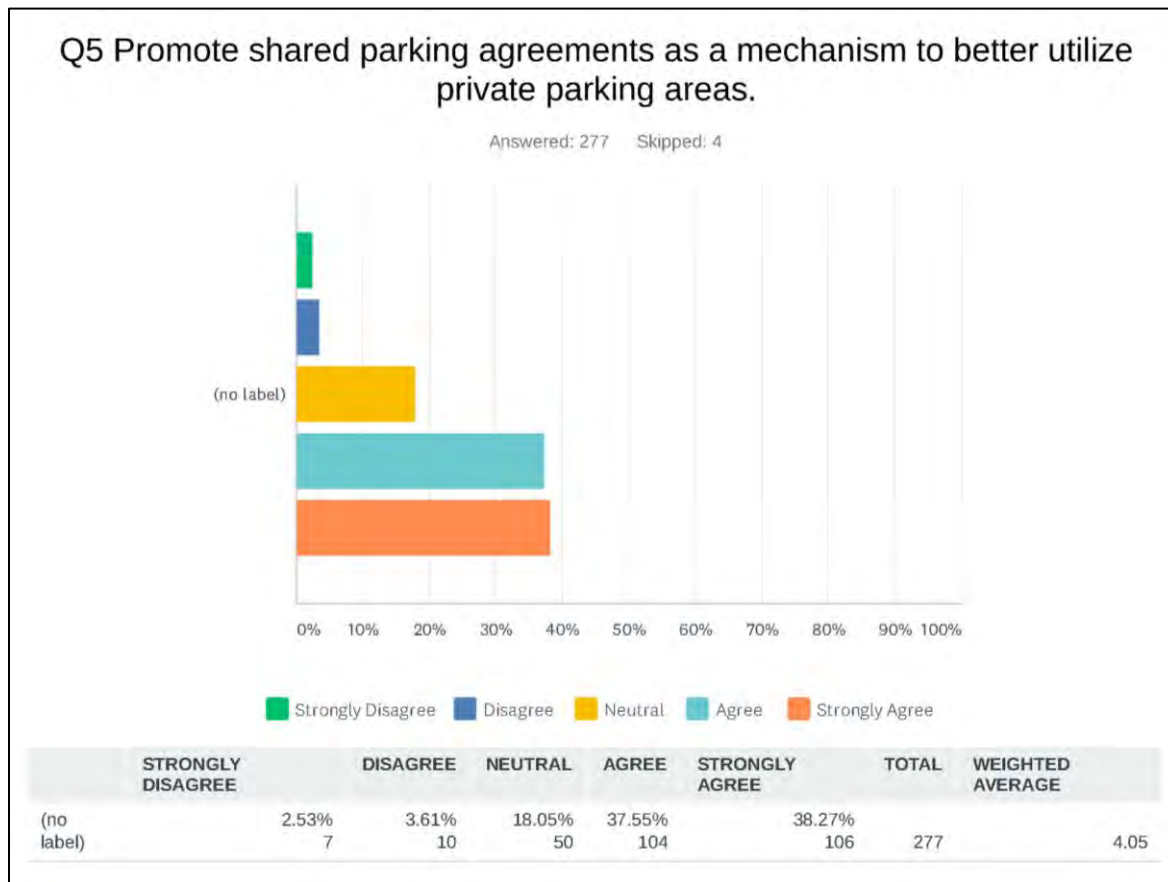
Supporting Analysis

When asked to respond to the proposal to promote shared parking, roughly 75% of respondents indicated they would support the City promoting more shared parking, as shown in **Figure 36**.

Only about 6% of respondents said that they would oppose the City promoting further use of shared parking, with most of that opposition seeming to revolve around the difficulty the City would have maintaining accurate information on existing shared parking agreements, tracking the remaining availability of spaces in an area, as well as general administration and enforcement of the agreements by the government.

Those who supported the initiative consistently noted the number of vacant parking spaces throughout downtown at any given time, which added to the potential benefit to the entire community. Through the survey responses specific locations and businesses were identified as willing to negotiate the terms of these agreements with others in the downtown.

Figure 36: Survey Responses to Instituting Shared Parking Agreements



Case Studies

In **Falls Church, Virginia**, there is a limited amount of on-street parking and City-owned, off-street parking options. Because building additional parking capacity is expensive, the City has begun entering into shared



parking agreements to utilize private off-street parking assets. The City has also investigated the potential of leasing private parking lots instead of building a parking structure.

In **Austin, Texas**, the City created a platform to match parties in need of parking with owners of available spaces who were interested in entering into shared parking agreements. The City provided the framework required to enter into the agreements and promoted the benefits of the program. The City also pushed education of the program to inform the public about the pros and cons of the program and now boasts a successful shared parking program.

The **Village of Oak Park, Illinois** offers several parking programs geared towards employees, downtown residents, customers, and commuters using a combination of publicly and privately owned parking facilities. The Village manages about 8,000 parking spaces, 1,000 of which are privately owned but managed by the Village. This shared parking method includes nearly 30 different parking lots and landowners. The arrangements with each landowner are fairly standard: The Village maintains and snowplows the lots, manages the signs, installs payment technology, collects revenue when applicable, and enforces parking payment through the Police Department. The Village collects the revenue, subtracts the administrative, operations, and maintenance costs, and splits the remaining funds with the landowner 50/50. Lease lengths are typically no more than three years.

In 1999, in an effort to better manage and use existing parking in the **Village of West Concord, Massachusetts**, four neighboring retail landowners on Commonwealth Avenue approached the Town of Concord for a special permit to share their respective parking lots. Previously the various lots had been managed independently, with ad hoc regulation and access according to the needs of the various businesses. The Town approved the permit, allowing the owners to operate their lots as one single parking area, rather than multiple lots with different rules and spaces. This shared parking lot was designed to share management costs, and to allow customers to use the lot for the associated businesses without needing to move their car. It was agreed that management costs would be split 45/45/5/5, in proportion to the size of the landowners' holdings.

In 1960 the **Town of West Hartford, Connecticut** led a consolidation effort to improve the parking that served businesses on Farmington Avenue. Under the Town's encouragement and recommendation, the lots for several businesses were combined into one single parking lot. While these lots were privately owned, the Town successfully lobbied the owners to consolidate their various parking lots by agreeing to maintain lots, including the striping, snow removal, and other aspects. In exchange for the continued effort by the Town, these lots function as paid, public parking. The effort by the Town of West Hartford allows for expanded public parking through cooperation with local parking lot owners, and provides an improved lot for those businesses served by the shared lot.

The **City of Walnut Creek, California** enables shared public-private parking operations, but is not directly involved in the management or contracting of operations. Shared public-private parking has been driven by the private sector: 70% of the downtown parking supply across 25 city-certified downtown lots is private parking, all managed by one operator, Regional Parking. The after-hours operations, enforcement, and collection of revenue are contracted to the private operator. The City's role in enabling the operation of this public-private supply is simply to establish and enforce codes to ensure the site has proper signage before it is used by the public for a fee. The Private Parking Lots Ordinance requires all private lots to be certified by the City and defines signage requirements. The City takes no part in management, enforcement, or collection, and as such has no liability and insurance responsibilities.



SIMPLIFY ON- AND OFF-STREET PARKING TIME LIMITS

Proposed Initiative

DESMAN recommends revising the assignment of on- and off-street time limits on transient spaces to simplify the system to the benefit of both the general public and parking enforcement personnel. Specifically, DESMAN is proposing to:

- Convert all short-term on-street spaces to a universal two-hour time limit.
- Convert all currently unregulated on-street parking spaces to a universal 10-hour time limit.
- Convert all off-street transient parking spaces currently limited to 2 or 3 hours to a universal four-hour time limit.
- Convert half of the 10-hour spaces in public off-street parking facilities to 4-hour spaces and the other half to permit only spaces.
- Convert all off-street transient parking spaces currently limited to 10 hours or less to permit parking only.

Statement of Issue

A significant number of respondents to the online survey, as well as attendees at the public meeting and stakeholder meetings, indicated that the existing time limits at both on- and off-street parking spaces do not meet the needs of downtown in their estimation. Ironically, some individuals indicated that there are too many 10-hour spaces, while others indicated that there are too many 2-hour spaces.

Another major theme of the public feedback received by DESMAN had to do with the lack of clarity in parking time limit assignments and signage. Specifically, respondents to the online survey and attendees at the public meeting indicated that they have received parking citations for parking in spaces that were not clearly marked for a particular time limit or parking restriction. This appears to be a failure of not only the signage but also a lack of consistency in the time limits/restrictions on particular streets or groups of streets.

Causes/Indications

Over 46% of the 1,117 survey respondents identified themselves as downtown property or business owners, employees, or residents, presumably seeking long-term parking arrangements. Presumably, the remainder of respondents were primarily diners, shoppers, patrons, and visitors, all of whom seek short-term parking options. Both user types must be served by the public parking system in some fashion.

When asked how long they typically stayed when parked, roughly 73% of respondents indicated they parked for a period of four hours or less, while the remaining 27% stated they parked for 4 hours or more.

Of the 1,112 survey respondents who elected to answer the question “Where do you usually park?” only slightly more than 4% identified themselves as permit holders, although over 83% indicated they parked in some public on- or off-street facility, with almost 44% indicated they parked in a deck with a time-limited space and almost 28% stated they parked in a surface lot.

In contrast to these results, DESMAN noted that there were only roughly 324 permit spaces in public facilities downtown, roughly 329 long-term (i.e. 10-hour) transient spaces, and 167 short-term (2-3 hour) transient spaces. Taken together, this publicly-accessible off-street parking supply (~ 820 spaces)



represents just 10.4% of the total parking supply in downtown (7,903 spaces) and roughly 37.6% of the public supply (2,178 spaces).

To summarize, 46% of respondents indicated they were long-term parkers, 73% stated they usually parked four hours or more, and 83% indicated they parked in some public parking facility, but less than 30% of the public supply is currently allocated for long-term parkers.

Comparison of these results would suggest that a large portion of long-term parkers are using the limited number of 10-hour spaces available in off-street facilities or shuffling their vehicles through short-term spaces to avoid being ticketed.

This theory was supported by parking enforcement personnel who had observed such behavior during patrols and supported by the online survey, which identified the mix of short- and long-term parking spaces in downtown as being in conflict with public needs. In fact, nearly 200 respondents identified the improper mix of space types as the biggest parking challenge facing downtown. If the city were to simplify the parking time limits, it would presumably ease both confusion among parkers and execution for parking enforcement personnel.

