



Northside and Southside Downtown Parking Study

Bethlehem, PA

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New York, New York

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NORTHSIDE AND SOUTHSIDE DOWNTOWN PARKING STUDY

BETHLEHEM, PENNSYLVANIA

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1. EXECUTIVE SUMMARY

Prior to this study, a thorough review and assessment of the entire public parking system had not been conducted for many years. For this reason, the City of Bethlehem (“City”) and the Bethlehem Parking Authority (“BPA” or “Authority”) sought a comprehensive study of public parking in both the northside and southside downtown areas. The goal of this project was to develop a plan for improving parking operations in order to address current challenges and to prepare for the impact of potential future development.

In addition to reviewing historical performance data for the parking system and conducting observations of current parking activity, discussions were held with Authority personnel responsible for parking operations, the project steering committee, as well as other stakeholders from across the City. In addition to these in-person discussions, an online survey was created to gain as much community input as possible in this process.

At the time of this study, the public parking supply in the northside downtown consisted of 3 garages, 1 surface parking lot and on-street metered parking totaling 2,249 spaces. In the southside downtown, the supply of public parking totaled 2,667 spaces in 2 garages, 14 surface parking lots and on-street metered spaces; during the course of this study, construction was completed on the Authority’s New Street Garage, which added 626 spaces to the public parking supply on the southside. Based on observations of the parking facilities during weekday peak activity periods in May and September of 2017, utilization of the public parking supply peaked at 70% in the northside downtown and 36% in the southside downtown; the peak utilization of parking on the southside jumps to 46% if we remove the privately-owned Sands parking lots from the public parking supply. During the utilization surveys, in both downtown areas, localized shortages of parking were observed at numerous segments of on-street metered spaces.

In addition to operating the City’s paid public parking facilities and on-street meters, the Authority also manages the City’s on-street residential permit parking program. Over the past several years, the BPA has made significant upgrades to the revenue collection technology in their off-street facilities, while also replacing all of the on-street parking meters. The BPA has also taken strides to implement programs and policies to address concerns of business owners in the northside and southside downtowns related to localized parking shortages. While there are some areas where improvements could be made, in general, the BPA operates, manages and maintains the public parking system efficiently and effectively.

Despite the current availability of parking during peak demand periods, on-going and potential development projects in both the northside and southside downtowns have the potential to significantly impact both the supply of and demand for public parking. In the northside downtown, the most significant impacts on public parking will come from the planned expansion of the Hotel Bethlehem and the need for the BPA to replace the 40+ year-old Walnut Street Garage. In the southside downtown, 2 in-progress and 2 proposed projects on the east side have the potential to create a parking deficit of several hundred spaces. On the west side of the southside downtown, the BPA’s existing parking facilities, including the New Street Garage, should have sufficient capacity to accommodate the demand generated by the planned development projects.

2. INTRODUCTION

At the request of the City of Bethlehem (“City”) and the Bethlehem Parking Authority (“BPA” or “Authority”), DESMAN Inc. (“DESMAN”) was retained to perform a review and evaluation of public parking in the city. Specifically, DESMAN was tasked with evaluating not only existing and future parking supply and demand, but also evaluating the operations of the BPA compared to industry best practices for similar parking systems. According to the City/BPA, this project was undertaken due to the fact that a thorough review and assessment of the entire public parking system has not been conducted for many years – all of the recent parking-related studies have been performed for specific development projects, smaller sub-areas of the city or in relation to the issuance or refinancing of Authority debt. The goal of this project was to develop a plan for improving parking operations in order to address current challenges and to prepare for the impact of potential future development in both the northside and southside downtown areas.

Downtown Bethlehem north of the Lehigh River has seen a recent push to add residential units and to convert previous ground-level retail spaces to new, commercial non-retail uses. Additionally, a number of newer, as well as some and long-time businesses, have experienced growth and may be looking to expand their operations. In the downtown district south of the Lehigh River, several large development projects have been completed in recent years, are currently under construction or are planned in the not-too-distant future. The significant level of private development, coupled with potential changes to the Lehigh University campus aimed at making it more pedestrian oriented, has some in the community anxious about the impact these projects will have on public parking throughout the downtown south of the river. For these reasons, it is necessary for the City/Authority to prepare its parking system to physically handle this growth, while also ensuring that the operations of the Authority are responsive to the current and future needs of the system’s users.

To those ends, DESMAN worked in coordination with the BPA to understand the current public parking system and operations, define the challenges facing the City, identify opportunities for improving the operations, and formulate implementable recommendations. In addition to reviewing historical performance data for the parking system and conducting observations of current parking activity, DESMAN held discussions with Authority personnel responsible for parking operations, as well as the project steering committee, and other stakeholders from across the City. Stakeholder discussions were conducted over multiple days and included participants from the following groups:

- Downtown business owners and operators;
- Owners and operators of event venues with the study areas;
- Representatives from various religious and academic institutions;
- Downtown residential property owners;
- Southside Arts District representatives;
- Redevelopment Authority of Bethlehem representatives, and;
- Property developers.

In addition to these in person discussions, an online survey was created to gain as much community input as possible in this process. Finally, several public meetings were conducted to present the status of the study and to hear feedback from City residents.

The following report presents the results of this work effort.

3. PUBLIC INPUT TO THE PROCESS

The first step toward developing a long-term plan for parking in Bethlehem was to become intimately acquainted with the project study areas through firsthand exploration, review of prior and associated efforts, and in-depth discussions with City/Authority personnel and constituents. Once a basic understanding of market conditions is established, a series of discussions were conducted with concerned constituents and stakeholders, following a “listen-confirm-respond” format.

Throughout the public process, DESMAN engaged in a program of constant analysis and assessment, developing potential solutions to issues as they were identified and quantified, testing those in internal meetings with BPA staff and steering committee members and then with stakeholders through the public engagement process. Those solutions which appeared to have viable support were then further refined, including preliminary cost/benefit assessments to quantify fiscal impact.

During the process of conducting this study, public input on parking in the City was gathered by a variety of means, including: sit-down discussions with various stakeholder groups, telephone calls with stakeholders, public presentations, and an online survey accessible by residents and visitors to Bethlehem. Based on the input received, the following issues were identified for further study/consideration:

- There is concern that an actual or perceived lack of parking could inhibit further infill of existing buildings or new development; there is worry that this could drive potential tenants out of the City.
- Several business owners have had issues in their interactions with the BPA, specifically related to how the BPA communicates changes to the system or operation.
- Patrons of the businesses and restaurants in the northside downtown prefer not to park in the parking garages because they are often dirty and feel unsafe.
- The pay-in-lane and pay-on-foot stations in the North Street and Walnut Street garages are often broken, leading to customer frustration.
- Parking is too expensive; some think that meter rates are too expensive for customers and others think monthly rates are too expensive for employees/business owners.
- What will happen if/when the Walnut Street Garage is demolished; how will the existing parking demand be handled until a permanent solution is found.
- Allowing only cash payments in the northside parking garages and charging flat rates during events causes issues, both in how the facilities operate and financially for employees who only need to park for a short time.
- Signage directing customers to parking facilities is insufficient.
- The annual payment from the Authority to the City’s General Fund should instead go to improving sidewalks, tree wells, public areas, etc.
- Southside stakeholders believe there is a need for one or more of the parking lots on Mechanic Street to be paid, hourly parking instead of all permit parking.
- There is concern among the southside downtown’s constituents about what will happen if/when Lehigh University develops its existing surface lots and Sands develop their parking lots.
- There are concerns that the Parking Authority does not consider the impacts that their operational and pricing decisions will have on downtown businesses.

The analysis and recommendations which follow attempt to address the above issues, while factoring in observed levels of parking utilization and anticipated new development in both downtowns. Additionally, the **Appendix** to this report contains summaries of the input gathered from the online survey.

4. EXISTING SUPPLY/DEMAND CONDITIONS

4.1 Study Areas

Two distinct study areas were chosen for this analysis, based on the desire to evaluate and improve parking in both the traditional downtown of Bethlehem, north of the Lehigh River, and the fast-growing downtown south of the River.

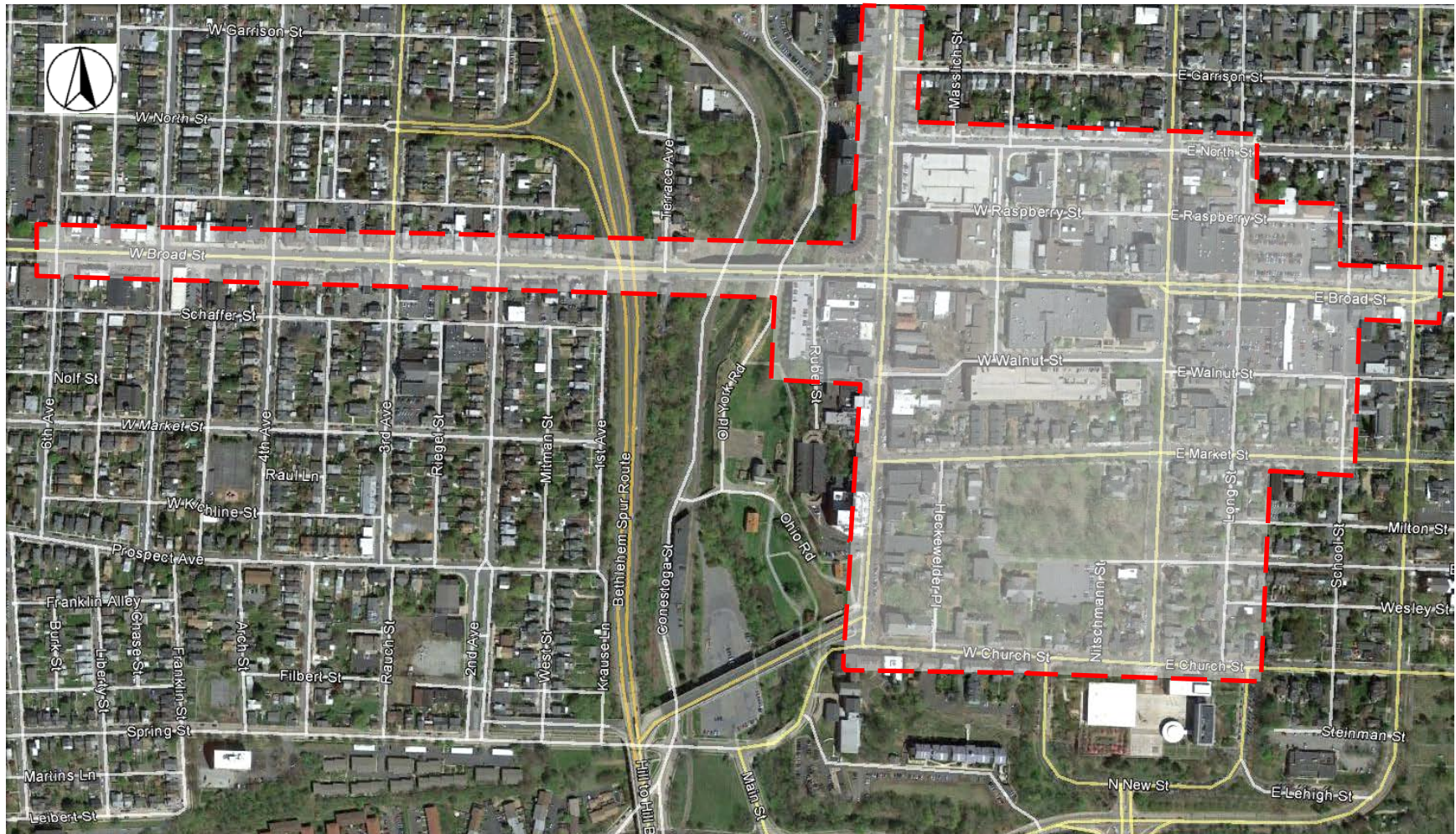
As the traditional center of commerce in Bethlehem, the northside downtown is the long-time home to many of the city's religious and educational institutions, as well as large office tenants, banks, retailers, hotels, and restaurants. In an effort to spur additional economic growth in this area of the City, there is interest in converting existing office and upper-level retail space to residential units and ground-floor retail space to more restaurants and other, commercial non-retail uses. In the southside downtown, the existing retail corridors on 3rd and 4th Streets are continuing to fill with retail, restaurant and service business tenants, while several large institutions, including Lehigh University and Northampton Community College, are also contributing to the growth in activity. Several residential developments and redevelopment projects have been built or are under construction, the flourishing community of artists living and working in the area and event venues like SteelStacks all contribute to the continuing growth and vitality of the southside downtown area.

Despite the fact that these two study areas are physically separated by the Lehigh River, the importance of each area to the overall success of the City of Bethlehem led to the decision to include both areas in this study. Additionally, with nearly all of the City's/Authority's parking assets located in one of the two downtowns, examining either area in isolation would provide an incomplete picture of how Bethlehem's public parking system is being operated and managed as a whole.

In general, the northside downtown study area includes the street corridors where parking meters are currently installed and off-street parking facilities are located. As shown in **Figure 1**, the northside study area is roughly bounded by Union Boulevard on the north, Center Street on the east, Church Street on the south, and 6th Avenue on the west, excluding the residential streets within this boundary where parking meters are not located.

As shown in **Figure 2**, the southside downtown study area is roughly bounded by the Lehigh River on the north, Hayes Street on the east, Packer Avenue on the south, and Wyandotte Street on the west, again encompassing the on-street meter areas and off-street parking facilities.

Figure 1 – Northside Downtown Study Area



Source: DESMAN

Figure 2 – Southside Downtown Study Area



Source: DESMAN

4.2 Downtown Public Parking Supply – Northside

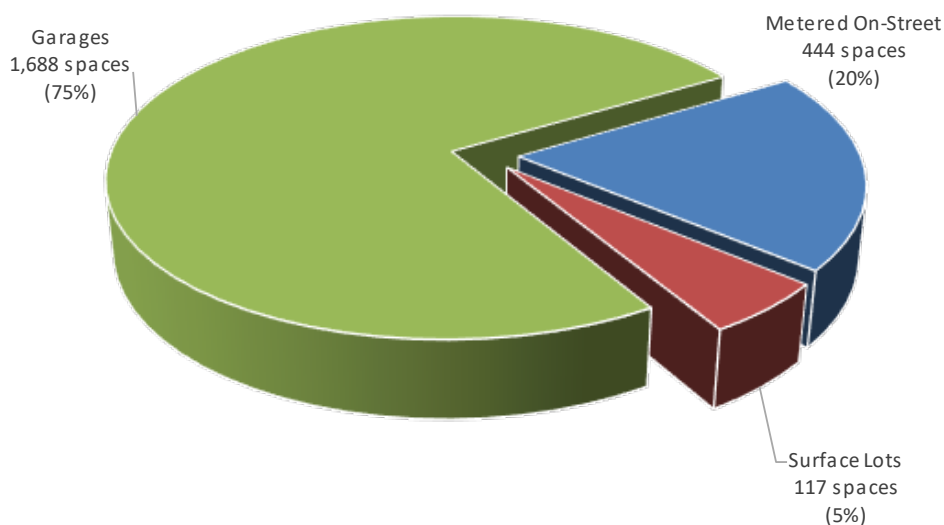
The supply of public parking that is the focus of this study consists of on-street (curbside) spaces and City/Authority-owned surface lots and parking garages. While there are a number of private surface lots throughout both study areas and one private garage in the northside downtown owned by the Historic Hotel Bethlehem, these are dedicated for exclusive use by certain groups, such as customers of a certain business or employees working or tenants living in a particular building and, as such, were not included in the inventory of public parking.

In total, the existing supply of public parking within the northside downtown study area is 2,249 spaces. The breakdown of spaces in the northside study area is as follows:

- 444 On-Street Metered Spaces
- 117 Spaces in 1 Surface Lot
- 1,688 Spaces in 3 Garages

Figure 3 presents the breakdown of the public parking supply by type.