Potential Solution

The majority of the on-street spaces which currently have time limits are fixed at 2-hours or less. The inventory conducted last spring found just 35 on-street spaces with time limits of 15 minutes, 30 minutes, or 1 hour. In DESMAN's experience, these kinds of time limits are virtually unenforceable, especially those under 30 minutes, without dispatching dedicated enforcement personnel specifically to monitor length of stay and turnover and typically done for political, not pragmatic, reasons. DESMAN recommends making all short-term on-street parking spaces currently subject to time limits a universal 2-hour space.

On the survey day, the 528 on-street spaces which currently have no time limit or other restriction associated with them were only 31.7% utilized at the busiest time and had roughly 400 open and empty spaces during much of the day. In fact, DESMAN only observed three block faces that were filled to effective capacity during field surveys. These spaces represent a large and untapped resource that could be employed to accommodate long-term parkers and proposes to convert these block faces to 10-hour spaces. These spaces would then be clearly demarcated and more easily distinguishable to those searching for longer term parking spaces.

Under DESMAN's proposal, the off-street facilities offering 2- or 3-hour parking would convert to a universal 4-hour parking time limit and half the 10-hour spaces in off-street facilities would also convert to 4-hour time limits. This 4-hour time limit should be of adequate length to accommodate virtually any type of transient parker, raising the time limit means that parking enforcement personnel can spend more time patrolling the 2-hour on-street spaces²⁵, and converting half the 10-hour spaces to the shorter time limit increases the short-term parking supply.

Of course, some long-term parkers formerly parking in the 10-hours spaces in public facilities may be displaced. Ideally, they will move into the 10-hour parking zones created in the formerly unregulated curbside parking areas or convert to permit parkers, which will also simplify enforcement efforts. At the

²⁵ Turnover and availability of these spaces was a concern to DESMAN, as it was noted that fourteen block faces were parked at or over effective capacity at least once during the survey day. Standardizing time limits on-street and raising off-street time limits will allow parking enforcement personnel to focus more on assuring these spaces turnover consistently.



City’s discretion, they could establish a permit parking program in these areas, rather than enforcing according to time limit. As conditions allow, the City could also explore limited permit programs for day use in underutilized residential neighborhoods currently governed by residential parking permit programs and/or allowing growing ridesharing services like Uber and Lyft use of loading zones for pick-up and drop-off programs, especially in the evenings around the Water Street area.

Conceptual Implementation

Execution of this initiative will be dependent on timing of other recommendations, as the success will be dependent on enforcement efforts to assure compliance with proposed time limit revisions. The other component of implementing the new time limits will be developing the layout of the specified time limits throughout the downtown. Based on the evaluation of the existing parking supply throughout the downtown, DESMAN mapped the time limits that are currently in effect and then adjusted those to reflect the changes. On the next pages, **Figure 37** and **38** on the next pages illustrate how the time limits would be changed throughout the study area. The most notable change in the recommended time limits is the reduction of the wide variety of time limited parking spaces as shown in **Table 18**.

Table 18: Time Limit Conversion Impacts

Type	Designation	Current	Proposed	Change
On-Street ¹	15 minutes	8	0	(8)
	30 minutes	24	0	(24)
	1 hour	3	0	(3)
	2 hours	229	264	35
	10 hours ³	0	528	528
	Unrestricted	528	0	(528)
	Red Permit ⁴	157	157	0
	Blue Permit ⁵	41	41	0
	Loading Zone ⁶	4	4	0
Off-Street ²	Short-Term (2-3 hours)	167	0	(167)
	Short-Term (4 hours)	0	332	332
	Long-Term (10 Hours)	329	0	(329)
	Permit	324	488	164
Total		1,814	1,814	0

Notes:

1. Includes all parking spaces as inventoried within the study area.
2. Limited to parking in the Water Street and Elizabeth Street Decks and the Farmer's Market Lot. All other facilities remain unchanged.
3. Assumes maximum length of stay for general transient. These areas could also support a permit parking program if desired.
4. These areas could support a limited day-use parking permit program.
5. These areas could be designated for TNC pick up/drop off during evening hours.



Figure 37: Existing Parking Time Limits

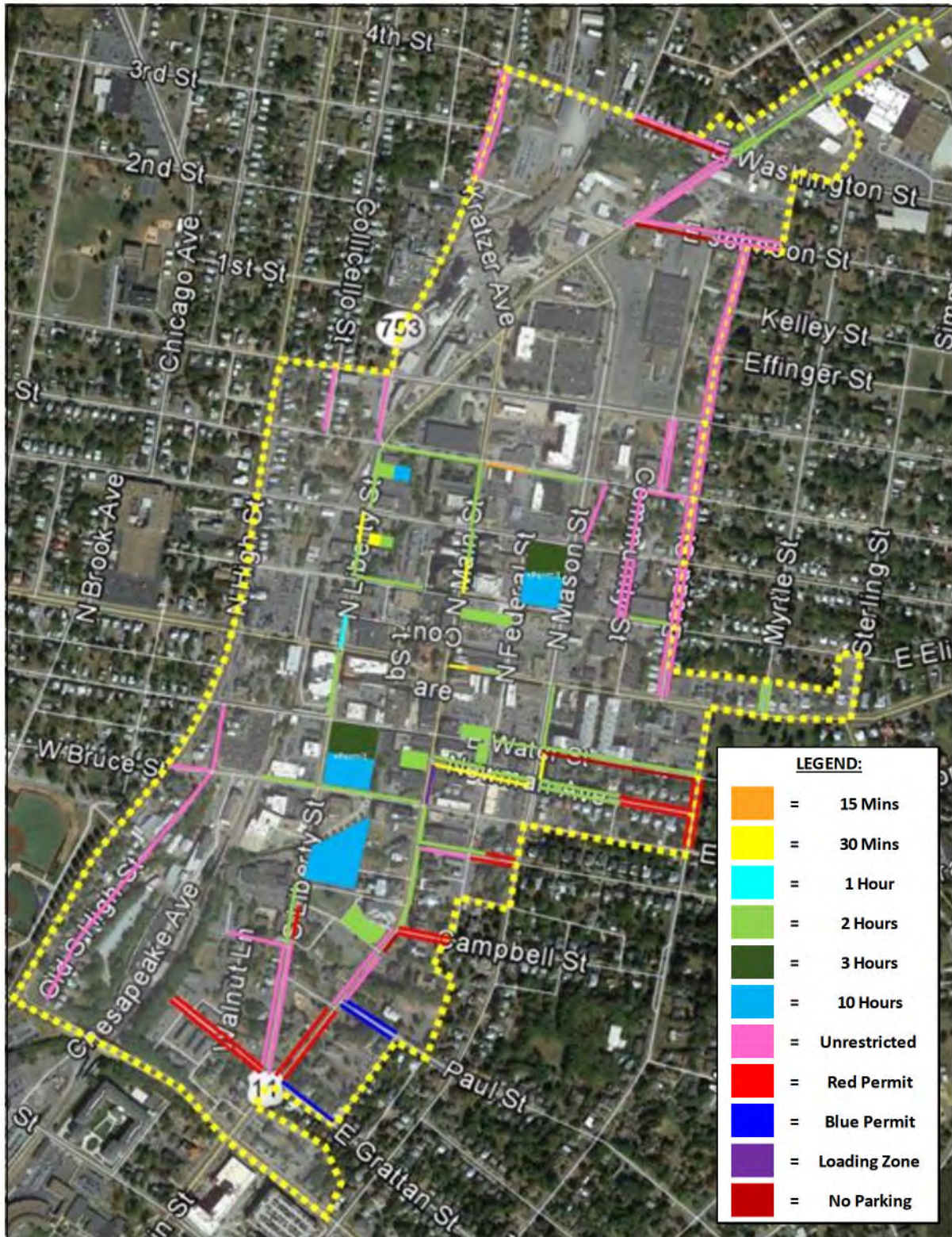
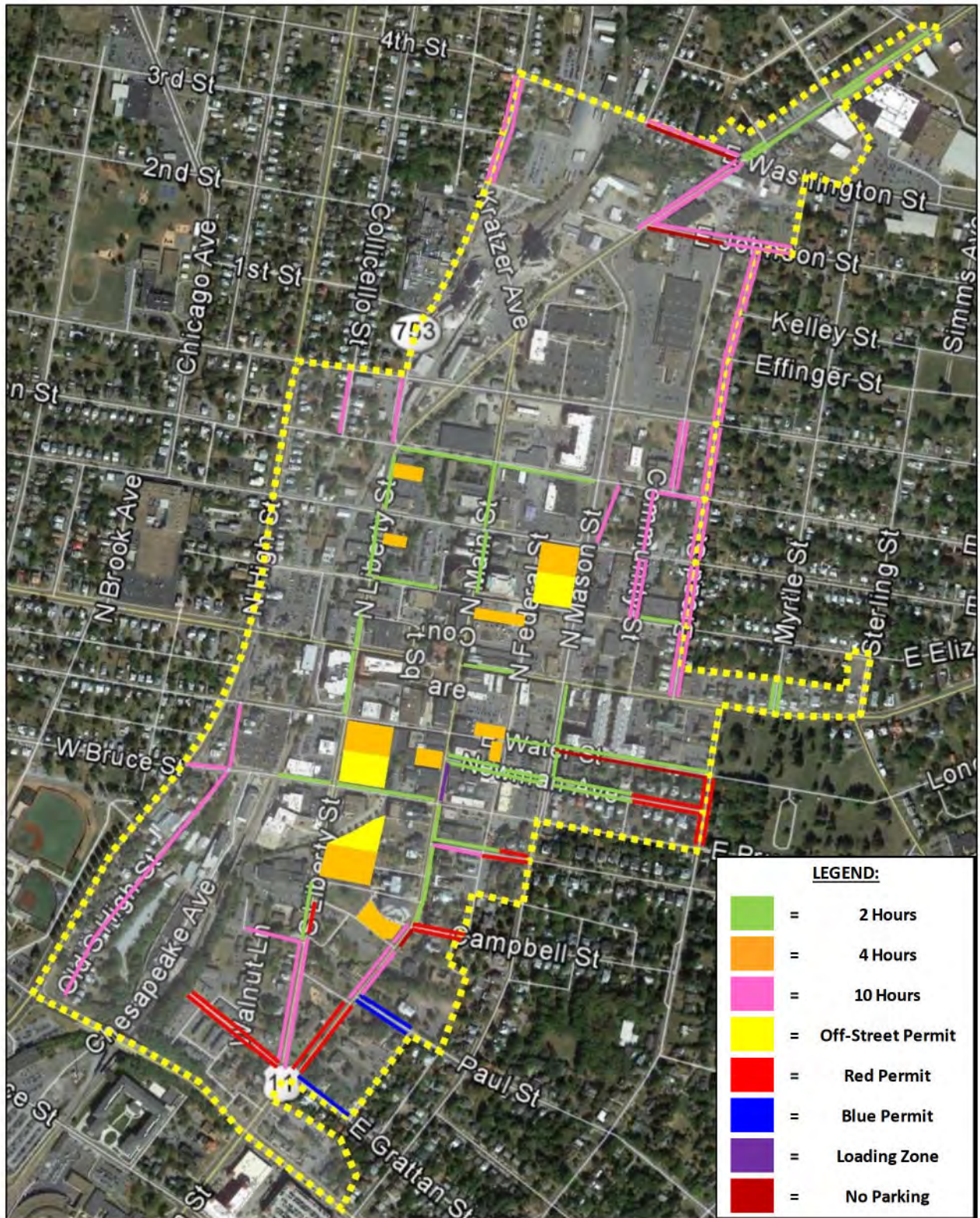


Figure 38: Proposed Parking Time Limits



Necessary Supports/Mechanisms

Prior to execution of these recommended policy revisions, the City will establish a Parking Enterprise Fund to capture the revenue derived for parking permit sales, citation fines, and in-lieu fees as described earlier in this document. As detailed previously, expenditures from this fund will be limited to improvements in the downtown parking system or other infrastructure and subject to oversight. As described previously, formation of this fund would fall under the responsibility of the Finance Department, with approval from City Council.

Execution of the proposed policy changes can precede adoption of LPR technology for parking enforcement (as recommended as part of improving parking facility management practices), but would be best executed after the new system is in place. As discussed previously, the adoption of LPR technology will make enforcement of both permit parking and time-limited parking, as well as the identification of parking scofflaws to assure payment of citations, most efficient and effective. Acquisition of LPR technology would be the responsibility of the Police Department.

An aggressive communication program involving the city's website, social media channels, email blasts, printed flyers, and local periodical advertisements, should be executed at least 30 days before the new policies are placed into effect. In addition, the City may wish to adopt a 14- to 30-day 'grace period' after adoption, during which enforcement personnel write warnings, rather than live citations, when encountering violations. Harrisonburg Downtown Renaissance, the Department of Public Works, and Community Development should all be involved in the information campaign.

The Department of Public Works should anticipate one-time expenditures to replace and/or expand current regulatory signage to accommodate the change in policy.

Benefits/Liabilities

Benefits: Revising current policies as recommended will increase the supply of long-term parking in the downtown and the supply of short-term parking in some contested City parking facilities, addressing many of the complaints voiced through the survey and public meetings. The addition of a 4-hour limit class of parking would give users such as jurors, tourists, and other transients likely to exceed the 2-hour time limit an option which accommodates their needs while preserving curbside parking for shorter term transients like diners and shoppers. Simplifying assignments will also make enforcement easier.

Liabilities: The long-term parkers currently using the City's 10-hour spaces in off-street facilities may be reluctant to convert to permit parkers or move to a curbside area a greater distance away. The residents living on some of the streets that are currently unrestricted may have concerns with the conversion to 10-hour parking. Improved enforcement will likely result in more citations being issued initially, which is never popular with the general public, even when citations are warranted. Finally, more effective enforcement will likely require additional staffing or effort to process and adjudicate citations.

Supporting Analysis

When asked about their likely level of support for a reevaluation of parking time limits throughout the city, 77% of survey respondents said that they would 'agree' or 'strongly agree' supporting such an effort by the City, as shown in **Figure 39** on the next page. The evaluation and adjustment of on-street parking time limits was seen as a positive initiative by the majority of those surveyed and the comments received highlighted the need for abundant short-term parking spaces, which provide enough time to conduct

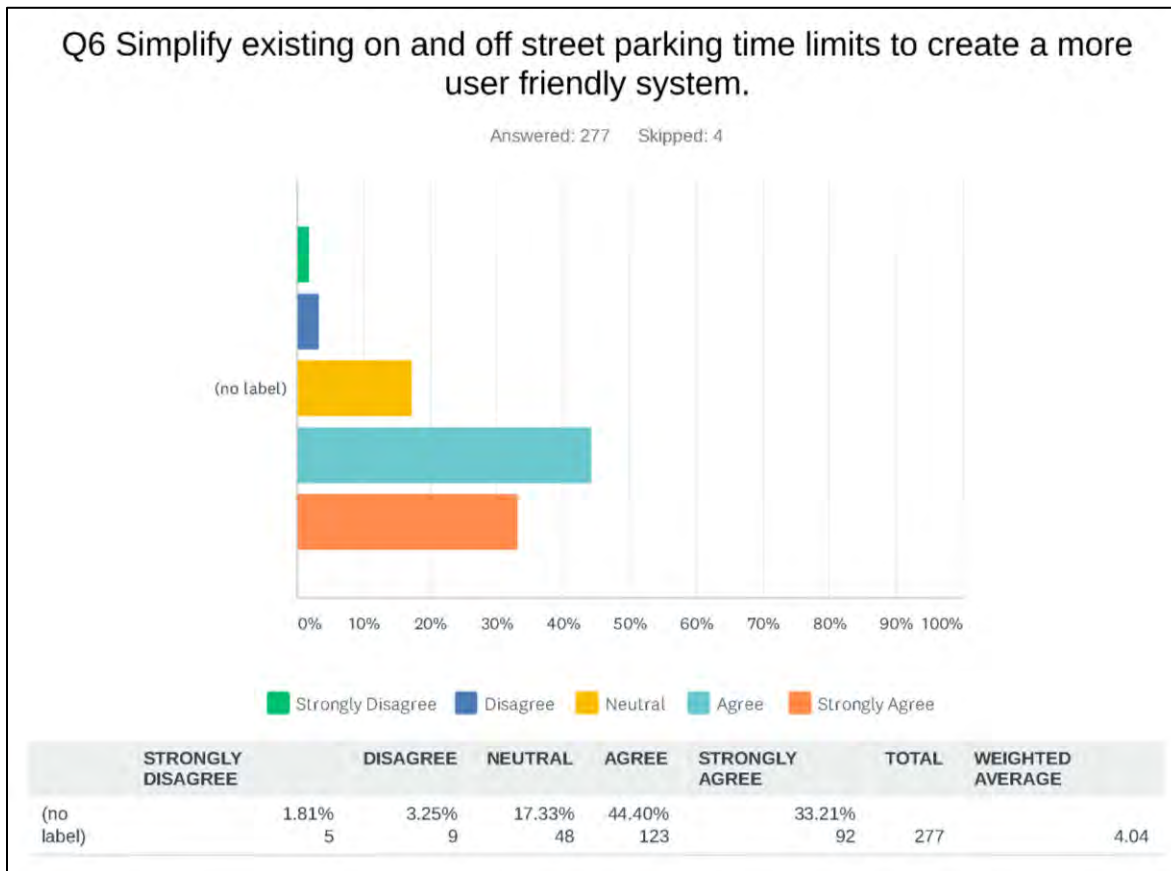


errands or patronize local businesses. The supporters also acknowledged the need for 10-hour spaces to accommodate those who work downtown, as the interruption of moving a vehicles multiple times per day to abide by parking time limits impedes productivity of these workers.

As shown in the figure, 17% were neutral on the initiative and only 5% of survey respondents disagreed. Those who responded with comments against adjusting time limits were those who were generally opposed to time limits or people being wary of shorter time limits in retail/restaurant areas, having time limits imposed on residential streets, as well as a general desire to reduce the level of parking enforcement throughout the city.

Given the degree to which Harrisonburg has changed and continues to change, it is DESMAN’s recommendation that the City periodically review all existing on-street parking time limits in order to determine the adequacy of time limits versus demand.

Figure 39: Survey Responses to Simplifying Parking Time Limits



Case Studies

Danville, California is a town of similar size to Harrisonburg that offers free time limited parking throughout the downtown. In 2010 Danville worked to develop new time limits that better served employees and visitors. The results were more simplified time limits, with the majority of on-street spaces being enforced with either 2-hour or 4-hour limits. These limits were focused on “hot spots” nearest tourist attractions and primary business destinations. Other changes were made to create longer-term



parking in off-street lots that catered to employees and an increase in the number of permit parking spaces throughout downtown.

The City of **Burlington, Wisconsin** has placed an emphasis on providing free parking for the city. The city has made all on-street parking 2-hour limited, with additional loading zones in order to provide areas for quick stops or drop-offs. The off-street parking lots and parking garage do not have an associated time limit, but are monitored to ensure vehicles are not being stored. Additional policies were enacted to ensure vehicles were not being stored on- or off-street, as all vehicles must be removed from the on-street spaces unless an overnight permit is displayed. Through use of these policies residents, visitors, and those conducting business are all able to find a suitable parking space when needed.

Jamestown, New York made the need for no-cost short-term parking in the “Congested District” of the downtown a priority. The City enacted a “Free Zone” where parking meters were removed to create 150 spaces on 20 block faces that offer a two-hour cumulative parking limit free of charge. The intent of this limit, is to provide more parking opportunities for short term access, while encouraging those who spend longer periods parked in the various spaces of the zone throughout their day to use the available long-term options. The areas around this “Free Zone” are metered and offer parking limits of either two- or twelve-hour lengths, however only parking in the “Free Zone” is free of charge for the two hours of use per day.



INVEST IN NEW TECHNOLOGY TO ASSIST WITH ENFORCEMENT***Proposed Initiative***

DESMAN recommends the Police Department invest in vehicle-mounted License Plate Recognition (LPR) technology to improve parking enforcement. DESMAN also recommends that the Department invest in systems which will allow the City to automate the parking permit registration, citation appeal, and citation payment processes.

Statement of Issue

Given the recommended changes in operating practice and policies detailed in other initiatives, the Police Department will be hard pressed to enforce these changes under current procedures.

As noted earlier, the current parking permit program for the City's off-street facilities is relatively easy to circumvent. In addition, enforcement of time limits is becoming more challenging for cities across the country. A recent ruling by the 6th Circuit Court in Saginaw, MI, determined that chalking tires of a vehicle is unconstitutional and violates the Fourth Amendment's ban on unreasonable searches and seizures. While the ruling currently impacts Michigan, Ohio, Kentucky, and Tennessee, there is a chance that its impacts could spread to other jurisdictions as well.

Proposed changes in policy would potentially increase the number of permit applications, which are currently processed manually by City personnel. Changes in policy are also likely to increase the number of citations issued and appealed. The City does offer an option for offenders to pay their parking ticket online, but parking citation appeals must still be submitted and processed manually. The increase in permit applications and administration of parking citation processing and payment processing, and adjudication will all tax the workload of the Police Department and City Treasurer's Office personnel.