Figure 3 – Existing Public Parking Supply by Type, Northside

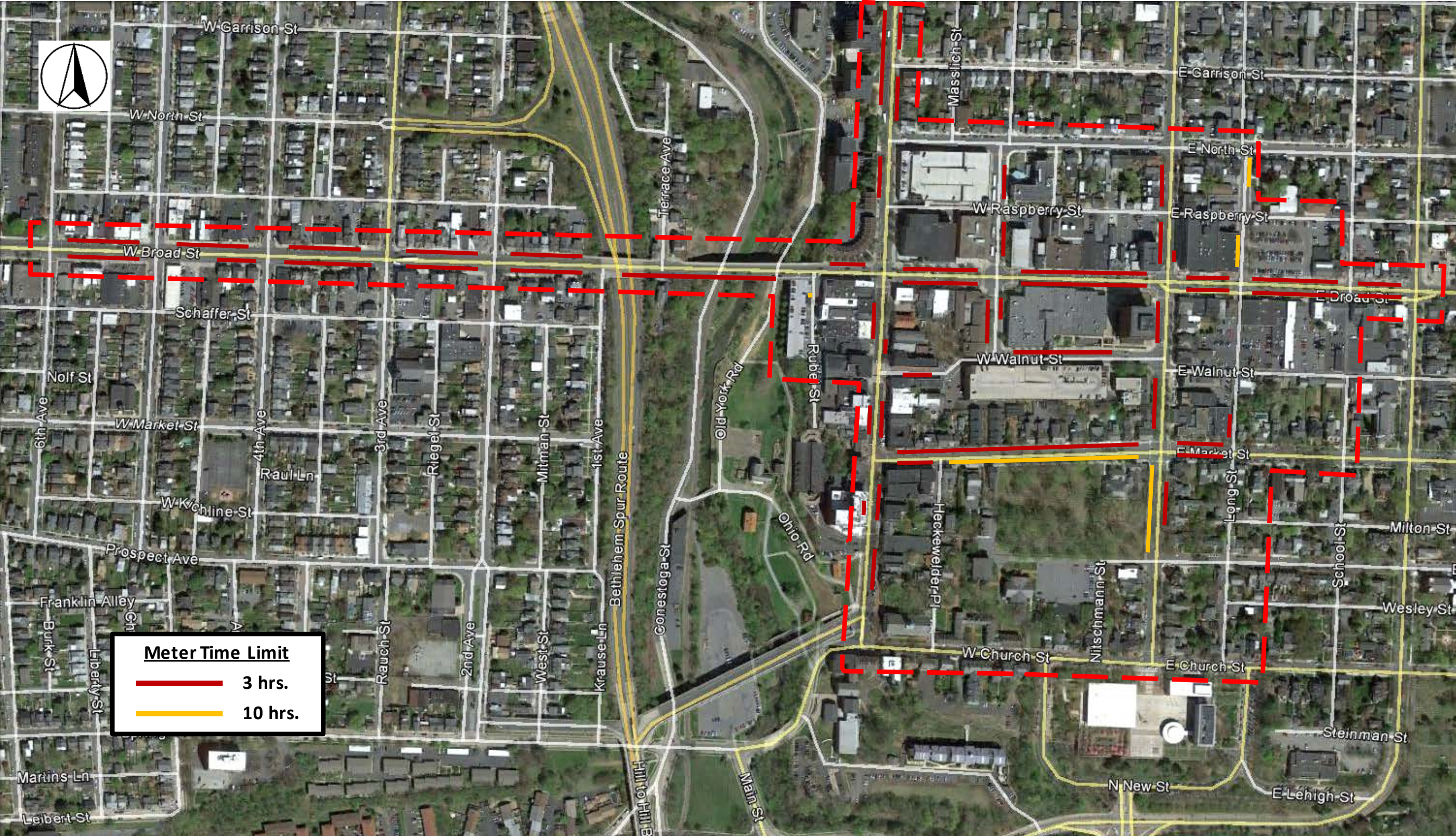


Source: BPA

4.2.1 Metered On-Street Parking

Each on-street parking meter controls one space and parking time can be paid for with coins, credit/debit card, tokens, or using the MobileNOW! application on a smart phone. Additionally, there are two different parking meter time limits at the northside on-street meters: 3-hours and 10-hours. **Figure 4** presents the locations of the on-street metered parking spaces in the northside downtown, as well as their time limits.

Figure 4 – Metered On-Street Parking Supply, Northside



Source: BPA; DESMAN

As shown in the figure, metered parking occupies Broad Street from 6th Avenue to Center Street, Main Street from Union Boulevard to Church Street and a large number of block faces on N. New Street, as well as the interior streets of the northside downtown. According to data provided by the BPA, 43 of the on-street metered spaces in the northside downtown are 10-hour spaces, while the remaining 401 spaces are 3-hour spaces.

4.2.2 Off-Street Parking

Public off-street parking spaces are located in a combination of surface parking lots and garages, all of which are owned and/or controlled by the City/Authority. In total, there are 1,805 off-street spaces available for public parking. **Table 1** lists each of the off-street parking facilities in the northside downtown, along with the space count in each and its location/address. The table also contains a “Map ID”, which corresponds to the aerial map labelled **Figure 5**.

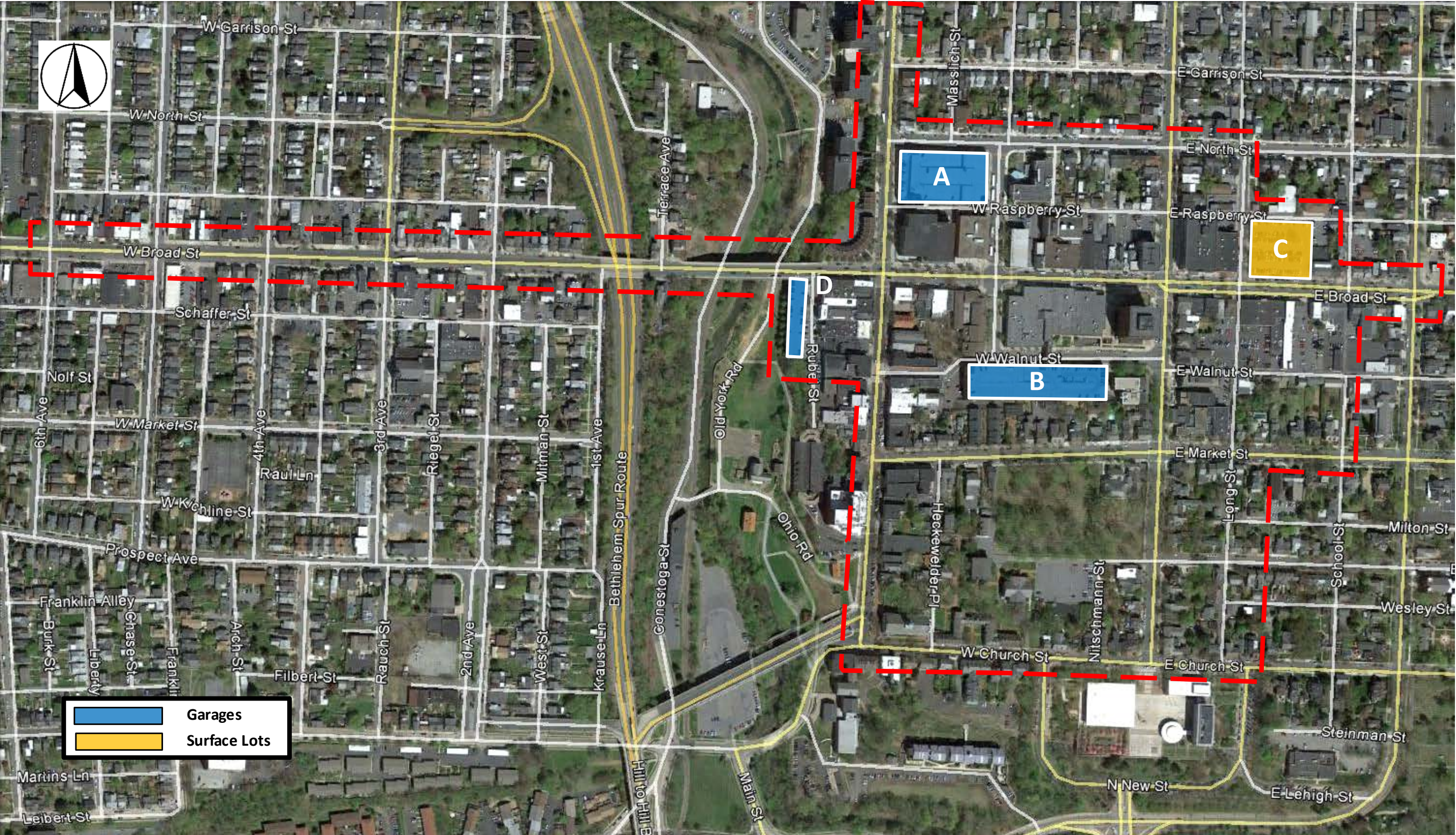
Table 1 – Off-Street Parking Supply, Northside

Map ID	Facility Name or Description	Location	Capacity
A	North Street Garage	75 W. North Street	800
B	Walnut Street Garage	33 W. Walnut Street	777
C	Broad Street Lot	55 E. Broad Street	117
D	Upper/Lower Commons Garage	533 Rubel Street	111
Total Northside Off-Street Parking Inventory and Occupancy			1,805

1) There is an additional 60-space lot at 123 W. Lehigh St. which is owned by the Authority. However, this facility was not included in the study due to its distance from downtown. This facility is primarily used only during large events.

Source: BPA; DESMAN

Figure 5 – Off-Street Parking Supply, Northside



Source: BPA; DESMAN

Both the North Street Garage (Map ID A) and Walnut Street Garage (Map ID B) are controlled using parking gates and a combination of ticket issuance machines for transient parkers and proximity cards for monthly parkers. These two facilities contain the bulk of the public parking spaces in the northside downtown (1,577 spaces of 2,249 total spaces or 70%). The Broad Street Lot (Map ID C) is controlled using a combination of monthly parking hangtags and pay-by-space machines for transient parkers. Finally, the Upper/Lower Commons Garage (Map ID D) uses a combination of single space parking meters on the top level and monthly permit hangtags and a pay-by-space machine to control the lower level.

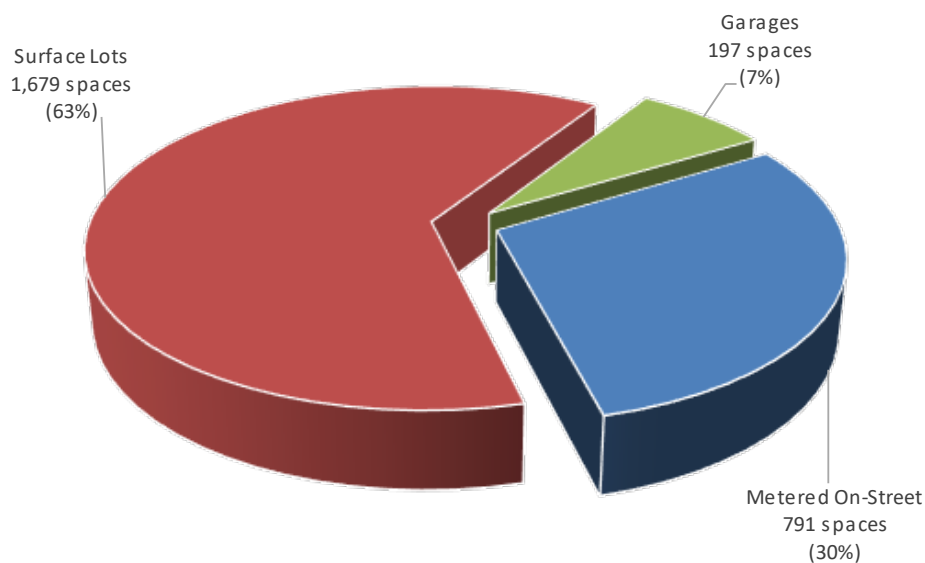
4.3 Downtown Public Parking Supply – Southside

On the southside of the River, the existing supply of public parking in the downtown study area is 2,667 spaces, of which 1,464 spaces are owned/controlled by the City/Authority. The remaining 1,203 spaces are located in three surface parking lots surrounding SteelStacks and the Farrington Square Garage owned by Lehigh University. While these facilities are not owned or controlled by the City/Authority, they are regularly used to accommodate daily public parking demand and/or event parking demand. For this reason, these spaces have been included in the public parking supply for the purposes of this study. In the southside downtown, the supply of parking spaces is broken-down as follows:

- 791 On-Street Metered Spaces
- 1,679 Spaces in 14 Surface Lots
- 197 Spaces in 2 Garages

Figure 6 presents the breakdown of the public parking supply by type.

Figure 6 – Existing Public Parking Supply by Type, Southside



Source: BPA

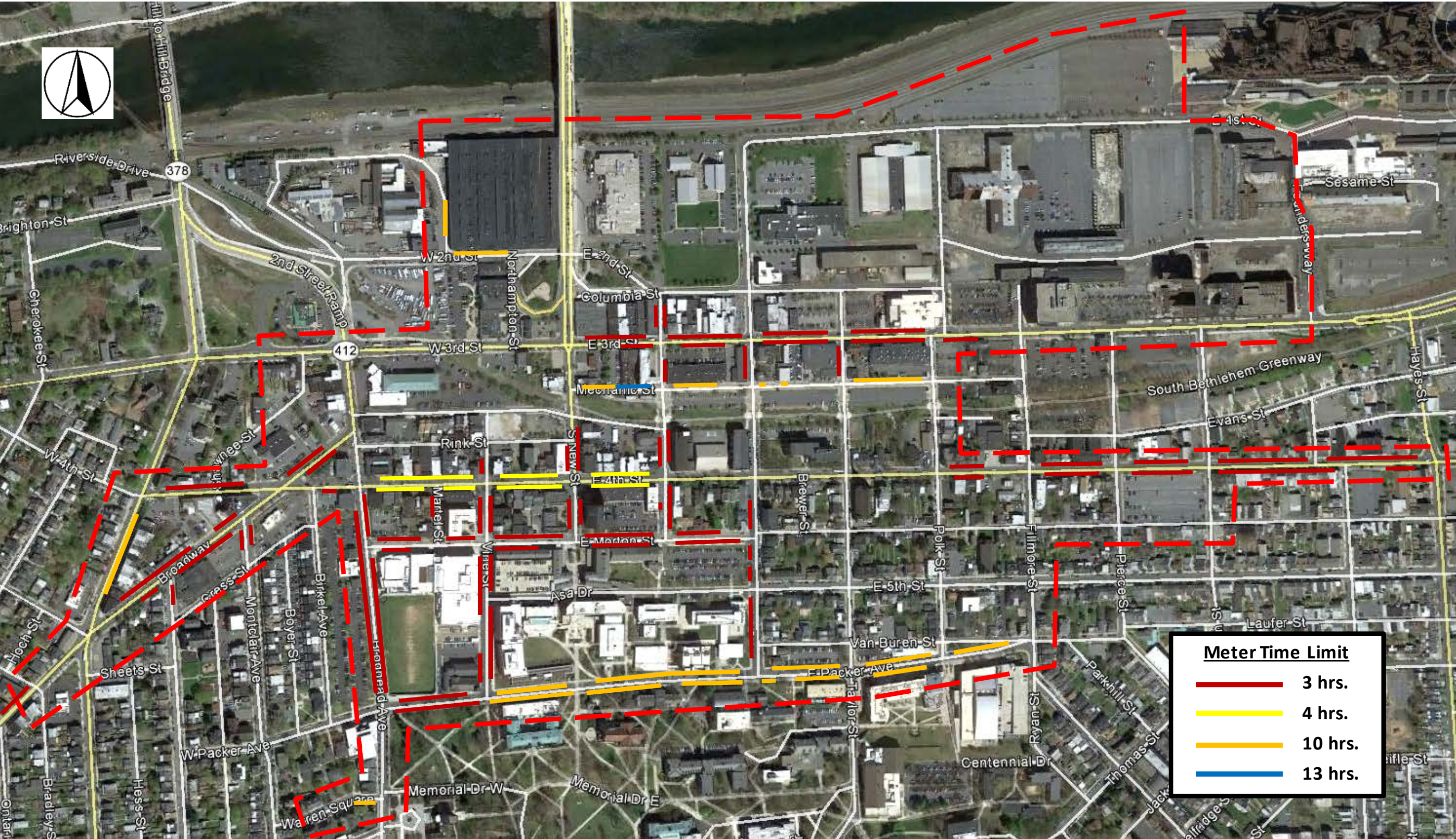
As shown by the above figure, in the southside downtown, the supply of public parking is currently dominated by surface lots (63% of the total), while only 7% of the total spaces are located in parking garages.

4.3.1 Metered On-Street Parking

The on-street parking meters in the southside downtown are all single-space meters. Parking time can be paid for with coins, credit/debit card, tokens, or using the MobileNOW! application on a smart phone. Additionally, there are four different parking meter time limits: 3-hours, 4-hours, 10-hours, and 13-hours.

Figure 7 presents the locations of the on-street metered parking spaces in the southside downtown, as well as their time limits.

Figure 7 – Metered On-Street Parking Supply, Southside



Source: BPA; DESMAN

While metered parking occupies a significant portion of the total block faces in the southside study area, there are noticeable gaps in the coverage of the meters. Specifically, all of E. 5th Street, portions of E. Morton Street and E. 4th Street, the east end of E. 3rd Street, as well as nearly all of Taylor, Polk, Fillmore, Pierce, and Buchanan streets do not have metered parking. Meters have not been installed on these street segments due to the fact that they are primarily residential or the existing land uses do not generate transient parking demand. However, as development occurs in the southside downtown, the BPA should periodically reevaluate the need for on-street meters in these areas.

In the southside downtown, according to data provided by the BPA, the number of on-street metered spaces, by time limit, are as follows: 547 3-hour spaces, 60 4-hour spaces, 179 10-hour spaces, and 5 13-hour spaces.

4.3.2 Off-Street Parking

Public off-street parking spaces are located in a combination of surface parking lots and two garages, most of which are owned and/or controlled by the City/BPA. As mentioned previously, three of the surface lots associated with SteelStacks are not owned or controlled by the City/BPA, nor is the Farrington Square Garage, however these spaces have been included in the analysis. In total, there are 1,831 off-street spaces available for public parking. **Table 2** lists each of the off-street parking facilities in the southside downtown, along with the space count in each and its location/address. The table also contains a “Map ID”, which corresponds to the aerial map labelled **Figure 8**.

It should be noted that, while the Farrington Square Garage contains several hundred spaces, only 45 spaces are available for public parking.

Table 2 – Off-Street Parking Supply, Southside

Map ID	Facility Name or Description	Location	Capacity
E	Lehigh Riverport Parking Garage	11 W. Second Street	152
F ¹	Lehigh Riverport Lot	3 S. New Street	42
G	New Street Bridge Lot	1-7 W. 3rd Street	17
H	West Third Street Lot	28 W. 3rd Street	30
I	Broadway Street Lot	209 Broadway Street	23
J	Third Street Lot	24 E. 3rd Street	21
K	Third & Webster Lot	201 Webster Street	16
L	Third & Taylor Lot	E. 3rd Street & Taylor Street	48
M	Mechanic & Adams Lot	100-198 Mechanic Street	60
N	Mechanic & Webster Lot	200-298 Mechanic Street	62
O ²	Mechanic & Taylor Lot	300-398 Mechanic Street	62
P	Fourth & Buchanan Lot	600-698 E. 4th Street	140
Sub-Total BPA Southside Off-Street Parking Inventory and Occupancy			673
Q*	Ruins East Lot	E. 1st St. b/w Polk Street & Founders Way	316
R*	Ruins West Lot	E. 1st St. b/w Polk Street & Founders Way	240
S*	Steel Stacks Lot	E. 1st St. b/w Polk Street & Founders Way	602
T*	Farrington Square Garage	8 W. Morton Street	45
Sub-Total Non-BPA Southside Off-Street Parking Inventory and Occupancy			1,203
Total Southside Off-Street Parking Inventory and Occupancy			1,876

*These surface lots are not owned or controlled by the BPA, but they do contain a significant number of parking spaces that are open to the public and influence supply/demand conditions on the Southside.

1) The spaces in this lot were closed at the time of the survey due to ongoing construction on the Fahy Bridge. However, past utilization studies conducted by the BPA reveal that these spaces are rarely used.

2) This lot is owned by the BPA, but is under a long-term lease and is not available for public parking on a daily basis. The lot is used by the BPA for event parking during Musikfest, for that reason, it was included in the inventory of public parking.

3) There is an additional 20-space lot at Laufer St. & Atlantic St. which is owned by the Authority. However, this facility was not included in the study due to its distance from downtown. This facility is intended to serve residents of this neighborhood.

Source: BPA; DESMAN

This aerial map of the University City area displays 20 numbered lots (E-S) with color-coded overlays. Blue indicates 'Garages' and yellow indicates 'Surface Lots'. A red dashed line outlines a specific area. A legend in the bottom right corner defines the color coding. A north arrow is in the top left corner.

Legend:

- Garages (Blue)
- Surface Lots (Yellow)

Map Details:

- Streets:** Riverside Drive, Brighton St, Cherokee St, W 4th St, W 3rd St, W 2nd St, W 1st St, W Packer Ave, W 4th St, W 5th St, W 6th St, W 7th St, W 8th St, W 9th St, W 10th St, W 11th St, W 12th St, W 13th St, W 14th St, W 15th St, W 16th St, W 17th St, W 18th St, W 19th St, W 20th St, W 21st St, W 22nd St, W 23rd St, W 24th St, W 25th St, W 26th St, W 27th St, W 28th St, W 29th St, W 30th St, W 31st St, W 32nd St, W 33rd St, W 34th St, W 35th St, W 36th St, W 37th St, W 38th St, W 39th St, W 40th St, W 41st St, W 42nd St, W 43rd St, W 44th St, W 45th St, W 46th St, W 47th St, W 48th St, W 49th St, W 50th St, W 51st St, W 52nd St, W 53rd St, W 54th St, W 55th St, W 56th St, W 57th St, W 58th St, W 59th St, W 60th St, W 61st St, W 62nd St, W 63rd St, W 64th St, W 65th St, W 66th St, W 67th St, W 68th St, W 69th St, W 70th St, W 71st St, W 72nd St, W 73rd St, W 74th St, W 75th St, W 76th St, W 77th St, W 78th St, W 79th St, W 80th St, W 81st St, W 82nd St, W 83rd St, W 84th St, W 85th St, W 86th St, W 87th St, W 88th St, W 89th St, W 90th St, W 91st St, W 92nd St, W 93rd St, W 94th St, W 95th St, W 96th St, W 97th St, W 98th St, W 99th St, W 100th St.
- Numbered Lots:** E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T.
- Color Coding:** Blue (Garages), Yellow (Surface Lots).
- Red Dashed Line:** Outlines a specific area.

Source: BPA; DESMAN

The public portion the Lehigh Riverport Parking Garage (Map ID E) is controlled using pay-by-space kiosks, as are the Lehigh Riverport Lot (Map ID F), the Third Street Lot (Map ID J), and the Third & Taylor Lot (Map ID L). Surface lots Q, R and S are typically unrestricted, but they are monitored during events and a fee is sometimes charged for event parking. The surface parking lots labelled H, M, N, and P are monthly permit-only lots, while Lot O is leased to a single business. Surface lots I, G and K accommodate both monthly permit holders using hangtags, as well as transient parkers who can pay at single-space parking meters in the lots. Finally, the public portion of the Farrington Square Garage (Map ID T) is controlled using single-space meters.

4.4 Current Utilization of Parking

Parking utilization or occupancy is a common measure for determining the adequacy of a City's public parking supply. By documenting the utilization of spaces during various periods of time, it is possible to determine the peak demand period and the extent to which different types of parking spaces are used. Ultimately, the analysis of existing parking demand can be used as the basis for evaluating the current adequacy of the parking supply, as well as the anticipated adequacy of the parking supply in the future, based on projected growth and development in Bethlehem.

In order to develop an understanding of the parking demand conditions in both downtown study areas, occupancy surveys of public parking spaces, both on- and off-street, were conducted in May 2017, with additional observations in August 2017 during Musikfest and counts in September 2017, once Lehigh University students were back in school. The goal of conducting these surveys during multiple times of the year and also during a very large event was to both document typical parking demand and to observe the Authority's operation when the parking system is pushed to its limits. Both the May and September survey days were identified by the Authority as characteristic of typical days in Bethlehem when Lehigh University is in session, not during the holidays or an exam week.

At the outset of this project, the City/Authority identified weekdays during normal business as the time when parking demand is at its peak and localized parking shortages tend to occur in both downtowns. As a result, in consultation with the City/Authority, it was determined that weekend occupancy surveys were not necessary in order to gain an understanding of typical peak demand conditions.

4.4.1 Parking Utilization – Northside (May 2017)

The pattern of parking utilization on a weekday in most downtowns consists of increasing utilization in the morning toward a peak, typically between 9AM and 3PM, with a steady decline in utilization as the daytime moves to evening. Additionally, the peak day of the week is typically a Tuesday, Wednesday or Thursday, as more employees tend not to work on Mondays and Fridays than the other days of the week. These factors guided the selection of the dates and days of the week chosen for the parking surveys in Bethlehem.

On Wednesday, May 3rd, 2017, occupancy surveys of the public parking spaces within both downtown study areas were conducted from 9:30AM to 11:00AM, 1:30PM to 3:00PM, and 5:30PM to 7:00PM. These survey periods were chosen in consultation with the City/BPA, based on the typical patterns of utilization which occur on weekdays, in order to capture the peak demand periods.

As shown in **Table 3**, on-street parking demand peaked during the 1:30PM to 3:00PM timeframe, when 60% of the spaces in the northside downtown were occupied.

Table 3 – Utilization of the On-Street Parking Supply, Northside (Wednesday, May 3rd, 2017)

Street	Between	Side of Street	# of Spaces	Wednesday, May 3 rd , 2017					
				Morning (9:30-11:00AM)	Occ. %	Afternoon (1:30-3:00PM)	Occ. %	Evening (5:30-7:00PM)	Occ. %
E. Broad Street	Center St. & N. New St.	North	22	11	50%	10	45%	15	68%
E. Broad Street	Center St. & N. New St.	South	23	15	65%	11	48%	11	48%
W. Broad Street	N. New St. & Main St.	North	26	3	12%	20	77%	21	81%
W. Broad Street	N. New St. & Main St.	South	22	16	73%	22	100%	20	91%
W. Broad Street	Main St. & Broad Street Bridge	North	4	0	0%	4	100%	4	100%
W. Broad Street	Broad Street Bridge	South	19	0	0%	9	47%	13	68%
W. Broad Street	1st Ave. & 2nd Ave.	North	11	1	9%	2	18%	11	100%
W. Broad Street	1st Ave. & 2nd Ave.	South	9	1	11%	8	89%	6	67%
W. Broad Street	2nd Ave. & 3rd Ave.	North	8	3	38%	5	63%	2	25%
W. Broad Street	2nd Ave. & 3rd Ave.	South	8	0	0%	3	38%	2	25%
W. Broad Street	3rd Ave. & 4th Ave.	North	10	1	10%	5	50%	0	0%
W. Broad Street	3rd Ave. & 4th Ave.	South	14	2	14%	4	29%	0	0%
W. Broad Street	4th Ave. & 5th Ave.	North	10	2	20%	4	40%	2	20%
W. Broad Street	4th Ave. & 5th Ave.	South	5	1	20%	0	0%	1	20%
W. Broad Street	5th Ave. & 6th Ave.	North	9	3	33%	5	56%	1	11%
W. Broad Street	5th Ave. & 6th Ave.	South	9	4	44%	1	11%	0	0%
Rubel St.	At W. Broad St.	West	1	0	0%	1	100%	1	100%
E. Market St.	Center St. & N. New St.	North	7	4	57%	4	57%	4	57%
E. Market St.	Center St. & N. New St.	South	7	3	43%	3	43%	4	57%
W. Market St.	N. New St. & Main St.	North	29	13	45%	20	69%	25	86%
W. Market St.	N. New St. & Main St.	South	29	12	41%	15	52%	7	24%
Guetter St.	W. North St. & W. Broad St.	East	8	5	63%	7	88%	2	25%
Guetter St.	W. Broad St. & W. Walnut St.	East	3	2	67%	2	67%	2	67%
Guetter St.	W. Broad St. & W. Walnut St.	West	6	7	117%	6	100%	6	100%
Long St.	E. North St. & E. Broad St.	East	5	1	20%	0	0%	2	40%
Long St.	E. North St. & E. Broad St.	West	6	4	67%	4	67%	6	100%
Long St.	E. Market St. & E. Walnut St.	West	4	2	50%	2	50%	4	100%
Main St.	W. Union Blvd. & W. North St.	East	10	3	30%	3	30%	5	50%
Main St.	W. Union Blvd. & W. North St.	West	10	5	50%	4	40%	2	20%
Main St.	W. North St. & W. Broad St.	West	5	0	0%	5	100%	3	60%
Main St.	W. Broad St. & W. Market St.	East	9	8	89%	8	89%	8	89%
Main St.	W. Broad St. & W. Market St.	West	8	7	88%	7	88%	8	100%
Main St.	W. Market St. & W. Church St.	East	21	8	38%	19	90%	18	86%
Main St.	W. Market St. & W. Church St.	West	2	1	50%	1	50%	1	50%
N. New St.	North St. & Broad St.	East	2	1	50%	0	0%	2	100%
N. New St.	North St. & Broad St.	West	13	6	46%	12	92%	11	85%
N. New St.	Broad St. & Market St.	West	15	8	53%	12	80%	10	67%
N. New St.	Market St. & Church St.	East	7	3	43%	3	43%	1	14%
N. New St.	Market St. & Church St.	West	13	2	15%	3	23%	0	0%
W. Walnut St.	N. New St. & Main St.	North	12	8	67%	9	75%	10	83%
W. Walnut St.	N. New St. & Main St.	South	3	2	67%	3	100%	0	0%
Total Northside On-Street Parking Inventory and Occupancy			444	178	40%	266	60%	251	57%

Source: DESMAN

Table 4 presents the results of the off-street surveys. As shown in the table, utilization of the off-street facilities also peaked between 1:30PM and 3:00PM, when 72% of the spaces were occupied.

Overall, utilization of the public parking supply within the northside downtown study area peaked at 70% of capacity.

Table 4 – Utilization of the Off-Street Parking Supply, Northside (Wednesday, May 3rd, 2017)

Map ID	Facility Name or Description	Location	Capacity	Wednesday, May 3rd, 2017					
				Morning (9:30-11:00AM)	Occ. %	Afternoon (1:30-3:00PM)	Occ. %	Evening (5:30-7:00PM)	Occ. %
A	North Street Garage	75 W. North Street	800	483	60%	530	66%	206	26%
B	Walnut Street Garage	33 W. Walnut Street	777	556	72%	618	80%	186	24%
C	Broad Street Lot	55 E. Broad Street	117	70	60%	83	71%	44	38%
D	Upper/Lower Commons Garage	533 Rubel Street	111	37	33%	69	62%	66	59%
Total Northside Off-Street Parking Inventory and Occupancy			1,805	1,146	63%	1,300	72%	502	28%

Source: DESMAN

The survey data of utilization by parking facility and on-street block face for the peak period is presented in **Figure 9**. The off-street parking facilities and metered, on-street block faces were highlighted in the figures to indicate the percentage of spaces in each that were occupied at the time of the survey:

- Red for 85% or more
- Orange for 70-84%
- Yellow for 50-69%
- Green for 20-49%
- Blue for less than 20%

In the parking industry, parking facilities and systems are typically designed so that, even during peak demand periods, some percentage of the parking spaces remain empty. Ideally, during a typical peak demand period, 15% of the spaces in a facility or on-street remain available to accommodate new parkers. Maintaining an inventory of available spaces, even during the peak demand period, makes it easier for parkers to find a space, reduces the amount of time drivers spend searching for empty spaces and generally results in a more positive parking experience. This concept, referred to as “practical capacity”, refers to that point at which a parking facility or system has reached its functional limit and is unable to efficiently or safely accommodate additional parking demand.