Causes/Indications

Causes and indications of this issue have been addressed in prior sections: IMPROVED FACILITY MAINTENANCE AND MANAGEMENT PRACTICES [page 65] and SIMPLIFY ON- AND OFF-STREET PARKING TIME LIMITS [page 109].

Potential Solution

DESMAN would recommend the City invest in one or more vehicle mounted LPR systems to enhance enforcement efforts for both parking permit facilities and time-limited parking zones. Based on DESMAN's experience, a vehicle mounted LPR system costs \$65,000 – \$80,000 for cameras, hardware, software, and supplemental support.

This City may wish to supplement this acquisition with new handheld citation units that capture vehicle license plate data and violation images in real-time. These units are typically \$3,500 to \$6,000 per piece.

In tandem with implementation of LPR technology, DESMAN would also recommend the City invest in software that would allow citizens to submit applications for parking permits online. These applications will capture all the information necessary to support an application and can be reviewed by an appointed individual for approval or rejection according to their schedule and availability. If the City converts over to the digital permits, in which the individual's license plate becomes their permit credential, the approval can be communicated electronically and the permit is valid the moment the application is approved.



Similarly, DESMAN would recommend the City investigate the purchase of software that will allow individuals to submit parking citation appeals, including all relevant supporting materials. As with parking permit applications, these appeals can be reviewed by an appointed individual as their schedule allows and the results of the appeal can be communicated electronically back to the applicant.

Conceptual Implementation

Many LPR technology providers offer software modules that perform permit application, citation appeal, and citation payment processing. As the Police Department is investigating the purchase of the LPR units, they should also be requesting quotes from qualified vendors to include these features in the purchase. DESMAN would recommend the Police Department and the City’s Purchasing Agent commence development of technical bid specification to acquire these systems as soon as possible and seek to have a vendor selected and engaged prior to the fall of 2020.

As with the change in parking policy, the change in the process for permit application and issuance, as well as citation appeals and payment, will need to be aggressively communicated to the local citizens at least 60 days in advance of the start of operations.

Necessary Supports/Mechanisms

The City’s Information Technology Department will need to be closely involved in the development of the technical specification, evaluation of bid, and installation of software and systems. The IT Department may need to revise the City’s website to provide links for users to connect with the portals to submit applications, appeals, and/or payment.

The City Attorney’s Office should also be involved during the specification development and award process to ensure the LPR system meets all civil rights requirements for the retention and protection of personal information.

Since the outset of the parking study process, the city’s parking system has undergone changes related to permitting and enforcement. Originally permit parkers were able to remove their permit from view, by removing the hangtag permit from the windshield and placing it out of site from the enforcement staff. Without a permit, these parkers were able to park in time-limited parking spaces without consequence. The city has since moved to a sticker, which is attached to the rear windshield of permit parkers, which ensures permit parkers are parking in their assigned areas leaving the time-limited parking to visitors and customers.



The oversell of annual permits for the parking garages should be continually evaluated. In the parking industry, it is typical for a parking facility to sell more parking permits than there are available parking spaces at the facility. It is unlikely that every registered permitholder will visit the parking facility every day. These oversell factors vary widely from facility to facility, as the mix of workers, employees, or tenants can fluctuate by hour and by day of the week. The continued patrol, and recorded number of permit parkers, should be continually evaluated to determine the average number of empty parking spaces at the parking garages. If the other recommended initiatives are incorporated into the parking plan, specifically adjusting time limits, the number of applications for garage permits may increase and the city should be equipped with the necessary information.



Benefits/Liabilities

Benefits: As mentioned previously, LPR technology is a force multiplier which will allow a single parking enforcement officer in an equipped vehicle to cover many times the same area normally patrolled using standard technology, with much higher accuracy and violation detection rates. The result of this will be better compliance with policy and more citation revenues to offset the cost of the equipment and systems. Automating the parking permit application and parking citation adjudication processes will be a convenience for both applicants and the individuals tasked with processing the applications and may allow the City to reassign those individuals formerly assigned to accept and process these materials manually to higher and better uses.

Another benefit of LPR is the ability to remove physical permits from circulation and use the license plate as the credential. The permits can be administered through the online portal to reduce the amount of labor and paperwork associated with distributing and monitoring permits. Due to the license plate being a regulated credential, the system provides a higher level of integrity and less opportunity of permit misuse.

Additionally, a benefit of a comprehensive LPR system is the collection of data related to occupancy, duration, and turnover. The City would be able to collect data on where cars park, when they park, how often, and how long. This information can be used in making conscious decisions about potential meter locations and rates to determining parking density for building and zoning decisions in the future.

Liabilities: Beyond the cost to develop the specification and administer the bid, and the purchase cost of the system, there will a labor cost associated with implementation and training, as well as any necessary modifications to the City's website. The effectiveness of the new system will be an issue for violators who might have previously gone undetected.

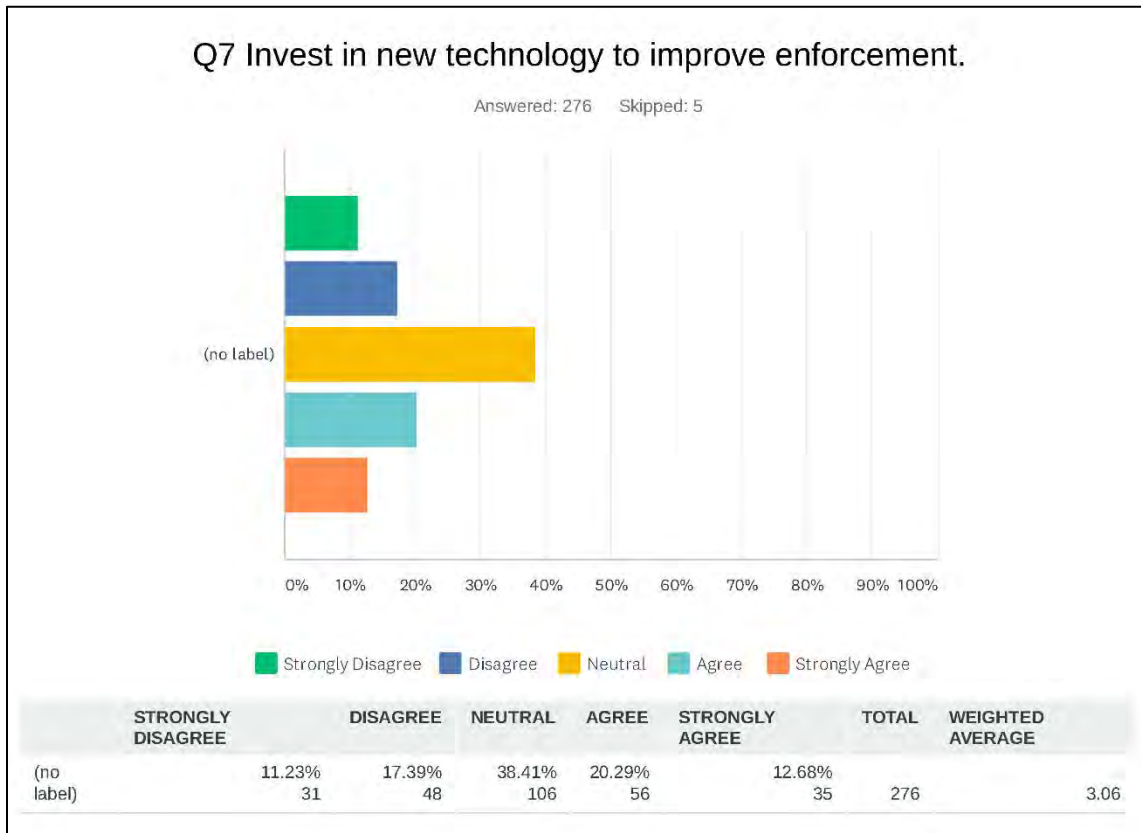
Supporting Analysis

As **Figure 40** on the following page shows, constituents are divided on whether or not to support new parking enforcement technology, with the largest group of respondents, 38% being neutral on the issue. Understandably, enforcement is not something that all constituents will respond to in the same way as some of the other initiatives. Many of those who would support new enforcement technology for the City understand the benefits, but do not approve of being preyed upon as a source of City revenue.

Opposition of this initiative offered comments that questioned the need/benefit of the technology as well as the new technology's cost. All responses were most concerned with parking capacity as well as any impacts to a resident's or visitor's ability to access a business, home, or institution.



Figure 40: Survey Responses to Improved Enforcement Technology



Case Studies

Lowell, Massachusetts uses pay-by-space multi-space parking kiosks for some on-street parking. Lowell replaced traditional parking meters with parking kiosks, which each serve approximately 7 to 8 parking spaces. The Parking Department in Lowell estimates that these changes have resulted in a 40% increase in parking collections and 25% decrease in operations and enforcement costs, since the status of parking facilities can be monitored remotely from the central office. These kiosks also help improve accountability since all collected monies are digitally accounted for by the meter, and “digital chalk” parking enforcement technology (License Plate Recognition Technology) means that enforcement officers no longer need to manually patrol meters or visually verify each vehicle.

In August 2011, **Kirkland, Washington** began using computers and License Plate Readers mounted on vehicles for parking enforcement. The “electronic chalking” system is more effective than the old method of manually chalking tires to check parking duration. The new system is reliable, effective, and allows for easier patrol of the on-street parking spaces throughout the city. Because on-street parking spaces in Kirkland typically have a 2-hour time limit throughout the City, the enforcement of those spaces is not as effective or timely when completed manually. The enforcement officers who patrol the city streets are now able to focus on navigating safely and only stop when the LPR system’s alarm is triggered by a vehicle that has overstayed the posted time-limit.



Rome, Georgia recently adopted License Plate Recognition into their parking plan. One of the reasons cited was because of the system's ability to collect information regarding who is parking downtown, when and for how long, which will be used for future planning as well as used to potentially adjust time limits in the future if necessary. The LPR system does require additional provisions in Georgia as there is not a front license plate, making enforcement more challenging if a vehicle is parked without their license plate displayed. The City has implemented the LPR system to encourage compliance with the on-street parking limits to ensure that there are on-street parking spaces available for visitors to the downtown.



SUPPORT USE OF ALTERNATIVE MODES OF TRANSPORTATION

Proposed Initiative

DESMAN recommends the City incorporate language into their zoning ordinances to incentivize developers and property owners to support alternative modes of transportation.

Statement of Issue

Mandating the inclusion of parking associated with new development is one way to increase parking supply to address future issues. However, providing infrastructure and programs that promote the use of alternative modes of transportation can also correct parking issues by mitigating current or future parking demand. The various modes range from walking and bicycling to public transportation and ridesharing.