As seen in Figure 9, during the peak period, none of the off-street parking facilities on the northside experienced utilization of 85% or more of their parking spaces. However, the Walnut Street Garage was 80% utilized and the Broad Street Lot was 71% utilized during this time period.

Conversely, numerous segments of parking meters did exceed 85% utilization during the peak demand period. A portion of the spaces along Broad Street and most of the blocks of Main Street that contain meters experienced high levels of demand. However, when looking at the northside downtown as a whole, utilization of the on-street metered parking spaces peaked at 60%.

Figure 9 – Northside Downtown Parking Utilization (1:30PM-3:00PM), Wednesday, May 3rd, 2017



Source: DESMAN

4.4.2 Parking Utilization – Northside (September 2017)

On Wednesday, September 20th, 2017, additional occupancy surveys of the public parking spaces within both downtown study areas were conducted from 9:30AM to 11:00AM, 1:30PM to 3:00PM, and 5:30PM to 7:00PM. Similar to the May surveys, during the September surveys, utilization of the public parking spaces in the northside downtown peaked during the 1:30PM to 3:00PM timeframe, when 68% of the spaces were occupied. This compares to 70% peak utilization in May.

While northside demand peaked in the afternoon, as shown in **Table 5**, utilization of the on-street parking spaces actually peaked during the evening timeframe, when 64% of the spaces were occupied.

Table 5 – Utilization of the On-Street Parking Supply, Northside (Wednesday, September 20th, 2017)

Street	Between	Side of Street	# of Spaces	Wednesday, September 20 th , 2017					
				Morning (9:30-11:00AM)	Occ. %	Afternoon (1:30-3:00PM)	Occ. %	Evening (5:30-7:00PM)	Occ. %
E. Broad Street	Center St. & N. New St.	North	22	9	41%	12	55%	11	50%
E. Broad Street	Center St. & N. New St.	South	23	10	43%	10	43%	13	57%
W. Broad Street	N. New St. & Main St.	North	26	2	8%	25	96%	26	100%
W. Broad Street	N. New St. & Main St.	South	22	11	50%	19	86%	21	95%
W. Broad Street	Main St. & Broad Street Bridge	North	4	0	0%	3	75%	4	100%
W. Broad Street	Broad Street Bridge	South	19	0	0%	3	16%	13	68%
W. Broad Street	1st Ave. & 2nd Ave.	North	11	0	0%	5	45%	5	45%
W. Broad Street	1st Ave. & 2nd Ave.	South	9	2	22%	4	44%	1	11%
W. Broad Street	2nd Ave. & 3rd Ave.	North	8	0	0%	0	0%	2	25%
W. Broad Street	2nd Ave. & 3rd Ave.	South	8	0	0%	0	0%	1	13%
W. Broad Street	3rd Ave. & 4th Ave.	North	10	0	0%	0	0%	2	20%
W. Broad Street	3rd Ave. & 4th Ave.	South	14	1	7%	2	14%	1	7%
W. Broad Street	4th Ave. & 5th Ave.	North	10	0	0%	2	20%	2	20%
W. Broad Street	4th Ave. & 5th Ave.	South	5	2	40%	1	20%	1	20%
W. Broad Street	5th Ave. & 6th Ave.	North	9	2	22%	3	33%	2	22%
W. Broad Street	5th Ave. & 6th Ave.	South	9	2	22%	2	22%	2	22%
Rubel St.	At W. Broad St.	West	1	0	0%	0	0%	0	0%
E. Market St.	Center St. & N. New St.	North	7	3	43%	7	100%	5	71%
E. Market St.	Center St. & N. New St.	South	7	2	29%	6	86%	2	29%
W. Market St.	N. New St. & Main St.	North	29	20	69%	29	100%	29	100%
W. Market St.	N. New St. & Main St.	South	29	9	31%	21	72%	28	97%
Guetter St.	W. North St. & W. Broad St.	East	8	2	25%	8	100%	8	100%
Guetter St.	W. Broad St. & W. Walnut St.	East	3	1	33%	3	100%	3	100%
Guetter St.	W. Broad St. & W. Walnut St.	West	6	4	67%	6	100%	6	100%
Long St.	E. North St. & E. Broad St.	East	5	1	20%	1	20%	0	0%
Long St.	E. North St. & E. Broad St.	West	6	2	33%	6	100%	2	33%
Long St.	E. Market St. & E. Walnut St.	West	4	2	50%	2	50%	3	75%
Main St.	W. Union Blvd. & W. North St.	East	10	3	30%	4	40%	4	40%
Main St.	W. Union Blvd. & W. North St.	West	10	2	20%	5	50%	2	20%
Main St.	W. North St. & W. Broad St.	West	5	2	40%	1	20%	4	80%
Main St.	W. Broad St. & W. Market St.	East	9	9	100%	4	44%	9	100%
Main St.	W. Broad St. & W. Market St.	West	8	7	88%	8	100%	7	88%
Main St.	W. Market St. & W. Church St.	East	21	11	52%	21	100%	20	95%
Main St.	W. Market St. & W. Church St.	West	2	1	50%	1	50%	2	100%
N. New St.	North St. & Broad St.	East	2	1	50%	1	50%	1	50%
N. New St.	North St. & Broad St.	West	13	9	69%	9	69%	11	85%
N. New St.	Broad St. & Market St.	West	15	5	33%	11	73%	11	73%
N. New St.	Market St. & Church St.	East	7	0	0%	4	57%	3	43%
N. New St.	Market St. & Church St.	West	13	0	0%	1	8%	3	23%
W. Walnut St.	N. New St. & Main St.	North	12	1	8%	9	75%	11	92%
W. Walnut St.	N. New St. & Main St.	South	3	0	0%	3	100%	3	100%
Total Northside On-Street Parking Inventory and Occupancy			444	138	31%	262	59%	284	64%

Source: DESMAN

Table 6 presents the results of the off-street surveys. As shown in the table, utilization of the BPA's off-street facilities peaked during the afternoon survey period, when 71% of the spaces were occupied.

Table 6 – Utilization of the Off-Street Parking Supply, Northside (Wednesday, September 20th, 2017)

Map ID	Facility Name or Description	Location	Capacity	Wednesday, September 20th, 2017					
				Morning (9:30-11:00AM)	Occ. %	Afternoon (1:30-3:00PM)	Occ. %	Evening (5:30-7:00PM)	Occ. %
A	North Street Garage	75 W. North Street	800	416	52%	577	72%	230	29%
B	Walnut Street Garage	33 W. Walnut Street	777	489	63%	537	69%	200	26%
C	Broad Street Lot	55 E. Broad Street	117	73	62%	95	81%	19	16%
D	Upper/Lower Commons Garage	533 Rubel Street	111	40	36%	66	59%	65	59%
Total Northside Off-Street Parking Inventory and Occupancy			1,805	1,018	56%	1,275	71%	514	28%

Source: DESMAN

The survey data of utilization by parking facility and on-street block face for the peak period is presented in **Figure 10**. Again, the off-street parking facilities and metered, on-street block faces were highlighted in the figures to indicate the percentage of spaces in each that were occupied at the time of the survey.

As seen in Figure 10, during the peak period, none of the off-street parking facilities on the northside experienced utilization of 85% or more of their parking spaces. However, the Broad Street Lot was 81% utilized and the North Street Garage was 72% utilized during this time period.

As seen during the May surveys, numerous segments of parking meters exceeded 85% utilization during the September peak demand period. Segments of Broad, Main, Market, and Guetter streets were highly utilized, with several segments reaching 100% occupancy. However, when looking at the northside downtown as a whole, utilization of the on-street metered parking spaces peaked at 59% during the afternoon survey period.

Figure 10 – Northside Downtown Parking Utilization (1:30PM-3:00PM), Wednesday, September 20th, 2017



Source: DESMAN

4.4.3 Northside Parking Utilization – May 2017 versus September 2017

As shown in the above tables, while there were facility-by-facility and street-by-street variations in the observed levels of occupancy between the May and September survey periods, generally, the demand patterns observed in the northside study area were consistent during both time periods.

At their most occupied, utilization of the BPA's off-street parking facilities in the northside study area peaked at 72% in May and 71% in September. On-street, the utilization of parking meters peaked at 60% in May and 64% in September. Overall, utilization of the public parking supply in the northside study area peaked at 70% in May and 68% in September.

4.4.4 Parking Utilization – Southside (May 2017)

Table 7 presents the results of the May occupancy surveys of the on-street metered parking spaces in the southside downtown study area. As shown in the table, on-street parking demand also peaked during the 1:30PM to 3:00PM timeframe, when 48% of the spaces were occupied. **Table 8** presents the results of the off-street surveys and show that the utilization of these spaces peaked during the morning survey period, when 30% of the spaces were occupied.

Table 7 – Utilization of the On-Street Parking Supply, Southside (Wednesday, May 3rd, 2017)

Street	Between	Side of Street	# of Spaces	Wednesday, May 3 rd , 2017					
				Morning (9:30-11:00AM)	Occ. %	Afternoon (1:30-3:00PM)	Occ. %	Evening (5:30-7:00PM)	Occ. %
Union Station	Union Station Place & W 2nd. St.	East	7	1	14%	1	14%	0	0%
W. 2nd St.	S. New St. & Union Station Place	North	16	0	0%	0	0%	0	0%
E. 3rd St.	Fillmore St. & Polk St.	South	6	0	0%	0	0%	1	17%
E. 3rd St.	Polk St. & Taylor St.	North	12	0	0%	2	17%	5	42%
E. 3rd St.	Polk St. & Taylor St.	South	12	0	0%	3	25%	7	58%
E. 3rd St.	Taylor St. & Webster St.	North	10	2	20%	2	20%	1	10%
E. 3rd St.	Taylor St. & Webster St.	South	9	5	56%	5	56%	5	56%
E. 3rd St.	Webster St. & Adams St.	North	12	3	25%	4	33%	1	8%
E. 3rd St.	Webster St. & Adams St.	South	7	2	29%	2	29%	5	71%
E. 3rd St.	Adams St. & S. New St.	North	9	5	56%	3	33%	2	22%
E. 3rd St.	Adams St. & S. New St.	South	5	4	80%	5	100%	3	60%
Adams St.	E. 2nd St. & E. 3rd St.	East	4	2	50%	2	50%	2	50%
Adams St.	E. 2nd St. & E. 3rd St.	West	4	0	0%	3	75%	4	100%
Adams St.	E. 3rd St. & E. 4th St.	East	10	2	20%	3	30%	6	60%
Adams St.	E. 3rd St. & E. 4th St.	West	5	0	0%	3	60%	5	100%
Adams St.	E. 4th St. & E. Morton St.	East	7	5	71%	6	86%	7	100%
Adams St.	E. 4th St. & E. Morton St.	West	1	1	100%	1	100%	1	100%
Mechanic St.	Polk St. & Taylor St.	North	10	0	0%	2	20%	3	30%
Mechanic St.	Taylor St. & Webster St.	North	2	1	50%	0	0%	0	0%
Mechanic St.	Webster St. & Adams St.	North	6	0	0%	0	0%	1	17%
Mechanic St.	Adams St. & S. New St.	North	10	7	70%	4	40%	7	70%
Webster St.	E. 3rd St. & Mechanic St.	West	6	0	0%	0	0%	0	0%
Webster St.	E. 4th St. & E. Packer Ave.	West	20	8	40%	11	55%	6	30%
Broadway St.	Brodhead Ave. & W. 4th St.	North	6	0	0%	2	33%	2	33%
Broadway St.	Brodhead Ave. & W. 4th St.	South	5	2	40%	3	60%	3	60%
Broadway St.	W. 4th St. & Wyandotte St.	North	16	14	88%	7	44%	9	56%
Broadway St.	W. 4th St. & Carlton Ave.	South	10	3	30%	2	20%	1	10%
Broadway St.	Carlton Ave. & Wyandotte St.	South	2	0	0%	0	0%	1	50%
Broadway St.	Seminole St. & Mohican St.	North	10	1	10%	2	20%	4	40%
Brodhead Ave.	W. 4th St. & W. Morton St.	East	6	1	17%	1	17%	0	0%
Brodhead Ave.	W. Morton St. & W. Packer Ave.	East	16	1	6%	0	0%	0	0%
Brodhead Ave.	W. 4th St. & W. Packer Ave.	West	26	1	4%	3	12%	0	0%
Wyandotte St.	W. 4th St. & Broadway St.	East	15	1	7%	3	20%	4	27%
Montclair Ave.	Broadway St. & Cress St.	East	3	0	0%	0	0%	0	0%
Montclair Ave.	Broadway St. & Cress St.	West	3	0	0%	0	0%	0	0%
Carlton Ave.	Broadway St. & Sheets St.	East	3	0	0%	0	0%	0	0%
E. Packer Ave.	Fillmore St. & Polk St.	North	10	5	50%	7	70%	5	50%
E. Packer Ave.	Polk St. & Taylor St.	North	12	6	50%	8	67%	6	50%
E. Packer Ave.	Polk St. & Taylor St.	South	10	8	80%	9	90%	3	30%
E. Packer Ave.	Taylor St. & Webster St.	North	13	10	77%	10	77%	7	54%
E. Packer Ave.	Taylor St. & Webster St.	South	8	8	100%	5	63%	6	75%
E. Packer Ave.	Webster St. & Vine St.	North	34	27	79%	32	94%	8	24%
E./W. Packer Ave.	Vine St. & Brodhead Ave.	North	11	4	36%	2	18%	2	18%
E./W. Packer Ave.	Webster St. & Brodhead Ave.	South	45	36	80%	28	62%	13	29%

Table 7 – Utilization of the On-Street Parking Supply, Southside (Wednesday, May 3rd, 2017) (cont.)