Causes/Indications

A preliminary analysis of known emerging developments in downtown Harrisonburg executed by DESMAN suggests that planned projects anticipated over the next three years (“near term”) will create new demand for 167 spaces but only supply 20 spaces and eliminate 88 existing spaces creating a net deficit of 235 spaces. In the mid-term (4-6 years), projected development will require up to 303 spaces, with no plans to replace any capacity other than that contained within the existing Water Street Garage. Finally, in the long-term (7-10 years), planned development will require 67 additional spaces, but provide no new supply, creating a net 10-year potential deficit of 605 spaces.

The City of Harrisonburg is focused on supporting alternative modes of transportation as a sustainable practice. The Departments of Public Works and Community Development issued the [2017 Harrisonburg Bicycle & Pedestrian Plan](#) outlining how the City was investing in infrastructure and support systems to incentivize walking and biking across the city. In fact, as noted in the report, the City’s Design and Construction Standards Manual requires bike racks be installed with any new development providing 15 or more parking spaces with the greater of four bicycle spaces or one bicycle space for every 25 standard parking spaces. Bicycle parking needs were also addressed in the [2013 Bicycle Usage in Downtown Harrisonburg](#) report, an appendix to the [2013 Downtown Parking Study](#) conducted by James Madison University students.

Potential Solution

As suggested in another section of this report, introducing parking requirements associated with new development is one way to address this issue and allowing for waivers against this requirement through credit for shared parking agreements or in lieu payments is a mechanism for mitigating the impact on development. Another way to mitigate the impacts on prospective developers is to give them credit against their parking requirements per code by installing infrastructure that supports other modes of transportation. This infrastructure can include:

- Covered bicycle/scooter parking racks or stations;
- Secured bicycle storage;
- Support facilities for bicycle commuters like lockers and showers;
- Inclusion of a car share services;
- Provision of a shuttle service to major destinations or transit hubs;
- Construction of covered bus shelters;



- Convenient Ridesharing/Transportation Network Company (TNC) Pick-up and Drop-off locations.

Under this initiative, applicants would be provided a deduction against the number of parking spaces required to support their development per code for implementing various alternative transportation components. As the zoning code is rewritten, there could be inclusive wording that mandates or suggests that new developments should include these facilities and, in some circumstances, could be provided waivers for providing certain amenities. Bicycle parking should be made a priority for residential uses, either housed within the building or by simple bicycle racks outside. These zoning codes should specifically be adopted in the downtown to offer accommodations for those who do not require a parking spaces for a vehicle.

This initiative does not need to be limited to the private sector. As the proposed Parking Enterprise Fund grows with the inclusion of in lieu fees, additional parking permit revenues and citation fines, the City could elect to invest in this infrastructure as well. For example, both the Water Street and Elizabeth Street garages could currently support the installation of a secure bicycle storage facility at grade level, which would provide centralized bicycle parking for the whole of the downtown. In a similar vein, the City could invite car sharing services into downtown by pledging provision of a designed vehicle storage space for these services in one or more public parking facilities.

The money allocated to the Parking Enterprise Fund does not necessarily have to be used for solely parking related projects. Within the downtown, there could be improvements made to the pedestrian environment, including crosswalk striping and signals. The Parking Enterprise Fund, at its infancy, will not be able to provide support to large parking initiatives such as developing new supply or carrying the debt service on existing assets as the amount of revenue coming into the fund is likely to be limited. The parking fund should be established to prepare the city for the future, as there may be a time when the city collects paid parking revenue.

Another component of this initiative that could alleviate parking demand during certain times of day would be the inclusion of specified TNC pick-up and drop-off locations²⁶. The existing loading zones throughout downtown are often busy during business hours, but go underutilized during evening hours. These areas could be designated with appropriate signage to allow the TNC services a designated space for loading and unloading passengers. The location of these spaces would allow the vehicles an area to move out of the right of way and not occupy the usable on-street parking supply to complete their ride process. If the city decides to move forward with this plan, the TNC companies should be contacted to set “pin” locations which will direct passengers to those designated areas during the evening hours.

Conceptual Implementation

Offering this option as an alternative to parking requirements would require implementation of the parking requirements first and some study of local conditions to determine the exchange rate (i.e. reduction) in parking allowed for each component. These incentives could be included at the outset of

²⁶ Another Virginia municipality recently completed a pilot with designating curbside pick-up/ drop-off curbside zones through a dense commercial and residential district with mixed results. When a police presence was visible and active, roughly 67% of TNC drivers complied with pick-up in the designated areas, while less than 50% used the areas for drop-offs. In the absence of a visible and active police presence, compliance fell below 20%, suggesting that simply designating exchange areas with curbside signage was inadequate. However, limiting where individuals can ‘pin’ their intended point of origin or destination to a particular area (such as a loading zone) promises better results.



the overall adoption and implementation of parking requirements or introduced at a later date. As DESMAN envisions it, the Department of Community Development would lead the effort to develop and promote this initiative. Public Works would also provide input to costs and feasibility for these projects.

Necessary Supports/Mechanisms

Beyond adoption of downtown parking requirements, this initiative would also require clear documentation and definition of what would constitute approved facilities and programs prior to implementation. Some of this has already been addressed in the [2017 Harrisonburg Bicycle & Pedestrian Plan](#). There are already plans to implement new Trailways through Harrisonburg as detailed in the [Downtown Streetscape Plan](#).

A component of this initiative would be for the city to identify deficiencies and constraints with pedestrian amenities. This process should include a walkability audit to determine how pedestrians are navigating downtown. In addition to the routes people are using a sidewalk appraisal should be completed. This task would serve as a method to inventory the location as well as the condition of sidewalks throughout the downtown, highlighting which ones are in most need of repair. The audit and inventory catalog would allow for the city to designate where to spend money for the greatest impact.

Benefits/Liabilities

Benefits: Provision of additional alternatives to building on-site parking can only mitigate the potential impacts on prospective downtown developers by granting them more flexibility. Inclusion of these components will support the City's commitment to promoting sustainable practices. Added benefits of removing vehicles from downtown will increase parking availability and less traffic and congestion on the streets. When interacting with the public during the forums, multiple constituents noted that they would be more inclined to ride their bicycle or walk if there were more facilities for the activity.

Liabilities: Considerable time and energy will need to be expended to determine the proper conversion rates of components to parking spaces. Adoption will be dependent on each developer's priorities and market conditions as this is an option, not a mandate.

Regarding other methods to mitigate parking demand, a major city in Virginia implemented a process which demarcated specific spaces for TNC services through a pilot program. The results of the initiative only netted a 20% compliance rate, which shows that 80% of these services still parked in the right of way or parked in an unoccupied parking space. During the pilot program, constituents questioned the decision to designate a prime parking space for this purpose as the space was rarely occupied.

Currently the city does not have the authority to enforce streetscape standards. As the zoning code is revised, certain language can be included that connects these improvements to a Traffic Impact Analysis (TIA). If the analysis identifies significant deficiencies, then the city would have the ability to impose changes to the existing streetscape. The work relies heavily on planning and zoning, but should be made a priority to improve the walkability of the downtown.

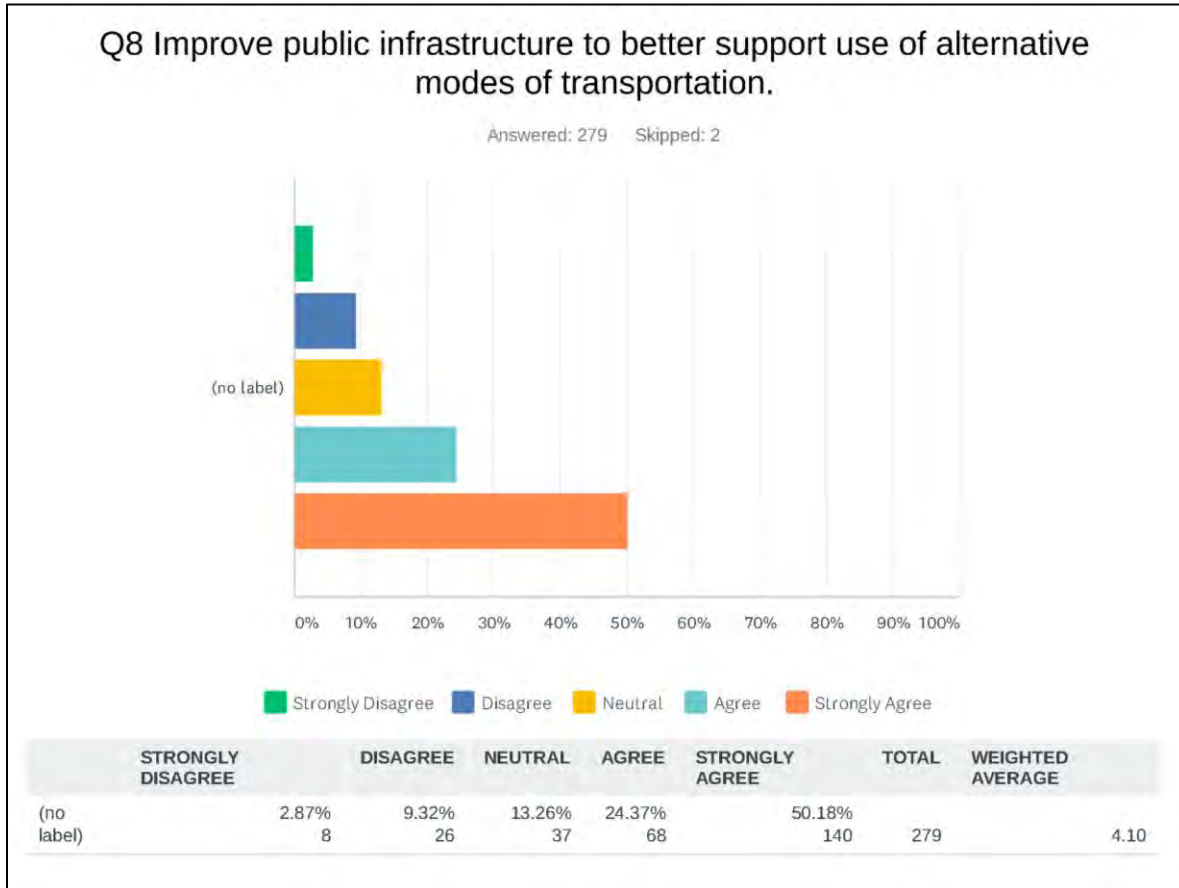
Supporting Analysis

Among surveyed constituents, over half those responding were overwhelmingly in support of improvements to support walking and alternative transportation as shown in **Figure 41** on the next page. Among the 75% of respondents who were supportive, the most consistent comment was regarding the number of those who are willing to walk and/or bicycle to a location, but are unable to do so because of a lack of accessibility or the perceived safety of the walking environment in the downtown.