Street	Between	Side of Street	# of Spaces	Wednesday, May 3 rd , 2017					
				Morning (9:30-11:00AM)	Occ. %	Afternoon (1:30-3:00PM)	Occ. %	Evening (5:30-7:00PM)	Occ. %
E. Morton St.	Webster St. & Adams St.	North	7	6	86%	7	100%	5	71%
E. Morton St.	Webster St. & Adams St.	South	14	3	21%	6	43%	2	14%
E. Morton St.	Adams St. & S. New St.	North	13	5	38%	9	69%	6	46%
E. Morton St.	Adams St. & S. New St.	South	11	3	27%	6	55%	5	45%
E. Morton St.	S. New St. & Vine St.	North	10	5	50%	10	100%	10	100%
E. Morton St.	S. New St. & Vine St.	South	6	2	33%	5	83%	4	67%
E. Morton St.	Vine St. & Brodhead Ave.	North	10	3	30%	4	40%	1	10%
E. Morton St.	Vine St. & Brodhead Ave.	South	4	1	25%	1	25%	2	50%
E. 4th St.	Hayes St. & Atlantic St.	North	15	7	47%	3	20%	5	33%
E. 4th St.	Hayes St. & Atlantic St.	South	4	0	0%	0	0%	0	0%
E. 4th St.	Atlantic St. & Buchanan St.	North	14	7	50%	5	36%	11	79%
E. 4th St.	Atlantic St. & Buchanan St.	South	18	5	28%	4	22%	8	44%
E. 4th St.	Buchanan St. & Pierce St.	North	9	2	22%	1	11%	4	44%
E. 4th St.	Buchanan St. & Pierce St.	South	11	2	18%	0	0%	1	9%
E. 4th St.	Pierce St. & Fillmore St.	North	11	6	55%	4	36%	5	45%
E. 4th St.	Pierce St. & Fillmore St.	South	9	5	56%	4	44%	5	56%
E. 4th St.	Fillmore St. & Polk St.	North	6	3	50%	3	50%	2	33%
E. 4th St.	Fillmore St. & Polk St.	South	5	1	20%	3	60%	1	20%
E. 4th St.	Adams St. & S. New St.	North	8	5	63%	6	75%	8	100%
E. 4th St.	Adams St. & S. New St.	South	8	4	50%	5	63%	7	88%
W. 4th St.	S. New St. & Vine St.	North	8	6	75%	4	50%	8	100%
W. 4th St.	S. New St. & Vine St.	South	10	2	20%	8	80%	5	50%
W. 4th St.	Vine St. & Brodhead Ave.	North	13	8	62%	9	69%	2	15%
W. 4th St.	Vine St. & Brodhead Ave.	South	13	1	8%	13	100%	1	8%
W. 4th St.	Brodhead Ave. & Broadway St.	South	2	1	50%	0	0%	1	50%
W. 4th St.	Broadway St. & Wayandotte St.	North	13	12	92%	9	69%	10	77%
S. New St.	3rd St. & 4th St.	East	7	3	43%	6	86%	6	86%
S. New St.	3rd St. & 4th St.	West	4	2	50%	3	75%	5	125%
S. New St.	4th St. & Morton St.	East	4	4	100%	5	125%	3	75%
S. New St.	4th St. & Morton St.	West	5	2	40%	3	60%	3	60%
Taylor St.	E. 3rd St. & Mechanic St.	West	5	1	20%	2	40%	3	60%
Vine St.	Rink St. & W. 4th St.	West	2	2	100%	2	100%	2	100%
Vine St.	W. 4th St. & W. Morton St.	East	6	5	83%	4	67%	4	67%
Vine St.	W. 4th St. & W. Morton St.	West	12	11	92%	10	83%	9	75%
Vine St.	W. Morton St. & W. Packer Ave.	East	21	18	86%	20	95%	10	48%
Vine St.	W. Morton St. & W. Packer Ave.	West	13	10	77%	8	62%	2	15%
Martel St.	W. 4th St. & W. Morton St.	West	3	0	0%	1	33%	0	0%
Warren Square	Brodhead Ave. & Montclair Ave.	South	3	0	0%	2	67%	0	0%
Total Southside On-Street Parking Inventory and Occupancy				791	43%	381	48%	312	39%

Source: DESMAN

Table 8 – Utilization of the Off-Street Parking Supply, Southside (Wednesday, May 3rd, 2017)

Map ID	Facility Name or Description	Location	Capacity	Wednesday, May 3 rd , 2017					
				Morning (9:30-11:00AM)	Occ. %	Afternoon (1:30-3:00PM)	Occ. %	Evening (5:30-7:00PM)	Occ. %
F	Lehigh Riverport Parking Garage	11 W. Second Street	152	48	32%	46	30%	69	45%
G'	Lehigh Riverport Lot	3 S. New Street	42	0	0%	0	0%	0	0%
H	New Street Bridge Lot	1-7 W. 3rd Street	17	0	0%	4	24%	11	65%
I	West Third Street Lot	28 W. 3rd Street	30	15	50%	10	33%	2	7%
J	Broadway Street Lot	209 Broadway Street	23	10	43%	8	35%	9	39%
K	Third Street Lot	24 E. 3rd Street	21	12	57%	13	62%	10	48%
L	Third & Webster Lot	201 Webster Street	16	5	31%	9	56%	2	13%
M	Third & Taylor Lot	E. 3rd Street & Taylor Street	48	19	40%	15	31%	14	29%
N	Mechanic & Adams Lot	100-198 Mechanic Street	60	32	53%	34	57%	21	35%
O	Mechanic & Webster Lot	200-298 Mechanic Street	62	19	31%	20	32%	10	16%
P ²	Mechanic & Taylor Lot	300-398 Mechanic Street	62	62	100%	62	100%	62	100%
Q	Fourth & Buchanan Lot	600-698 E. 4th Street	140	59	42%	54	39%	42	30%
Sub-Total BPA Southside Off-Street Parking Inventory and Occupancy			673	281	42%	275	41%	252	37%
R*	Ruins East Lot	E. 1st St. b/w Polk Street & Founders Way	316	76	24%	65	21%	165	52%
S*	Ruins West Lot	E. 1st St. b/w Polk Street & Founders Way	240	157	65%	79	33%	30	13%
T*	Steel Stacks Lot	E. 1st St. b/w Polk Street & Founders Way	602	37	6%	42	7%	72	12%
U*	Farrington Square Garage	8 W. Morton Street	45	12	27%	22	49%	7	16%
Sub-Total Non-BPA Southside Off-Street Parking Inventory and Occupancy			1,203	282	23%	208	17%	274	23%
Total Southside Off-Street Parking Inventory and Occupancy			1,876	563	30%	483	26%	526	28%

Source: DESMAN

While the overall utilization of the off-street spaces on the southside peaked at 30%, utilization of the BPA's facilities reached 42% during the morning survey period versus 23% for the non-BPA facilities.

The utilization data for the southside downtown by parking facility and on-street block face for the morning peak period is presented in **Figure 11**.

As seen in Figure 11, during the peak period, none of the off-street parking facilities on the southside, with the exception of Lot O, experienced utilization greater than 69%. Additionally, while a number of the streets within and surrounding Lehigh University were highly occupied, there was still available parking capacity on nearly every street segment in the southside downtown study area.

It should be noted that, while Lot O is shown in the table and figure as 100% occupied, there were actually no cars parked in the lot during either survey period. As noted previously, this lot is fully leased by a private business which, at the time of the surveys, did not use the lot. However, given restrictions in the lease between the BPA and the business, Lot O is not available for use by any other public parkers. That is why the facility is shown as fully occupied.

Overall, utilization of the public parking supply within the southside downtown study area peaked at 34% of capacity.

Figure 11 – Southside Downtown Parking Utilization (9:30AM-11:00AM), Wednesday, May 3rd, 2017



Source: DESMAN

4.4.5 Parking Utilization – Southside (September 2017)

Table 9 presents the results of the September occupancy surveys of the on-street metered parking spaces in the southside downtown study area. As shown in the table, on-street parking demand peaked during the afternoon survey period, when 53% of the spaces were occupied. **Table 10** presents the results of the off-street surveys and show that the utilization of these spaces peaked during the morning survey period, when 32% of the spaces were occupied.

Table 9 – Utilization of the On-Street Parking Supply, Southside (Wednesday, September 20th, 2017)

Street	Between	Side of Street	# of Spaces	Wednesday, September 20th, 2017					
				Morning (9:30-11:00AM)	Occ. %	Afternoon (1:30-3:00PM)	Occ. %	Evening (5:30-7:00PM)	Occ. %
Union Station	Union Station Place & W 2nd. St.	East	7	0	0%	0	0%	0	0%
W. 2nd St.	S. New St. & Union Station Place	North	16	2	13%	0	0%	0	0%
E. 3rd St.	Fillmore St. & Polk St.	South	6	0	0%	0	0%	0	0%
E. 3rd St.	Polk St. & Taylor St.	North	12	0	0%	3	25%	5	42%
E. 3rd St.	Polk St. & Taylor St.	South	12	4	33%	8	67%	8	67%
E. 3rd St.	Taylor St. & Webster St.	North	10	1	10%	5	50%	2	20%
E. 3rd St.	Taylor St. & Webster St.	South	9	5	56%	6	67%	4	44%
E. 3rd St.	Webster St. & Adams St.	North	12	3	25%	3	25%	1	8%
E. 3rd St.	Webster St. & Adams St.	South	7	1	14%	4	57%	4	57%
E. 3rd St.	Adams St. & S. New St.	North	9	1	11%	2	22%	2	22%
E. 3rd St.	Adams St. & S. New St.	South	5	5	100%	5	100%	3	60%
Adams St.	E. 2nd St. & E. 3rd St.	East	4	3	75%	1	25%	2	50%
Adams St.	E. 2nd St. & E. 3rd St.	West	4	0	0%	1	25%	1	25%
Adams St.	E. 3rd St. & E. 4th St.	East	10	2	20%	2	20%	4	40%
Adams St.	E. 3rd St. & E. 4th St.	West	5	2	40%	1	20%	4	80%
Adams St.	E. 4th St. & E. Morton St.	East	7	7	100%	7	100%	7	100%
Adams St.	E. 4th St. & E. Morton St.	West	1	0	0%	1	100%	1	100%
Mechanic St.	Polk St. & Taylor St.	North	10	0	0%	1	10%	10	100%
Mechanic St.	Taylor St. & Webster St.	North	2	0	0%	1	50%	2	100%
Mechanic St.	Webster St. & Adams St.	North	6	4	67%	1	17%	1	17%
Mechanic St.	Adams St. & S. New St.	North	10	4	40%	8	80%	4	40%
Webster St.	E. 3rd St. & Mechanic St.	West	6	0	0%	0	0%	0	0%
Webster St.	E. 4th St. & E. Packer Ave.	West	20	14	70%	14	70%	5	25%
Broadway St.	Brodhead Ave. & W. 4th St.	North	6	1	17%	0	0%	4	67%
Broadway St.	Brodhead Ave. & W. 4th St.	South	5	1	20%	0	0%	2	40%
Broadway St.	W. 4th St. & Wyandotte St.	North	16	10	63%	7	44%	7	44%
Broadway St.	W. 4th St. & Carlton Ave.	South	10	1	10%	2	20%	0	0%
Broadway St.	Carlton Ave. & Wyandotte St.	South	2	1	50%	0	0%	1	50%
Broadway St.	Seminole St. & Mohican St.	North	10	3	30%	5	50%	4	40%
Brodhead Ave.	W. 4th St. & W. Morton St.	East	6	0	0%	0	0%	0	0%
Brodhead Ave.	W. Morton St. & W. Packer Ave.	East	16	0	0%	0	0%	1	6%
Brodhead Ave.	W. 4th St. & W. Packer Ave.	West	26	5	19%	2	8%	0	0%
Wyandotte St.	W. 4th St. & Broadway St.	East	15	2	13%	3	20%	1	7%
Montclair Ave.	Broadway St. & Cress St.	East	3	0	0%	0	0%	0	0%
Montclair Ave.	Broadway St. & Cress St.	West	3	0	0%	0	0%	0	0%
Carlton Ave.	Broadway St. & Sheets St.	East	3	2	67%	0	0%	3	100%
E. Packer Ave.	Fillmore St. & Polk St.	North	10	10	100%	10	100%	3	30%
E. Packer Ave.	Polk St. & Taylor St.	North	12	12	100%	11	92%	0	0%
E. Packer Ave.	Polk St. & Taylor St.	South	10	8	80%	7	70%	1	10%
E. Packer Ave.	Taylor St. & Webster St.	North	13	13	100%	13	100%	4	31%
E. Packer Ave.	Taylor St. & Webster St.	South	8	7	88%	7	88%	5	63%
E. Packer Ave.	Webster St. & Vine St.	North	34	29	85%	29	85%	14	41%
E./W. Packer Ave.	Vine St. & Brodhead Ave.	North	11	2	18%	1	9%	1	9%
E./W. Packer Ave.	Webster St. & Brodhead Ave.	South	45	36	80%	33	73%	17	38%

Table 9 – Utilization of the On-Street Parking Supply, Southside (Wednesday, September 20th, 2017)
(cont.)

Street	Between	Side of Street	# of Spaces	Wednesday, September 20th, 2017					
				Morning (9:30-11:00AM)	Occ. %	Afternoon (1:30-3:00PM)	Occ. %	Evening (5:30-7:00PM)	Occ. %
E. Morton St.	Webster St. & Adams St.	North	7	7	100%	6	86%	7	100%
E. Morton St.	Webster St. & Adams St.	South	14	1	7%	4	29%	3	21%
E. Morton St.	Adams St. & S. New St.	North	13	3	23%	7	54%	8	62%
E. Morton St.	Adams St. & S. New St.	South	11	3	27%	5	45%	2	18%
E. Morton St.	S. New St. & Vine St.	North	10	6	60%	5	50%	7	70%
E. Morton St.	S. New St. & Vine St.	South	6	2	33%	6	100%	5	83%
E. Morton St.	Vine St. & Brodhead Ave.	North	10	5	50%	5	50%	2	20%
E. Morton St.	Vine St. & Brodhead Ave.	South	4	2	50%	1	25%	0	0%
E. 4th St.	Hayes St. & Atlantic St.	North	15	1	7%	6	40%	5	33%
E. 4th St.	Hayes St. & Atlantic St.	South	4	1	25%	1	25%	1	25%
E. 4th St.	Atlantic St. & Buchanan St.	North	14	6	43%	8	57%	4	29%
E. 4th St.	Atlantic St. & Buchanan St.	South	18	11	61%	10	56%	10	56%
E. 4th St.	Buchanan St. & Pierce St.	North	9	2	22%	4	44%	7	78%
E. 4th St.	Buchanan St. & Pierce St.	South	11	0	0%	0	0%	0	0%
E. 4th St.	Pierce St. & Fillmore St.	North	11	7	64%	5	45%	1	9%
E. 4th St.	Pierce St. & Fillmore St.	South	9	5	56%	3	33%	3	33%
E. 4th St.	Fillmore St. & Polk St.	North	6	6	100%	3	50%	3	50%
E. 4th St.	Fillmore St. & Polk St.	South	5	4	80%	4	80%	2	40%
E. 4th St.	Adams St. & S. New St.	North	8	2	25%	6	75%	5	63%
E. 4th St.	Adams St. & S. New St.	South	8	0	0%	3	38%	3	38%
W. 4th St.	S. New St. & Vine St.	North	8	0	0%	6	75%	4	50%
W. 4th St.	S. New St. & Vine St.	South	10	6	60%	8	80%	3	30%
W. 4th St.	Vine St. & Brodhead Ave.	North	13	5	38%	6	46%	7	54%
W. 4th St.	Vine St. & Brodhead Ave.	South	13	4	31%	10	77%	5	38%
W. 4th St.	Brodhead Ave. & Broadway St.	South	2	1	50%	1	50%	0	0%
W. 4th St.	Broadway St. & Wayandotte St.	North	13	11	85%	5	38%	10	77%
S. New St.	3rd St. & 4th St.	East	7	5	71%	5	71%	6	86%
S. New St.	3rd St. & 4th St.	West	4	1	25%	1	25%	3	75%
S. New St.	4th St. & Morton St.	East	4	3	75%	4	100%	4	100%
S. New St.	4th St. & Morton St.	West	5	4	80%	5	100%	2	40%
Taylor St.	E. 3rd St. & Mechanic St.	West	5	0	0%	2	40%	2	40%
Vine St.	Rink St. & W. 4th St.	West	2	2	100%	2	100%	2	100%
Vine St.	W. 4th St. & W. Morton St.	East	6	3	50%	4	67%	4	67%
Vine St.	W. 4th St. & W. Morton St.	West	12	8	67%	11	92%	9	75%
Vine St.	W. Morton St. & W. Packer Ave.	East	21	8	38%	14	67%	0	0%
Vine St.	W. Morton St. & W. Packer Ave.	West	13	8	62%	6	46%	9	69%
Martel St.	W. 4th St. & W. Morton St.	West	3	1	33%	3	100%	1	33%
Warren Square	Brodhead Ave. & Montclair Ave.	South	3	0	0%	0	0%	0	0%
Total Southside On-Street Parking Inventory and Occupancy			791	345	44%	389	49%	287	36%

Source: DESMAN

Table 10 – Utilization of the Off-Street Parking Supply, Southside (Wednesday, September 20th, 2017)

Map ID	Facility Name or Description	Location	Capacity	Wednesday, September 20 th , 2017					
				Morning (9:30-11:00AM)	Occ. %	Afternoon (1:30-3:00PM)	Occ. %	Evening (5:30-7:00PM)	Occ. %
F	Lehigh Riverport Parking Garage	11 W. Second Street	152	48	32%	45	30%	62	41%
G'	Lehigh Riverport Lot	3 S. New Street	42	0	0%	0	0%	0	0%
H	New Street Bridge Lot	1-7 W. 3rd Street	17	4	24%	11	65%	13	76%
I	West Third Street Lot	28 W. 3rd Street	30	9	30%	7	23%	1	3%
J	Broadway Street Lot	209 Broadway Street	23	10	43%	11	48%	7	30%
K	Third Street Lot	24 E. 3rd Street	21	12	57%	15	71%	9	43%
L	Third & Webster Lot	201 Webster Street	16	6	38%	9	56%	5	31%
M	Third & Taylor Lot	E. 3rd St. & Taylor St.	48	9	19%	13	27%	6	13%
N	Mechanic & Adams Lot	100-198 Mechanic Street	60	28	47%	28	47%	21	35%
O	Mechanic & Webster Lot	200-298 Mechanic Street	62	31	50%	33	53%	24	39%
P ²	Mechanic & Taylor Lot	300-398 Mechanic Street	62	62	100%	62	100%	62	100%
Q	Fourth & Buchanan Lot	600-698 E. 4th Street	140	54	39%	53	38%	43	31%
Sub-Total BPA Southside Off-Street Parking Inventory and Occupancy			673	273	41%	287	43%	253	38%
R*	Ruins East Lot	E. 1st St. b/w Polk St. & Founders Way	316	109	34%	57	18%	26	8%
S*	Ruins West Lot	E. 1st St. b/w Polk St. & Founders Way	240	166	69%	125	52%	26	11%
T*	Steel Stacks Lot	E. 1st St. b/w Polk St. & Founders Way	602	41	7%	59	10%	45	7%
U*	Farrington Square Garage	8 W. Morton Street	45	15	33%	21	47%	9	20%
Sub-Total Non-BPA Southside Off-Street Parking Inventory and Occupancy			1,203	331	28%	262	22%	106	9%
Total Southside Off-Street Parking Inventory and Occupancy			1,876	604	32%	549	29%	359	19%

Source: DESMAN

Overall, utilization of the public parking supply within the southside downtown study area peaked at 36% of capacity during the morning survey period. The utilization data for the southside downtown by parking facility and on-street block face for the morning peak period is presented in **Figure 12**.

As seen in Figure 12, during the peak period, none of the off-street parking facilities on the southside (again, aside from Lot O) experienced utilization greater than 69%. Additionally, while a number of the streets within and surrounding Lehigh University were highly occupied, especially Packer Avenue, there was still available parking capacity on nearly every street segment in the southside downtown study area.

Figure 12 – Southside Downtown Parking Utilization (9:30AM-11:00AM), Wednesday, September 20th, 2017



Source: DESMAN

4.4.6 Southside Parking Utilization – May 2017 versus September 2017

As with the northside study area, while there were facility-by-facility and street-by-street variations in the observed levels of occupancy between the May and September survey periods, generally, the demand patterns observed in the southside study area were consistent during both time periods.

At their most occupied, utilization of the off-street public parking facilities in the southside study area peaked at 30% in May and 32% in September. On-street, the utilization of parking meters peaked at 48% in May and 49% in September. Overall, utilization of the public parking supply in the southside study area peaked at 34% in May and 36% in September.

If public parking in the Ruins Lots is restricted in the future, not only will this reduce the supply of public parking that is available, it will also push several hundred current parkers into the remaining southside public parking spaces. Based on the 2017 utilization surveys, restricting parking in the Ruins Lots could result in 275 additional vehicles requiring a public parking space. This increase in peak demand could result in the off-street public parking supply on the east side of the southside downtown being overwhelmed, pushing utilization toward 100%. The only public off-street parking available would be on the opposite side of downtown.

4.4.7 Observations of Musikfest (August 2017)

Musikfest is a music festival that has occurred annually in Bethlehem since 1984. Each year, hundreds of performances occur throughout the city over the course of 10 days, drawing approximately 1,000,000 people. As the largest annual event held in Bethlehem, the City/BPA thought it important for DESMAN to observe parking supply and demand conditions during the festival. This year, Musikfest ran from August 4th through August 13th and DESMAN was on-site Thursday, August 10th, a date chosen to coincide with one of the largest ticketed concerts of the festival, Toby Keith.

Northside Observations

BPA Public Parking Supply: During our observations of Musikfest, the impacts on the public parking supply were noticeable in the northside study area. Throughout the course of the survey day, Main Street was closed to regular vehicular traffic from Broad Street to just west of Conestoga Street, eliminating all of the on-street, metered parking beginning at noon.

In addition to the on-street spaces on Main Street, the metered spaces on Walnut and Guetter streets, south of Broad Street and west of New Street, were also taken out of service, although the streets were not closed. Additionally, despite the fact that the parking meters on Market Street between Main and New streets were available for use – with a temporary sign put in place to indicate their availability – the closure of the street to through traffic appeared to negatively impact the use of these spaces.

All told, between the street and meter closures and spaces occupied by vendors and activities, approximately 122 of the 2,249 northside public parking spaces (~5%) were taken out of service by Musikfest-related activity.

In addition to the BPA parking facilities within the northside study area, the BPA's overflow parking lot at the southwest corner of Union Boulevard and Old York Road was also used to satisfy Musikfest parking

demand. According to the Executive Director of the BPA, this unpaved area is manned by BPA personnel every day of Musikfest and sees significant utilization over the course of a day.

Other Public Parking Supply: Aside from the BPA's public parking facilities, a number of private property owners and businesses in the northside study area opened their parking lots to public parking for a fee. Several property owners/businesses on the south side of E. Broad Street between New and Center streets were actively attempting to attract parkers. As shown in **Exhibits 1** and **2**, in at least two instances, the median of E. Broad Street was used to post signs directing parkers to these parking locations.

Exhibit 1 – Parking Sign Posted at E. Broad St. and Long St.



Source: DESMAN

Exhibit 2 – Parking Sign Posted at E. Broad St. and School St.



Source: DESMAN

Additional parking locations were also observed just outside of the northside study area. Several property owners across Union Boulevard from the BPA's overflow lot offered pay public parking, along with Trinity United Church of Christ at the corner of Center and E. North streets and Moravian College near the Foy Concert Hall. **Exhibits 3, 4 and 5** show several of these temporary public parking locations outside the northside study area.

Exhibit 3 – Temporary Public Parking at W. Union Blvd. and Orchard St.



Source: DESMAN

Exhibit 4 – Temporary Public Parking at W. Union Blvd. and Monocacy St.



Source: DESMAN

Exhibit 5 – Temporary Public Parking at Center St. and E. North St. (Trinity U.C.C.)



Source: DESMAN

In all, these temporary locations offered more than 250 spaces for public parking.

Demand for Public Parking in the Northside Study Area: On the day DESMAN observed Musikfest, the BPA's parking facilities in the northside study area were, as a whole, able to maintain some amount of excess capacity, at least until after 6PM. During normal business hours, while the Walnut Street Garage reached capacity several times, a significant number of spaces were available on-street and in the North Street Garage. As downtown employees and regular business patrons left for the day, they were quickly replaced with festival-goers, who filled all of the BPA's off-street parking facilities and all but the most remote on-street, metered spaces after business hours.

Southside Observations

BPA Public Parking Supply: Unlike the northside study area, street closures and Musikfest activities in the southside study area did not result in BPA public parking spaces being removed from the available parking supply. None of the street closures around SteelStacks or other Musikfest-related vendors or venues required the closure of BPA parking spaces.

Other Public Parking Supply: As one of the main areas hosting musical performances during Musikfest, the public parking lots around SteelStacks were greatly affected by the festival. A large portion of the SteelStacks lot was taken-up by the main concert stage, while the Ruins East and Ruins West lots were used for VIP parkers (e.g. ArtsQuest members, purchasers of special passes, people with ADA placards, etc.). In total, these three parking lots account for approximately 1,158 of the 2,686 public parking spaces (~43%) in the southside study area.

In addition to the public parking facilities typically available on the southside, during large Musikfest concerts on this side of the city, such as occurred on August 10th, a number of private property owners and businesses open their parking to the public (for a fee). Based on DESMAN's observations, more than a dozen temporary paid parking lots were in operation in the vicinity of SteelStacks, during the Toby Keith concert on Thursday, August 10th, adding several hundred spaces to the supply of parking and directly competing with the BPA's spaces.

Demand for Public Parking in the Southside Study Area: Unlike the northside study area, the BPA's parking facilities and on-street parking spaces in the southside study area either did not fill at all or filled after many of the temporary public parking locations during the August 10th observation day. Despite the proximity of the Third & Webster Lot, the Third & Taylor Lot and the Mechanic Street lots to the main stage at SteelStacks (all within a 5- to 10-minute walk), these facilities had available capacity well after the doors opened for the Toby Keith concert. Additionally, there were available on-street, metered spaces on E. 3rd Street, Mechanic Street and the adjoining cross streets, as well.

Based on DESMAN's observations, several of the temporary public parking lots that operated near SteelStacks during Musikfest were either more expensive (some charging \$20 or more) or equally as expensive as the nearby BPA parking facilities. However, the proximity of these other parking locations closer to the music venue or more visible than the BPA's facilities, seemed to drive people's parking behavior.

In the portions of the southside study area that are not immediately adjacent to SteelStacks, ample on- and off-street parking was available throughout the observation day.

5. NEW STREET GARAGE

During the course of this parking study, a new BPA parking garage was being constructed in the southside study area. The New Street Garage, as it is currently known, is a 6-level, 626-space facility located at the northwest corner of S. New Street and Rink Street, that was officially opened on November 29th, 2017. According to the BPA, the New Street Garage was built to provide additional parking for businesses and institutions on the southside and to help compensate for the loss of spaces that will result from the eventual development of the BPA's existing Mechanic Street parking lots.

Given the fact that the New Street Garage was not completed until very late in the study process and the adjacent office building has not yet been completed, it was impossible to document the stabilized utilization of the parking facility, as was done in the rest of the southside study area. However, a study was conducted to determine the economic feasibility of the New Street Garage, prior to the facility being designed. Part of this study examined the potential parking demand generated by the new office building, as well as the surrounding businesses and institutions, that would likely be captured by the New Street Garage. The results of the previous study have been used to provide insight into the potential future parking supply and demand conditions in the southside downtown study area, presented later in this report.

This Northside and Southside Downtown Parking Study document can and should continue to change as the City of Bethlehem and the operations of the BPA change. To that end, we recommend that after utilization of the New Street Garage has stabilized, the impact of the facility should be evaluated and incorporated into this study.

6. EXISTING PARKING OPERATION

The Bethlehem Parking Authority was established in 1988 under City Ordinance No. 2196, authorizing it to acquire, construct, equip, and operate parking facilities under the provisions of the Parking Authority Law presented by the City of Bethlehem. The Authority is responsible for the administration, supervision

and enforcement of off-street and on-street public parking in Bethlehem. These tasks include operating, maintaining and collecting revenue from the public parking facilities in the city, as well as enforcing on-street parking regulations and administering the various on-street permit parking programs. Additionally, the BPA is often integral in the planning and execution of development projects throughout the city, specifically projects that might not be viable without proximate public parking.

The following sections of this report include: brief descriptions of the oversight and management of the Authority; the hours of operation and rates charged at the BPA's off-street parking facilities and on-street metered spaces; a description of the current parking access and revenue control technology employed by the Authority; a review of public parking rates and fines for violations in Bethlehem as compared to similar municipalities, and; historical performance data for the BPA, including revenues, expenses and net income.

6.1 Oversight of the Bethlehem Parking Authority

The property and business of the Bethlehem Parking Authority is managed and controlled by a Board comprised of five members appointed by the City's Mayor in accordance with the Parking Authority Act. The Authority is operated with the intent of providing reliable services to the general public on a continuous basis and the Authority is typically financed and/or costs recovered primarily through user charges. The operations of the Authority are not subsidized by the City's General Fund.

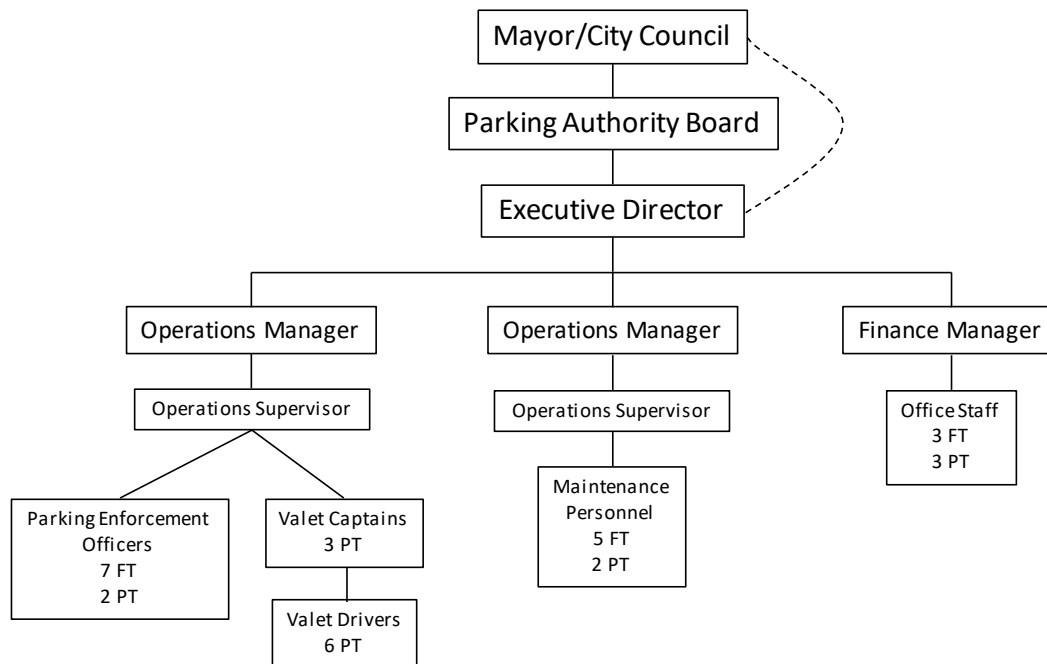
Meetings of the BPA Board are held regularly, typically on a monthly basis. During Board Meetings, the Executive Director of the Parking Authority reports to the Board on the financial performance of the Authority's assets, informs the Board of new initiatives impacting the parking system and, periodically, seeks changes to off-street parking rates. These meetings are open to the public, with notice of meeting dates and times posted at the Authority's office at 85 W. North Street and in the Morning Call newspaper.

In addition to oversight by the Parking Authority Board, the BPA is also subject to oversight by the Mayor of Bethlehem and the Bethlehem City Council. It is within the Mayor's power to set parking meter rates, while the hours of operation of the meters and the fine amounts for parking violations are set by City Council. Changes to any of these rates and the hours of operation may be recommended by the Authority, but the Mayor or City Council ultimately decides which changes will be implemented.

6.2 BPA Personnel Roles and Responsibilities

The current organizational chart of the Bethlehem Parking Authority is presented in **Figure 13**.

Figure 13 – Bethlehem Parking Authority Organizational Chart



Source: BPA

As shown in the figure, including the Executive Director, the Authority is currently staffed by 21 full-time employees and 16 part-time employees.

The two Operations Managers and the Finance Manager report directly to the Executive Director. Each Operations Manager is then responsible for one major aspect of the field operation – one is in charge of enforcement and other services, including the valet operation, and the other is in charge of facility and parking equipment/meter maintenance. The Finance Manager is in charge of the office staff, including those performing the customer service and accounting functions.

As their title implies, the Parking Enforcement Officers enforce parking rules and regulations, including payment of parking meters, parking time limits, on-street permit parking regulations, among others.

Valet Captains act as shift supervisors, collecting valet parking fees and managing the keys to vehicles, while the Valet Drivers park and retrieve vehicles.

The BPA's Maintenance Personnel are tasked with cleaning and performing general maintenance in the parking garages and surface lots, as well as maintaining the parking equipment in the off-street facilities and the parking meters on-street. These employees are also responsible for collecting coins from the parking meters and ensuring that they are safely deposited at the Authority's bank.