The respondents that did not agree with the initiative cited the use of funding for these improvements to be unnecessary, as the City should be investing in higher priority issues such as roadway improvements or building more public parking before expending tax dollars on these programs. Many respondents also added comments about the need for sidewalks whether being for or against this initiative.

Figure 41: Survey Responses to Promoting Alternative Modes of Transportation



Case Studies

The **City of Austin, Texas**, amended its zoning code to reduce minimum off-street parking requirements by “twenty (20) spaces for every car-sharing vehicle provided in a program that complies with its requirements,” under which it approves binding contracts between developers and car-sharing companies to gain reductions of up to 40 percent of required off-street spaces.

In May 2018, **New York City** faced considerable opposition when it announced that it would be reserving 285 parking spaces for exclusive use by Zipcar and Enterprise Carshare during a two-year pilot program under which the companies pay a one-time \$765 licensing fee to participate, no fee for the on-street spaces, but monthly parking fees for use of the city’s municipal lots for 55 of the cars. The city government justified its action on the basis that a single shared car serves approximately six to 10 users, lessens the reliance on individual cars, and reduces traffic congestion and greenhouse gases.



In **Denver, Colorado** the zoning code allows parking space reductions of five required off-street spaces for each on-site car-sharing program space provided. Denver also issues on-street parking permits to car-sharing companies for \$850 per vehicle, but users can park cars in those spaces free, without time limits. The states of Colorado, Minnesota, and Florida exempt car-sharing vehicles from the daily car rental fees charged for conventional car rentals, or they charge reduced fees.

In **Portland, Oregon** for every car-sharing parking space that is provided, the motor vehicle parking requirement is reduced by two spaces, up to a maximum of 25 percent of the required parking spaces.

Arlington County, Virginia, provides reductions of up to 50 percent of minimum parking requirements for car-sharing agreements that are at least three years in duration. The growth of the number of car share services has also increased in the region which creates a variety of options for these communities.

Aurora, Colorado offers a waiver for parking reduction when the parking needs of a particular land use will be adequately served and there is an acceptable proposal for an alternative transportation program, including a description of existing and proposed facilities and assurances that the use of alternate modes of transportation will continue to reduce the need for on-site parking. These provided alternative forms of transportation can be bicycle parking or the introduction to an on-site car share service so long as the available options are assuredly reducing the need for on-site parking.

Washington, DC (<https://dcregs.dc.gov/Common/DCMR/SectionList.aspx?SectionId=46224>) requires new developments with eight (8) or more dwelling units and non-residential uses with more than four thousand square feet (4,000 sq. ft.) or more of gross floor area to provide short-term and long-term bicycle parking spaces based on size of the development. For example, a Residential multiple dwelling unit, the requirement is for 1 long-term space for each 3 units. Additionally, retail establishments are required to provide 1 short-term bicycle parking space for each 3,500 sq. ft.



INVESTIGATE FEE-FOR-USE (“PAID”) PARKING

Proposed Initiative

DESMAN recommends the City consider a ‘paid parking’ pilot to measure the impact and influence it might have on parker’s behaviors and mode choice.

Statement of Issue

Downtown Harrisonburg is developing into a vibrant, multi-use downtown with both residential and commercial components. In DESMAN’s experience, popular in-demand areas with businesses and commercial activity do not benefit from residential parking permits and maximum allowable time limits once a certain threshold of parking utilization is met. Parking unavailability and strict enforcement repel returning customers, which is detrimental to business.

With the exception of certain permit holders, virtually all of the public parking supply surveyed across the study is ‘free’ parking, which is to say that parkers did not pay a direct fee to access public parking. This status was vigorously defended by members of the City’s administration and the public, citing the fact that surrounding communities did not charge for parking and to do so would put Harrisonburg at a competitive disadvantage by creating a new barrier to entry for visitors, tenants, and businesses.

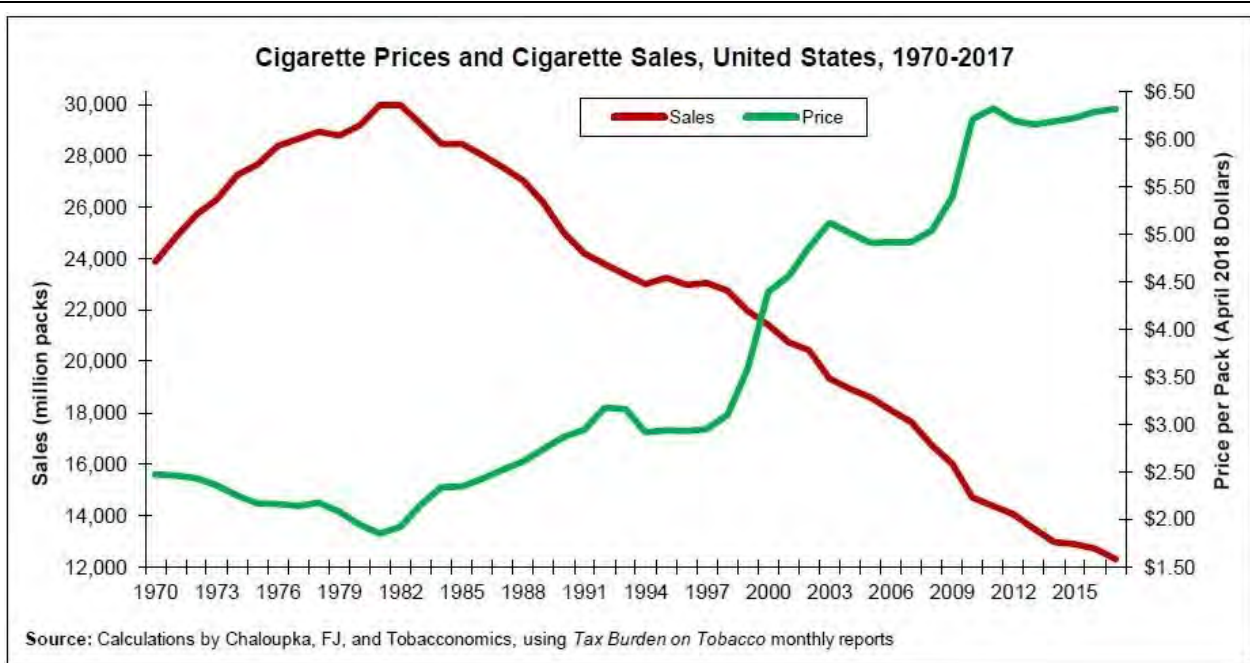
As outlined in Dr. Donald Shoup’s seminal work The High Cost of Free Parking, ‘free’ parking does not come without a substantial cost; it is simply that the cost is not realized by the individual accessing a parking space. The cost to provide, maintain, and manage that parking space, along with the roadways connecting a particular space to a parker’s point of origin, are covered through a combination of various taxes and fees collected by public agencies and/or inflated costs on goods and services sold by private entities. As mentioned in The High Cost of Free Parking, no form of transportation can rival the speed, ease, convenience, comfort, and flexibility of the private automobile; Shoup concedes this point and argues that the only way to get individuals to consider alternative modes of transportation is by making driving oneself less attractive. Shoup proposes one of the most effective ways of achieving this end is by charging driver’s a fair market cost²⁷ for parking.

It is a common and widely accepted economic principle that manipulating the cost of a particular action will translate into increased or decreased rates of behavior. Take as an example, smoking tobacco products. Studies issued as early as the 1920s reported a direct link between smoking and lung cancer rates and major studies in the 1950s verified these findings. In 1964, the U.S. Surgeon General issued a report conclusively establishing the health risks of smoking, resulting in the universal labelling of health risks on all tobacco products in 1965. Massive media campaigns in the 1970s and 1980s informed the public of the health risks associated with smoking. But cigarette sales and smoking rates did not begin to decline dramatically until the direct cost of smoking, realized as the cost of a pack of cigarettes, began to increase appreciably as shown in the **Figure 42**. These price increases, driven by the institution and application of taxes applied to tobacco sales, which was felt directly by the consumer, had a greater effect than any of the educational campaigns that preceded.

²⁷ Shoup argues that a ‘fair market cost’ should reflect the expenses associated with providing a parking space as well as the relative value ascribed to that space as evidenced by the competing demand to occupy it.



Figure 42: Correlation between Price and Behavior Rates



Similarly, Shoup argues, if municipalities truly want to promote the use of alternative modes of transportation, they must first make the traditional modes of driving oneself less appealing by revealing the costs associated with this behavior. Just as public authorities moved to influence smoking rates by placing a tax on tobacco purchases, municipalities can reduce single-occupancy driving patterns by increasing the cost of using that mode of travel, in conjunction with providing simultaneous support for alternative forms of travel.

An exhaustive search for peer-reviewed documentation proving that implementation of fee-for-use parking led to the decline or extinction of a town or district did not return any results. What documentation that does exist is typically anecdotal in nature and unsubstantiated or a matter of opinion and conjecture, rather than a supported case study. Inversely, there are numerous downtowns and districts that have converted from free to fee parking without adverse long-term side effects; in fact, many businesses and residents in these areas report that parking availability and turnover is improved in the wake of the conversion, creating more opportunities and activity for first-time visitors.

Causes/Indications

‘Paid parking’ is most commonly activated in areas where utilization is near or in excess of practical capacity for extended periods, despite efforts to compel parkers to use other facilities, such as aggressive enforcement of time restrictions. Based on field work and analysis, DESMAN does not currently believe such an area exists in downtown Harrisonburg. However, there are indications that particular blocks or facilities could become overburdened in the future. Alternately, the City may elect to institute ‘fee for use’ to address limited focus or impact issues associated with a particular building, event or area. And should the replacement of the Water Street Deck advance as a public/private venture where the private party elects to charge for parking in the facility, then the City will be obligated to convert to fee-for-use in the surrounding public streets and facilities to prevent overburdening of these assets by individuals seek to avoid paying for parking in the new structure.