According to the Executive Director of the BPA, over the last several years, with the automation of the North Street and Walnut Street parking garages and efficiency improvements in the rest of the operation, it has been possible to reduce the overall number of staff employed by the BPA. As personnel costs are most often the largest expense in a public parking operation, it is crucial to keep staffing at an appropriate level to adequately serve customers, while also limiting costs.

6.3 Parking Facility Characteristics and Hours of Operation

While the parking supply and demand analysis presented earlier in this report documented the utilization of public parking at both BPA and non-BPA operated parking facilities, the BPA does not control all of the public parking in either the northside or southside study areas. As such, the below discussion includes only those facilities operated and maintained by the Authority.

6.3.1 Off-Street Parking Facilities – Northside

Of the public parking facilities located in the northside study area, the BPA is responsible to operate and maintain four of the facilities, shown in **Table 11**.

Table 11 – BPA Off-Street Parking Facilities, Northside

	North Street Garage	Walnut Street Garage	Broad Street Lot	Upper/Lower Commons Garage
Map ID	A	B	C	D
Facility Type	Garage	Garage	Surface Lot	Garage
Address	75 W. North St.	33 W. Walnut St.	55 E. Broad St.	533 Rubel St.
Access and Revenue Control Technology	Gated; Pay-on-Foot/Pay-in-Lane/Proximity Card	Gated; Pay-on-Foot/Pay-in-Lane/Proximity Card	Monthly Hangtag; Pay-by-Space	Pay-by-Space; Monthly Hangtag; Single-Space Meter
Space Inventory	800	777	117	111
Hours of Operation (Enforcement)	24/7	24/7	24/7 & Mon. - Sat., 8AM - 9PM	24/7 & Mon. - Sat., 8AM - 9PM

Source: BPA

As shown in the table, both the North Street Garage and Walnut Street Garage are gated facilities operating 24 hours a day, 7 days a week. These garages require parkers to either pay by the hour for parking or have a monthly permit. Hourly parkers pull a ticket upon entering the facilities and pay prior to exiting, either at a pay-on-foot station with cash or a credit or debit card before returning to their vehicles or in the exit lane with a credit or debit card. Monthly parkers use a proximity card, which is waved near a reader at the entry and exit lanes, in order to access and exit the facility.

Both the Broad Street Lot and the Commons Garage are ungated facilities that also accommodate both monthly and transient parkers. Monthly parkers in both facilities are allowed to park at any time, as long as they display a valid monthly parking hangtag; at the Commons Garage, monthly parkers may only use their hangtags on the lower level. Transient parking is permitted from 8AM-9PM, Monday-Saturday in both the Broad Street Lot and on the upper level of the Commons Garage; on weekdays, transient parking on the lower level of the Commons Garage is only allowed after 4:30PM.

6.3.2 Off-Street Parking Facilities – Southside

As in the northside study area, the BPA does not control all of the public parking facilities in the southside study area. As shown in **Table 12**, of the 15 parking facilities studied in the supply/demand analysis, 12 are owned and operated by the BPA.

Table 12 – BPA Off-Street Parking Facilities, Southside

	Lehigh Riverport Garage	Lehigh Riverport Lot	New Street Bridge Lot	West 3rd Street Lot	Broadway Street Lot	3rd Street Lot	3rd & Webster Lot	3rd & Taylor Lot	Mechanic & Adams Lot	Mechanic & Webster Lot	Mechanic & Taylor Lot	4th & Buchanan Lot
Map ID	F	G	H	I	J	K	L	M	N	O	P	Q
Facility Type	Garage	Surface Lot	Surface Lot	Surface Lot	Surface Lot	Surface Lot	Surface Lot	Surface Lot	Surface Lot	Surface Lot	Surface Lot	Surface Lot
Address	11 W. 2nd St.	3 S. New St.	1-7 W. 3rd St.	28 W. 3rd St.	209 Broadway St.	24 E. 3rd St.	201 Webster St.	307 E. 3rd St.	100-198 Mechanic St.	200-298 Mechanic St.	300-398 Mechanic St.	600-698 E. 4th St.
Access and Revenue Control Technology	Monthly Hangtag; Pay-by-Space	Pay-by-Space	Monthly Hangtag; Single-Space Meter	Monthly Hangtag	Monthly Hangtag; Single-Space Meter	Monthly Hangtag; Pay-by-Space	Monthly Hangtag; Single-Space Meter	Pay-by-Space	Monthly Hangtag	Monthly Hangtag	Monthly Hangtag	Monthly Hangtag
Space Inventory	152	42	17	30	23	21	16	48	60	62	62	140
Hours of Operation (Enforcement)	24/7	24/7	24/7 & Mon. - Sat., 8AM - 9PM	24/7	24/7 & Mon. - Sat., 8AM - 9PM	24/7 & Mon. - Sat., 8AM - 9PM	24/7 & Mon. - Sat., 8AM - 9PM	Mon. - Sat., 8am - 9pm	24/7	24/7	24/7	24/7

Source: BPA

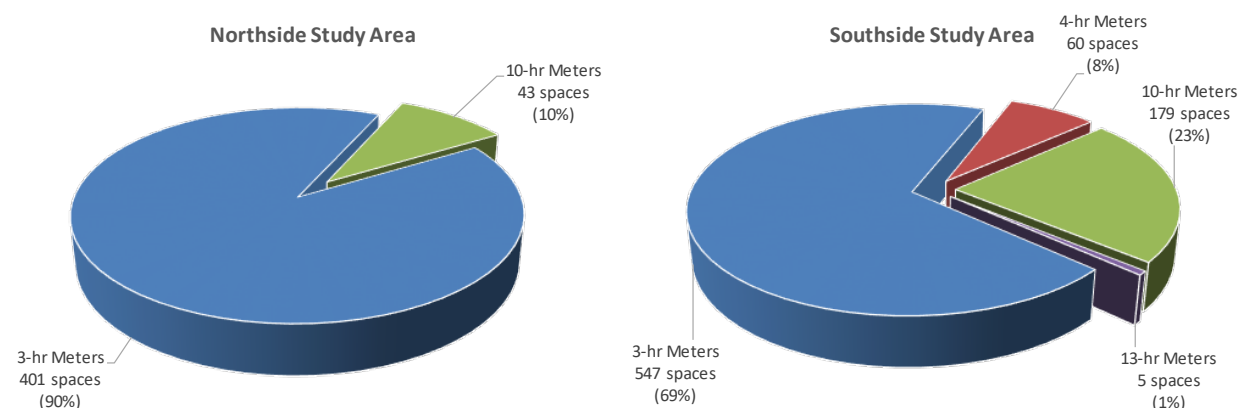
Of the 12 parking facilities controlled by the BPA in the southside study area, 5 of the facilities (all surface lots) are available for monthly parking only and require parkers to display a valid hangtag. Aside from the Third & Taylor Lot, which is a transient-only facility, the remaining off-street facilities accommodate a combination of monthly and transient parkers. All monthly parking in the southside facilities is controlled using hangtag permits, which are enforced 24 hours a day, 7 days a week. The facilities that allow transient parking are controlled using single-space meters or pay-by-space pay stations and are enforced from 8AM-9PM, Monday-Saturday, except the Lehigh Riverport Garage and Lot which are enforced at all times.

6.3.3 Metered On-Street Parking

On-street metered parking is currently enforced from 8AM-9PM, Monday-Saturday, while parking at the meters is free on Sundays and select holidays; these hours of enforcement match the hours of enforcement at the metered off-street spaces. Various parking time limits are in place at the on-street metered spaces, ranging from 3-hours to 13-hours, in order to serve various groups of potential parkers – spaces with shorter time limits encourage turnover and ensure that there are available spaces for incoming parking patrons, while spaces with longer time limits are meant to serve downtown employees and other longer-term parkers. As discussed previously, in the northside study area, the on-street meters have either a 3- or 10-hour time limit, while the on-street meters in the southside study area have either a 3-, 4-, 10-, or 13-hour time limit.

Figure 14 illustrates the distribution of on-street metered parking time limits in both the northside and southside study areas.

Figure 14 – Distribution of On-Street Metered Parking Time Limits, Northside and Southside



Source: BPA

As shown in the figure, approximately 90% of the on-street metered parking spaces in the northside study area have a 3-hour time limit, while the percentage of 3-hour spaces in the southside study area is approximately 69%.

Generally speaking, in order to make enforcement of metered parking as efficient as possible, it is preferable to have as few parking time limits in place as possible within a certain geographical area. The greater number of time limits that must be enforced, the more difficult and resource-intensive it is to enforce those meters. Although it was impossible to determine based on DESMAN's research, it is likely that the small number of meters with 4- and 13-hour time limits in the southside study area were put in place based on the desires of particular businesses in this area.

6.4 Additional BPA Services/Responsibilities

In addition to operating and maintaining the parking garages, surface lots and metered on-street parking spaces, and enforcing parking regulations, the BPA also provides other parking-related services, namely valet parking and event parking. The BPA also administers the City's on-street permit parking program.

6.4.1 Valet Parking

On Fridays and Saturdays from 5PM-11PM, the BPA operates a valet parking service in both the northside and southside study areas. This service began in late 2012 in order to help alleviate concerns that there was a shortage of parking in the northside downtown, with the service later expanded to the southside.

In the northside downtown, if a driver chooses to valet their vehicle, as opposed to self-parking at an on-street meter or in an off-street facility, they can drop their car with BPA valet staff who are located near 555 Main Street. For the cost of \$7, the valets will park these cars in the nearby Walnut Street Garage and retrieve the vehicles upon request. In the southside downtown, the valet operation is based at the ArtsQuest Center at SteelStacks and the vehicles are parked in a nearby ArtsQuest parking lot.

This service is not intended to be a moneymaker for the Authority. Rather, the intent is to improve customer service and encourage more people to visit both downtowns.

6.4.2 Event Parking

During large events which impact either downtown Bethlehem study area, the BPA will adjust their operations to more effectively manage parking demand. When events such as Musikfest or the Celtic Classic, an event celebrating Celtic history and culture, are hosted in the city, the associated parking demand volumes and patterns are much different than those on a typical weekday or weekend. For this reason, the BPA must adapt in order to effectively manage the large volumes of infrequent visitors looking for a place to park in the city.

When these events occur, BPA staff are located at the entrances of designated parking facilities in order to collect parking fees from customers, who can pay with cash or credit card. In addition to ensuring that the Authority collects the appropriate revenue for the number of vehicles parking in its facilities, these employees also provide valuable customer service, directing parkers to event destinations and alternate parking locations, as necessary.

The BPA also provides event-specific parking information on its website in advance of these large events, in order to help visitors plan their trip to Bethlehem.

6.4.3 Park & Shop

As a way to allow business owners to offset the cost of their visitor's/customer's parking in either the North Street or Walnut Street parking garage, the BPA has the "Park & Shop" program. This long-running program allows businesses to purchase parking time for their customers, either loaded onto one-time-use validation ("chaser") tickets or in the form of tokens that can be used at the parking meters. With this program, retailers receive a 30% discount for validations and tokens. Also, twice per year, 90-day promotions are held during which validations are offered at 50% of the regular price. This program is available to any merchant in Bethlehem, not just those in the northside and southside downtowns.

When a business chooses to validate a visitor's/customer's parking, they provide the visitor/customer with a validation ticket or tokens. For the validations, as the parker exits the garage, the validation ticket is inserted after the ticket they received upon entry. Depending on the value of the validation, the parking customer could owe an additional fee or be permitted to exit the garage. If they owe an additional fee, they can pay in their exit lane with a credit or debit card. The tokens can be used just like coins at any of the BPA's metered parking spaces.

This program gives the BPA the ability to generate the revenue necessary to operate and maintain the City's public parking assets, while also helping to alleviate business owner's concerns about the cost of parking driving away customers.

6.4.4 On-Street Permit Parking Program

While managing off-street parking facilities and metered on-street spaces are the primary functions of the Bethlehem Parking Authority, the BPA is responsible for administering and enforcing the City's on-street permit parking program, as well. In total, seven different on-street parking permits are available for various groups of parkers. These permit programs are described briefly, below:

Employee Permit: This permit is available to employees or business owners in the City of Bethlehem and allows parking only in an assigned zone. If no space is available in that zone, the

employee cannot park in another zone, but can pay for parking in a public parking facility or at a parking meter, if available. The initial cost of the permit is \$50, with an annual renewal fee of \$40.

Residential Permit: These permits are available to residents of the various residential parking zones and allow a vehicle to remain parked for 2 hours at a time on any particular block in that zone. After 2 hours, the vehicle must leave that block for 2 hours before returning. The initial cost of the permit is \$20, with an annual renewal fee of \$10. There are currently eight residential parking zones in the city on the northside of the Lehigh River and four zones on the southside.

Student Permit: Lehigh University students living in one of the residential parking zones are eligible for these permits. However, there is a limit of two permits per structure. The initial cost of the permit is \$50, with an annual renewal fee of \$40.

Summer Student Permit: Like the Student Permit, the Summer Student Permit is available to Lehigh University students living in one of the residential parking zones. However, this permit is only valid for students living in Bethlehem from June 1st to August 31st. The fee for this permit is \$30.

Visitor Permit: Students and residents may get a visitor permit for a limit of 14 days per year. This permit is granted free of charge. In order to receive a Visitor Permit, the student or resident seeking the permit must hold a valid residential parking permit.

Contractor Permit: Only contractors providing a service in designated residential parking zones can obtain this type of permit. A Contractor Permit allows a vehicle to remain parked in excess of the 2-hour on-street parking restriction, but the vehicle must comply with all other regulations. The cost of this permit is \$3 per day.

All City Permit: This permit type is intended to be used by vehicles affiliated with a business or one that regularly provides a service or delivers goods to a business. These permits are only valid in locations where the vehicle is providing the commercial service and/or delivering commercial goods, not in the location of the permittee's business. The cost of this permit is \$150 per year, plus an initial hang tag deposit fee of \$10.

In all, the BPA sells nearly 2,800 Resident, Student, and Employee permits per year, with Resident Permits accounting for nearly 85% of that total.

Despite the fact that these permits are not valid in a majority of the area covered by the northside and southside study areas, this is a major function of the BPA and, as such, was worth discussing as part of this study.

6.5 Parking Technology

6.5.1 Off-Street Technology

Beginning in 2012, the Bethlehem Parking Authority began to upgrade the technology used for collecting revenue in its parking lots and garages. In both the North Street and Walnut Street garages, the human parking attendants have been replaced with proximity card readers for monthly parking customers and pay-on-foot and pay-in-lane technology for transient parkers. These technologies have allowed the

Authority to reduce the amount of manpower necessary to operate the garages, as well as allowing for more accurate tracking of parking transactions and an overall reduction in the amount of cash payments for parking – all of these factors are a benefit to the operational efficiency of the parking system.

In the Commons Garage and Lehigh Riverport Garage, as well as the surface lots that allow transient parking, the BPA has also upgraded the revenue collection technology. Instead of using mechanical single-space parking meters, these facilities have been upgraded with either pay-by-space pay stations, which permit payment with coins, credit/debit cards or via cell phone, or new single-space meters that accept coins, credit/debit cards, tokens, or cell phone payments.

6.5.2 On-Street Technology

In August 2012, the BPA also began upgrading its inventory of on-street single-space meters with IPS single-space meters. The mechanical meter mechanisms were replaced with digital mechanisms that run on solar-rechargeable batteries and accept multiple forms of payment (i.e. coins, credit/debit cards, tokens, and cell phone payments). The initial installation involved 500 IPS meters being placed along portions of Broad Street and other high-activity areas, with the remainder of the on-street meters replaced with the new technology before the end of 2016.

The new parking meter technology also allowed the BPA to adopt pay-by-phone technology for the payment of parking time. Shortly after the new meters were installed in 2012, the BPA selected MobileNOW! for a pilot program to allow patrons to pay for – or extend – paid parking time by calling a toll-free number and paying with a credit card over the phone. This pilot program has since become permanent and parking patrons can now pay for parking at a meter by either calling the toll-free number or using the MobileNOW! application on their smart phones.