Potential Solution

At the outset, it should be noted that charging for parking is not a panacea and should not be undertaken as isolated policy change. Rather, the decision to convert from free to fee-for-use parking should be a part of a larger strategy. Critical action steps when executing a 'paid parking' pilot include:

1. **Clearly define and communicate your objectives for conversion to constituents well before hand.** The most successful conversions tie the initiative to a bigger, universally embraced community objective. For example, one New England community is expanding their on-street meter program into areas where the community would like to see (re)activation of vacant retail storefronts. The objective of the metering initiative is to compel turnover and availability to support the new retailers.
2. **Design a pilot program to evaluate impacts and performance.** As a general rule, constituents tolerate pilot programs with a defined timeline and limited geography far better than large-scale, permanent conversions. The best pilots are those that have clearly defined performance metrics which can be easily measured and reported, such as maintaining an 85% or lower occupancy rate during peak hours.
3. **Identify alternatives for individuals who may be displaced by the pilot.** Establishing a fee for use area is likely to impact regular, long-term parkers the most dramatically. Smart municipalities develop multiple alternatives to accommodate these long-term parkers such as subsidized transit passes, ride-matching services, low- or no-cost satellite parking facilities supported by shuttle service, etc., proactively to capture these users when their current parking accommodations become less attractive.
4. **Establish structures to prevent unintended consequences.** There will always be some individuals who will seek to avoid paying fees wherever possible, and be unwilling to consider alternatives. Care should be taken to consider institution of new policies or programs in advance of the pilot to ensure that users seeking to avoid fees do not migrate into adjacent areas and overwhelm that supply. Establishment of permit zones around the pilot area or time limits supported by enhanced enforcement efforts will prevent migration and displacement of parkers in adjacent areas. As a general rule, these measures should be instituted across an area of 2-3 blocks to any side of the pilot area and at least 30 days prior to commencement of the pilot.
5. **Make it easy for users to participate.** One of the errors often made by municipalities piloting fee-for-use parking is relying on a single mechanism for collecting fees, such as relying exclusively on pay-by-cell applications or coin-operated meters. Successful municipalities provide multiple options, allowing for payment of fees by cash, credit card, debit card, smartphone applications, etc., to make paying as easy and convenient as possible.
6. **Communicate frequently and maintain transparency.** Pro-active and aggressive communication before, during, and after of the pilot is critical to maintaining good-will with the community. Alerting residents, business owners, and other constituents of objectives, metrics, meetings, events, and changes as well as pilot results ensures trust and continuing goodwill during the course of the pilot. Care should be taken to report on the performance of the pilot on a regular basis during its term, even when the metrics indicate the pilot may be failing to meet objectives. Information should be communicated through multiple media platforms.
7. **Report results back to the community.** At some mid-point of the pilot and at the conclusion of the pilot, the municipality should be prepared to provide a report on how the pilot is performing,



whether it is meeting its objectives, and if there were any collateral impacts. This requirement is based on the principle of informed consent and is non-negotiable.

- 8. Create a mechanism for investing back into the community where possible.** The municipalities that have most successfully transitioned from free to fee-for-use parking have done so, in part, by committing a portion of the funds generated from paid parking into benefits for the community. These reinvestments can be in the form of supporting expansions of the parking system or improvements, but have also taken the form of streetscape improvements, transit subsidies, and beautification projects.

Conceptual Implementation

DESMAN perceives this as a long-term initiative to be implemented when parking conditions are such that utilization in a district or facility is consistently at or over 85%-90% of effective supply and all other initiatives (including institution of aggressive time limits with enhanced enforcement, shared parking, promotion of no- or low-cost options elsewhere, promotion of alternative modes of transport, etc.) have failed to alleviate the issue.

Necessary Supports/Mechanisms

As detailed in previous sections, a Parking Enterprise Fund should be in place to capture revenues from the pilot for reinvestment back into the community.

As noted, the City will need to implement measures to prevent 'migration' into adjacent no- or low-cost parking areas or facilities (unless intended) and enforcement to ensure compliance. The City will also need to invest in infrastructure for fee collection (e.g. meters, pay-by-cell services, etc.).

Another consideration that should be evaluated is the potential of the introduction of a Public-Private Partnership to develop a new parking garage. The most likely scenario of the development process would be the introduction of fee-for-use at the parking garage in order to fund the project. The city would need to monitor the costs of the off-street parking and then implement fee-for-use parking on-street and in the surrounding area concurrently to ensure customers and visitors are parking in the garage and not overburdening the public on-street supply. Fee-for-use systems can be implemented, and work effectively, when there is an issue on a micro level or specific area. If vehicles continually overburden certain areas on the street, paid parking can change the behavior and relocate those vehicles off-street or to other areas.

All changes to the initiative of paid parking are predicated on the necessity to communicate clearly and often. The need for public interaction and communication during any adjustments of time limits and/or implementation of a paid parking process cannot be overstated.

Benefits/Liabilities

Benefits: Any paid parking will come under scrutiny as the costs of parking change. This becomes even more of a conversation when parking was previously provided at no cost. The benefit of charging for on-street parking is the increased cost of vehicular transportation, which can influence transportation choices by the public, including use of public transportation options. The monetizing of transportation decisions is proven to change behavior and can be attributed to the generation of more parking supply by reducing the number of users who were previously competing for parking spaces.



The increase in newly revealed revenues for the City can also be a benefit, as the revenue can fund parking, transportation, and mobility improvements or other important priorities for the community. These changes in fee-for-use parking can help promote other modes of travel and may create opportunities for new businesses or residents while reducing or better balancing parking demand.

Liabilities: The liabilities of establishing fee-for-use parking include the public uproar of having to pay for parking where it was once provided for free. There could potentially be a reduction or loss in business trade in these districts, but the perceived loss of business may have already been a consideration before the implementation of paid parking. Some residents and businesses may altogether leave the district due to the change to paid parking, but in many cases the opposite effect happens and visitors are drawn to the district as it becomes a destination with more parking availability and newly implemented pedestrian infrastructure.

The costs of procurement and installation of the meter hardware as well as the costs associated with the administration of the parking system will impact the amount of revenue generated at the outset of the program. In many instances of the conversion to paid parking the municipality may realize some revenue being generated on top of operating costs; however, it should be noted that the revenue generated will be allocated to a specific fund used for specified parking or pedestrian related projects.

Supporting Analysis

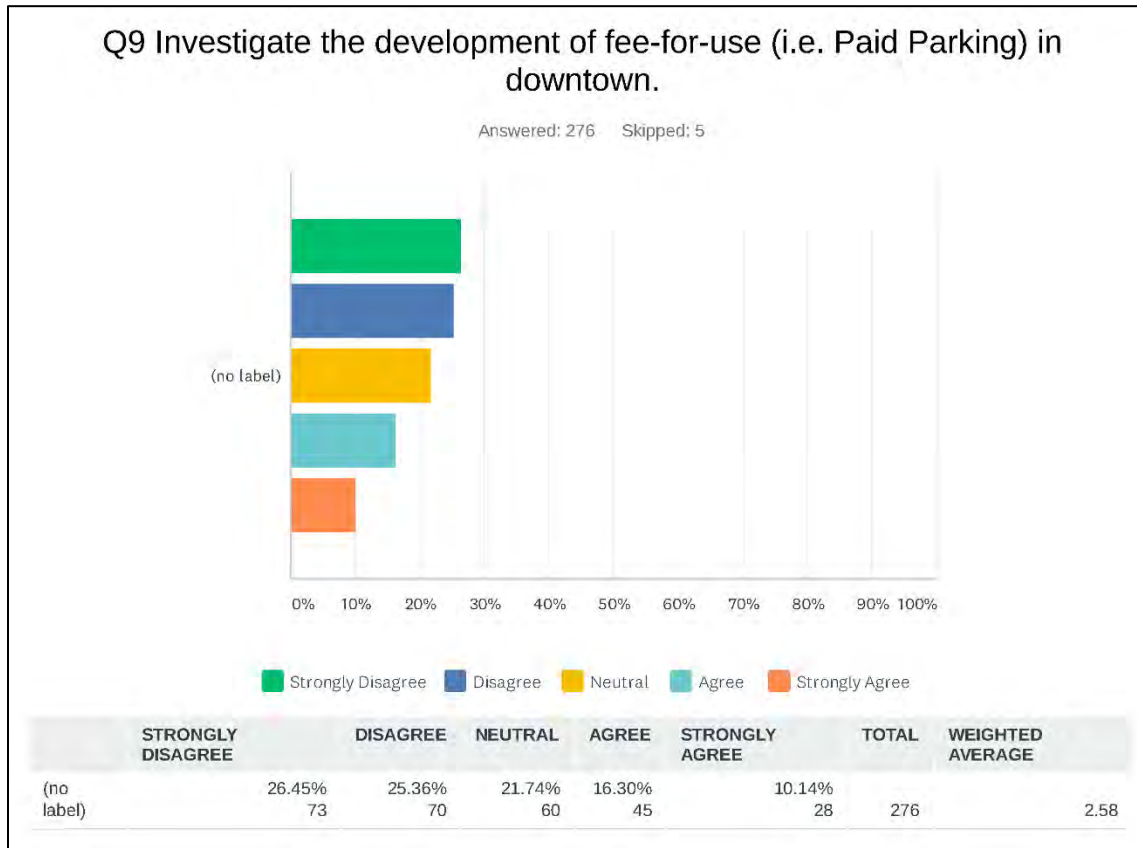
When asked to respond to the proposal to establish paid parking, only 26% of respondents indicated they agree to support fee-for-use parking. The comments received highlighted the fact that many of the peer cities to Harrisonburg, such as Staunton or Winchester, have implemented paid parking. Additional comments mentioned that this could be seen as the allure of Harrisonburg.

As shown in **Figure 43**, next page, more than 50% were opposed to paid parking. In DESMAN's experience, it is rare for the majority of any community to embrace the concept of paying for a service that was previously provided free of charge, so the survey results are not surprising and strongly suggest that any attempt to convert from free to fee-for-use parking should closely follow the guidelines and best practices outlined previously. Other respondents stated that they felt 'free' parking was a critical aspect of Harrisonburg's culture.

While there is substantial resistance to adopting this action at this time, the initiative should not be disregarded. Paid parking is an effective mechanism to influence parking behavior, whether it is assisting in promoting desired turnover, limiting length of stay in particular areas or facilities, redistributing demand among multiple facilities, or discouraging single-occupant vehicle use in favor of alternative modes of transportation.



Figure 43: Survey Responses to Instituting Paid Parking



Case Studies

The **Cities of Pasadena, California** and **Boulder, Colorado** have both been able to support large-scale public amenity projects through dedication of parking revenues. In **Pasadena**, parking revenue has been used to purchase street furniture, street trees, historic lighting fixtures, and improving sidewalk maintenance. Installing the parking meters was not politically palatable until the City agreed to invest the parking revenue back into Old Pasadena. In **Boulder**, parking revenues have funded the maintenance and improvements to the Pearl Street Mall, a four-block long pedestrian entertainment, retail and dining district that draws visitors from across the region.

Redwood City, California implemented a demand responsive parking pricing strategy to maintain an ideal utilization rate of 85% at their more desirable “front-door” curb spaces along Broadway, their primary commercial street. Before the introduction of the program, Broadway had 1-hour time limits but no meters which resulted in nearly 100-percent utilization all day. The strategy involved installing multi-space meters and pricing different zones according to the observed demand. The initial approach instituted a clearly communicated \$0.75/hour price on the main commercial strip and removed time limits completely. The program relies on occupancy data to adjust pricing if necessary, with the goal to be 85-percent utilization rate or about 2 to 3 available parking spaces on each block face. Following the implementation of this hourly parking charge, the occupancy rate averaged under 85%, parking duration averaged 72-minutes, and off-street parking lot permit sales were increased by 50%.



Montgomery County, Maryland instituted a 90-day pilot program for drivers to pay for parking by their cell phones, and the success of that pilot program expanded to the entire county. In January of 2010, the test area included approximately 1,200 parking meters. The program eliminated the need for coins, allowed people to receive text messages notifying them that their time was expiring as well as allowed parkers to extend their legal parking time by paying remotely. While the County did not have customer survey data for the program, it received a significant amount of positive feedback from the public regarding the program. Between the initiation of the pilot and April, 2010, more than 1,900 people used the program over 6,500 times. Due to the ease of use, the program was expanded for use throughout the County. These pay-by-cell technology programs have now been implemented all over the country and continues to be successful by providing parkers numerous straightforward payment methods.



7. IMPLEMENTATION PLAN

Based on the Long-List recommendations presented to the city and the public and the resulting response, as well as DESMAN’s understanding of the City’s near-, mid- and long-term goals, we would propose the following courses of action:

Initiative	Timing	Action Step	Responsible Party(s)	Estimated Cost	Complexity	Reference
Establish a Parking Enterprise Fund	Near Term	Draft a charter of allowable revenues and expenses	City Council/ City Attorney	\$	**	p.56-57
	Near Term	Establish Parking Enterprise Fund	Finance Department	\$	*	p.56-58
	Near Term	Appoint Board of Overseers	City Council	\$	**	p.56-59
	On-Going	Board of Overseers to meet periodically to vet fund performance and expenditures	DPW/Police Dept./ HDR/ Others	\$	*	p.56-60
Institute Parking Requirements for Downtown Development	Near Term	Develop realistic parking requirements through local research	DPW/ Economic Development/ Community Development	SS	**	p.58
	Near Term	Vet proposed ratios	Economic Development	\$	**	p.58
	Near Term	Research 'in lieu' fee requirements	Finance Department/ Economic Development	\$	*	p.59
	Near Term	Prepare recommended policy language	DPW/ Economic Development/ City Attorney	\$	**	p.60
	Mid Term	Council review and adoption	City Council	\$	***	p.60
	Every 5 years	Periodic review and update of requirements	DPW/ Economic Development/ Community Development	SS	**	p.60
	As needed	Review of requests for waivers	Planning Commission	\$	*	p.60-61
	Annually	Audit of approved shared use agreements	Planning and Zoning Division	\$	*	p.60-61

Estimated Cost = \$ (Less than \$1,000) \$\$ (\$1,000-\$5,000) \$\$\$ (\$5,000-\$100,000) \$\$\$\$ (More than \$100,000)

Complexity = * (Simple/Limited Effort) ** (Moderate/Some Coordination) *** (Difficult/ Substantial Coordination)



Initiative	Timing	Action Step	Responsible Party(s)	Estimated Cost	Complexity	Reference
Improve Facility Maintenance and Management Practices	Near Term	Execute a preliminary CPTED assessment of public parking assets	Police Department	\$	*	p.70
	Near Term	Meet with downtown employers to discuss measures to improve Elizabeth Street Deck usage after hours	Police Department	\$	*	p.71
	Near Term	Prepare an RFQ for supplemental Risk Assessment (if needed)	Police Department/ City Attorney/ Purchasing	\$	*	p.71
	Near Term	Execute, assess and execute Risk Assessment recommendations	Private Contractor/ Police Department/ City Attorney/ DPW	\$\$	**	p.71
	Near Term	Review and revise parking facility maintenance practices	DPW	\$\$\$	**	p.71
	Near Term	Evaluate City employee relocation	City Manager/ City Attorney	\$	*	p.72
	Near Term	Acquire LPR Technology	Police Department	\$\$\$	**	p.72
Invest in Improved Wayfinding and Parking Guidance Systems	Near Term	Relocate and supplement existing signage	DPW	\$	*	p.79
	Near Term	Update web-based map facility locations and names	DPW	\$	*	p.79
	Near Term	Acquire and install Marquee/Blade Signs	DPW	\$\$	**	p.80
	Near Term	Improve instructional signage	DPW	\$	*	p.80
	Near Term	Improve City website graphics	DPW	\$	*	p.81
	Near Term	Expand Parking Information on HDR website	HDR	\$	*	p.81
	Mid Term	Investigate potential APGS pilot	DPW	\$	*	p.82
	Mid Term	Include APGS in any new facility design	DPW/ Purchasing	\$\$\$	***	p.83

Estimated Cost = \$ (Less than \$1,000) \$\$ (\$1,000-\$5,000) \$\$\$ (\$5,000-\$100,000) \$\$\$\$ (More than \$100,000)

Complexity = * (Simple/Limited Effort) ** (Moderate/Some Coordination) *** (Difficult/ Substantial Coordination)



Initiative	Timing	Action Step	Responsible Party(s)	Estimated Cost	Complexity	Reference
Introduce New Parking into Downtown	Near Term	Develop RFP for Public/Private venture to replace Water Street Deck	DPW/ Economic Development/ City Council/ City Attorney/ Purchasing	\$\$	**	p.101
	Near Term	Investigate possible collaboration with courts expansion	Economic Development/ City Attorney	\$\$	**	p.101
	Near Term	Assess feasibility of garage development through TIF or other mechansim	Commissioner of the Revenue/ City Attorney/ City Council	\$\$	**	p.101
	Mid Term	Replace Water Street Deck	DPW/ Economic Development/ City Council	\$\$\$\$	***	p.101
	Mid Term	Identify Site for Development of New Parking Structure	DPW/ Economic Development/ City Council	\$\$	**	p.101
	Long Term	Introduce New Parking Structure	DPW/ Economic Development/ City Council	\$\$\$\$	***	p.101
Promote Shared Parking Agreements to Maximize Use of Existing Assets	Near Term	Develop stock Shared Parking Agreement templates and materials	Community Development/ City Attorney	\$	*	p.106
	Near Term	Begin the process of educating property owners how to form Shared Parking Agreements	Community Development/ City Attorney	\$\$	**	p.106
	Near Term	Begin the process of developing a database of potential agreement participants	Downtown Harrisonburg Renaissance	\$\$	**	p.106
	Near Term	Broker agreements between participants	Economic Development	\$\$	**	p.106
	Mid Term	Enact select Shared Parking Agreements with private entitites	DPW/ Police Department/ City Attorney	\$\$	**	p.106

Estimated Cost = \$ (Less than \$1,000) \$\$ (\$1,000-\$5,000) \$\$\$ (\$5,000-\$100,000) \$\$\$\$ (More than \$100,000)

Complexity = * (Simple/Limited Effort) ** (Moderate/Some Coordination) *** (Difficult/ Substantial Coordination)



Initiative	Timing	Action Step	Responsible Party(s)	Estimated Cost	Complexity	Reference
Simplify Parking Time Limits	Near Term	Assess impacts to existing parking revenue stream	Finance Division/ DPW/ Police Department	\$	*	p. 115
	Near Term	Implement use of LPR technology to enhance compliance with policy	Police Department	N/A ¹	N/A ¹	p. 115
	Near Term	Execute informational campaign	DPW/ Police Department	\$\$	**	p. 115
	Near Term	Execute policy revisions	City Council/ City Attorney	\$	*	p. 115
	Near Term	Replace existing signage	DPW	\$\$	**	p. 115
	Near Term	Counsel existing users through new policy	DPW/ Police Department	\$	*	p. 115
Invest in New Technology to Assist with Parking Policy Enforcement	Near Term	Implement use of LPR technology to enhance compliance with policy	Police Department	N/A ¹	N/A ¹	p. 118
	Near Term	Investigate the cost to purchase supplemental handheld units	Police Department	\$	*	p. 118
	Near Term	Investigate and acquire software allowing users to self-administer parking permit applications/ accounts	Police Department	\$\$	**	p. 118
	Near Term	Investigate and acquire software allowing users to self-administer parking violation appeals	Police Department	\$	*	p. 119

Notes:

1. Acquisition of LPR technology covered under prior initiative.

Estimated Cost = \$ (Less than \$1,000) \$\$ (\$1,000-\$5,000) \$\$\$ (\$5,000-\$100,000) \$\$\$\$ (More than \$100,000)

Complexity = * (Simple/Limited Effort) ** (Moderate/Some Coordination) *** (Difficult/ Substantial Coordination)



Initiative	Timing	Action Step	Responsible Party(s)	Estimated Cost	Complexity	Reference
Support Use of Alternative Modes of Transportation	Near Term	Develop provisions to proposed parking requirements allowing waivers for inclusion of components supporting alternative transportation	Planning Division/ Community Development/ City Attorney	\$	*	p.125
	Near Term	Implement provisions	City Council	\$	**	p.125
	Near Term	Designate TNC exchange zones	DPW/ IT Services/ TNC Companies	\$	*	p.125
	Mid Term	Develop a sidewalk inventory/ pedestrian connect plan	DPW/ Planning Division/ Community Development	\$\$	**	p.125
Investigate Fee-for-Use Parking	Near Term	Investigate pilot to address 'micro' issues ²	Police Department/ City Council	\$\$	**	p.129
	Mid Term	Investigate paid parking pilot associated with opening of the new Water Street structure ²	DPW/ Police Department/ City Council	\$\$\$	***	p.129
	Long Term	Investigate paid parking to manage demand if/when utilization of requires it ²	DPW/ Police Department/ City Council	\$\$\$	***	p.129

Notes:

1. Acquisition of LPR technology covered under prior initiative.
2. Any paid parking pilot should be conducted in compliance with the principles outlined on pages 130-131.

Estimated Cost = \$ (Less than \$1,000) \$\$ (\$1,000-\$5,000) \$\$\$ (\$5,000-\$100,000) \$\$\$\$ (More than \$100,000)

Complexity = * (Simple/Limited Effort) ** (Moderate/Some Coordination) *** (Difficult/ Substantial Coordination)