On the parking enforcement side, the BPA is currently using some of the latest technology as well. License Plate Recognition (“LPR”) cameras and the associated software are currently being used by the BPA to enforce residential parking regulations and to monitor meter feeding activity. The Authority also plans to increase the use of LPR technology in the future, using license plate numbers to identify on-street permit holders, instead of the existing hang-tag system, and moving to pay-by-plate in its off-street facilities that offer transient parking. The BPA currently has two vehicles equipped with LPR technology, with plans to purchase one additional set of equipment before the end of 2017 and another in 2018.

6.5.3 Parking Technology Conclusion

In comparison to many other municipal parking systems, the BPA has done an excellent job upgrading its on-street and off-street parking technology over time, in order to maximize the efficiency and revenue generating potential of its parking assets.

6.6 Parking Rates and Fines for Violations

Being organized as an Authority under the laws of the Commonwealth of Pennsylvania, the Bethlehem Parking Authority is required to fund its operations solely through the fees and fines generated by the parking assets it controls and manages – the operations of the BPA cannot be subsidized by the City of Bethlehem, or any other entity, if its revenues are insufficient to cover expenses. For that reason, the fees (rates) charged for parking and, to a lesser degree, the fines for parking violations, must be set at a level

that allows the BPA to remain solvent, but also does not discourage businesses from locating in Bethlehem or visitors from coming to the City.

6.6.1 Public Parking Rates in BPA Facilities

Table 13 lists the hourly, daily, and monthly parking rates charged at the metered on-street parking spaces and in the off-street parking facilities operated by the Bethlehem Parking Authority, dating back to 2006; parking rates for the Commons Garage are not available prior to 2009, when the BPA acquired the Garage.

Table 13 – Historical Parking Rates at BPA Parking Facilities, 2006-2017

MONTHLY CONTRACT PARKING RATES	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Walnut Street Parking Garage	\$50.00	\$50.00	\$50.00	\$55.00	\$55.00	\$55.00	\$55.00	\$55.00	\$57.00	\$57.00	\$65.00	\$65.00
North Street Parking Garage	\$50.00	\$50.00	\$50.00	\$55.00	\$55.00	\$55.00	\$55.00	\$55.00	\$57.00	\$57.00	\$65.00	\$65.00
Lower Commons Garage	N/A	N/A	N/A	\$50.00	\$50.00	\$50.00	\$50.00	\$55.00	\$55.00	\$55.00	\$65.00	\$65.00
Lehigh Riverport Parking Garage	Resident-Only							\$30.00	\$31.00	\$31.00	\$65.00	\$65.00
Broad Street Lot	\$40.00	\$40.00	\$40.00	\$45.00	\$45.00	\$45.00	\$45.00	\$45.00	\$47.00	\$47.00	\$55.00	\$55.00
Southside Lots	\$22.00	\$22.00	\$22.00	\$30.00	\$30.00	\$30.00	\$30.00	\$30.00	\$31.00	\$31.00	\$40.00	\$40.00
GARAGE TRANSIENT RATES (per hour)												
Walnut Street and North Street Garages	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$0.75	\$0.75	\$0.75	\$0.75	\$1.00	\$1.00
Upper/Lower Commons Garage	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50	\$0.75	\$0.75	\$0.75	\$0.75	\$1.00	\$1.00
Lehigh Riverport Parking Garage	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50	\$0.75	\$0.75	\$0.75	\$0.75	\$1.00	\$1.00
METER RATES (per hour)												
On-Street Meters	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00
Off-Street Meters	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50	\$0.75	\$0.75	\$0.75	\$0.75	\$1.00	\$1.00

Source: BPA

As highlighted in ●orange in the table, parking rates have increased periodically since 2006, with the exception of the North Street and Walnut Street garages' hourly rates, which recently returned to \$1.00/hour after decreasing to \$0.75/hour from 2012-2015; the maximum daily rate for parking in either garage is \$10. With the exception of the on-street meters, the rates charged for parking in the BPA's facilities all increased most recently in 2016. Conversely, the hourly rate for metered on-street parking has not increased since 2012.

It is important to note that, since on-street meter rates were not increased in 2016 along with the hourly off-street rates, the hourly cost to park in an off-street facility is now equal to the hourly cost to park on-street. Typically, parking industry best practices dictate that the hourly cost to park at an on-street meter should be greater than the hourly cost to park in an off-street facility. This price imbalance is meant to encourage longer-duration and more cost-sensitive parkers to park off-street, leaving spaces available on-street for those parkers that value convenience over price. A higher hourly rate on-street also encourages turnover of the on-street spaces, increasing the likelihood that potential parkers can find available spaces.

6.6.2 Fines for Parking Violations

The enforcement of parking rules is of paramount importance to the performance of a municipal parking system. If parking rules are not properly enforced, parkers have no incentive to pay the meters. If parking rules are enforced in an over-aggressive manner, there is likely to be public backlash and an increase in the number of violations contested in court. It is equally important that the fines charged for parking violations are set at an appropriate level so as to encourage payment of the meters, while not being overly punitive.

The current parking violation fine amounts for a few of the more common parking violations are presented in **Table 14**.

Table 14 – Sample of Fines for Parking Violations

Violation Description	Initial Fine	Fine After 14 Days
Expired Meter	\$10.00	\$30.00
Overtime Parking in a Timed Zone	\$10.00	\$30.00
Expired Registration/Inspection	\$15.00	\$35.00
Meter Feeding	\$10.00	\$30.00
Illegally Parked in Handicapped Space	\$50.00	\$70.00

Source: BPA

As shown in the table, if a ticket remains unpaid for a period of time exceeding 14 days, a late fee of \$20 is assessed.

While setting the fine amount for each type of parking violation is not an exact science, there are best practices in the parking industry which guide the setting of fines related to non-payment of a meter and meter feeding. It is generally accepted in the parking industry that the fine for these types of violations should equal 10-15 times the hourly rate charged for parking, with 15 times as the target. In Bethlehem, the \$10 fine for an expired meter or meter feeding is reasonable, based on the \$1.00/hour cost to park at a meter. However, as meter rates are increased in the future, the fines for parking violations should also be increased in order to maintain an appropriate parking charge-to-fine relationship.

6.7 Parking Rates in Bethlehem versus Comparable Municipalities

In order to understand how Bethlehem's public parking rates and fines for violations compare to those charged in other municipalities, the following section presents detailed information related to the parking systems of 14 municipalities. These municipalities were chosen because they share some similarity to Bethlehem either in geographic location, size and demographics of the population, parking system size, or several of these elements. **Table 15** presents detailed inventory, parking rate, hours of operation, and parking violation information for each of the 14 municipalities examined, in addition to the comparable information for Bethlehem.

Table 15 – Parking Rates and Fines in Comparable Municipalities

City	State	Population ¹	On-Street Metered Spaces	Number of Garages	Number of Lots	Rates				On-Street Hours of Enforcement	Overtime Meter Violation Fine	Duration prior to Late Payment Fee	Monthly/Contract Parking Discounts
						On-Street (per hour)	Off-Street (daily)	Surface Lot (monthly)	Garage (monthly)				
Allentown	PA	120,443	1,400	5	25	\$1.00-\$2.00	\$8.00	\$20.00-\$65.00	\$75.00	Monday - Saturday, 8AM - 6PM or 8AM - 9PM	\$10.00	10 days	\$5 discount for 10 or more permits
Easton	PA	26,978	700	2	4	\$1.00	\$16.00	\$55.00	\$70.00	Monday - Saturday, 9AM - 8PM; Sunday, 12PM - 6PM	\$25.00	8 days	\$20 discount for 60 or more permits, \$10 discount for 40-59 permits, \$5 discount for 20-39 permits
Harrisburg	PA	48,904	1,300	8	3	\$1.50-\$3.00	\$6.00-\$30.00	\$25.00-\$120.00	\$195.00-\$275.00	Monday - Saturday, 8AM - 7PM	\$30.00	4 days	No discount program
Lancaster	PA	59,218	946	7	3	\$1.50	\$5.00-\$15.00	\$40.00	\$65.00	Monday - Saturday, 8AM - 6PM	\$10.00	15 days	No discount program
Montclair	NJ	38,021	1,257	4	17	\$1.00	\$12.00	\$65.00-\$120.00	\$65.00-\$120.00	Monday - Saturday, 8AM - 7PM	\$30.00	7 days	No discount program
Morristown	NJ	19,016	700	4	11	\$0.75-\$1.00	\$16.00	\$35.00-\$50.00	\$75.00-\$100.00	Monday - Friday, 9AM - 5PM	\$25.00	30 days	No discount program
Newark	DE	33,398	457	0	5	\$1.25	\$8.00	\$85.00	N/A	Monday - Saturday, 8AM - 1AM; Sunday, 1PM - 1AM	\$15.00	30 days	No discount program
New Brunswick	NJ	56,910	1,000	2	10	\$2.00	\$20.00-\$22.00	N/A	\$160.00-\$175.00	Monday - Saturday, 8AM - 9PM	\$27.00	14 days	No discount program
Reading	PA	87,575	900	9	7	\$1.50	\$11.00	\$30.00-\$69.00	\$82.00-\$90.00	Monday - Friday, 8AM - 6PM	\$20.00	10 days	\$2 discount for 5 or more permits
Scranton	PA	77,291	1,479	5	1	\$1.50	\$12.00	N/A	\$90.00-\$120.00	Monday - Friday, 8AM - 5PM	\$25.00	1 day	No discount program
State College	PA	41,992	420	3	4	\$1.25	\$9.00-\$12.00	\$75.00-\$85.00	\$100.00-\$115.00	Monday - Saturday, 10AM - 10PM	\$6.00	3 days	No discount program
Summit	NJ	22,019	600	2	11	\$0.50	\$3.00-\$30.00	\$40.00	\$200.00	Monday - Saturday, 8AM - 6PM	\$20.00	14 days	No discount program
Wilmington	DE	71,442	1,000	6	2	\$1.00	\$8.00-\$12.00	\$95.00-\$135.00	\$115.00-\$175.00	Monday - Friday, 8AM - 6PM	\$20.00	21 days	No discount program
Wilkes-Barre	PA	40,964	800	3	1	\$2.00	\$15.00	\$70.00	\$70.00	Monday - Saturday, 8AM - 6PM	\$10.00	3 days	\$25 discount for certain groups
Bethlehem	PA	75,293	1,235	4	12	\$1.00	\$10.00	\$40.00-\$55.00	\$65.00	Monday - Saturday, 8AM - 9PM	\$10.00	14 Days	No discount program
Average Rate/Fine (not incl. Bethlehem)						\$1.40	\$13.00	\$65.00	\$117.00		\$20.00		

(1) Population information taken from the U.S. Census Bureau, 2016 Population Estimate

*In most cases, the number of metered spaces is rounded. Also, the number of facilities includes on those owned/controlled by each city/authority.

**These rates were confirmed in September 2017 and February 2018.

Source: DESMAN

Of the 14 municipalities examined, 13 charged at least as much or more per hour for on-street parking than Bethlehem's \$1.00/hour rate. Among the municipalities, the average on-street meter rate is approximately \$1.40/hour.

For off-street parking, the average daily rate in these municipalities is approximately \$13, compared to the \$10 charged by in the BPA's North Street and Walnut Street parking garages. Monthly parking in surface lots ranges in cost from \$20-\$135, with an average of \$65, compared to Bethlehem's \$40-\$55. Monthly parking rates in public garages in these municipalities range from \$65-\$275, with an average of \$117, compared to \$65 in Bethlehem.

The last column in the table contains information related to rate discounts offered by the various public parking systems for people or companies that purchase monthly permits in bulk. As shown in the table, only 4 of the 14 municipalities offer any kind of discount on monthly parking for those purchasing a certain number of permits.

Based on the information contained in Table 15, the parking rates charged in Bethlehem are generally lower than the average rates charged in comparable municipalities. The implication is that the parking rates charged in Bethlehem are too low and an argument can be made for increasing parking rates to more closely align with the rates charged in comparable cities.

6.8 Historical Financial Performance of the Bethlehem Parking Authority

The financial health of the Bethlehem Parking Authority is not only important in terms of its ability to operate on a day-to-day basis, but also in terms of its ability to maintain its existing assets, upgrade technology as necessary, and support economic development by adding public parking when and where necessary.

A summary of the historical financials of the BPA from 2010-2017 is presented in **Table 16**; the 2010-2016 figures are actuals taken from the Authority's unaudited financials, while the 2017 figures are based on the year-to-date results projected through the end of the year.

Table 16 – Financial Performance of the Bethlehem Parking Authority, 2010 – 2017

REVENUES	2010 (Actual)	2011 (Actual)	2012 (Actual)	2013 (Actual)	2014 (Actual)	2015 (Actual)	2016 (Actual)	2017 (Projected)
TOTAL OFF STREET PARKING	\$1,474,100	\$1,437,596	\$1,598,077	\$1,680,100	\$1,868,221	\$1,926,716	\$2,080,305	\$2,020,111
TOTAL TICKET REVENUE	\$1,140,358	\$1,067,050	\$1,264,355	\$1,112,771	\$959,844	\$1,211,986	\$1,259,911	\$1,213,716
TOTAL METER & OTHER REVENUE	\$1,195,322	\$1,177,848	\$1,648,884	\$1,770,232	\$1,934,196	\$1,987,865	\$2,092,910	\$2,019,847
TOTAL REVENUE	\$3,809,780	\$3,682,492	\$4,511,313	\$4,563,103	\$4,762,256	\$5,126,566	\$5,433,126	\$5,253,674
EXPENSES								
TOTAL SALARIES & FRINGE	\$1,957,479	\$2,051,112	\$1,694,716	\$1,691,366	\$1,623,427	\$1,691,443	\$1,733,167	\$1,843,233
TOTAL OPERATING EXPENSES	\$345,883	\$236,938	\$326,482	\$364,901	\$398,119	\$401,936	\$468,230	\$521,835
TOTAL PROFESSIONAL FEES	\$43,360	\$65,884	\$45,956	\$43,270	\$77,437	\$99,541	\$122,992	\$130,810
TOTAL GENERAL EXPENSES	\$180,204	\$181,433	\$204,445	\$215,990	\$222,538	\$242,796	\$236,893	\$254,459
TOTAL OTHER EXPENSES	\$159,634	\$75,844	\$147,630	\$132,642	\$150,197	\$178,790	\$236,537	\$208,076
TOTAL EXPENSES	\$2,686,559	\$2,611,242	\$2,419,228	\$2,448,170	\$2,471,714	\$2,614,505	\$2,797,820	\$2,958,413
NON-OPERATING TRANSFERS								
VEHICLE MAINTENANCE TRANSFER TO CITY	\$0	\$0	\$0	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000
TRANSFER TO CITY	\$0	\$0	\$324,997	\$500,000	\$500,000	\$525,000	\$500,000	\$500,000
TOTAL TRANSFERS TO CITY	\$0	\$0	\$324,997	\$525,000	\$525,000	\$550,000	\$525,000	\$525,000
DEBT SERVICE								
SERIES 2015 BONDS	\$989,889	\$1,045,016	\$1,042,578	\$1,044,925	\$1,045,320	\$459,571	\$305,961	\$1,018,103
SERIES 2016 BONDS ¹	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL DEBT SERVICE	\$989,889	\$1,045,016	\$1,042,578	\$1,044,925	\$1,045,320	\$459,571	\$305,961	\$1,018,103
NET CASH FLOW²	\$133,332	\$26,235	\$724,511	\$545,008	\$720,222	\$1,502,490	\$1,804,344	\$752,158

1) Payments on these bonds begin in 2018; these payments will total approximately \$440,000 in 2018 and 2019, increasing to approximately \$830,000 per year after that.

2) The large increases in Net Cash Flow in 2015 and 2016 are attributable to one-time savings associated with the BPA refinancing its outstanding debt.

Source: BPA

As shown in the table, the BPA has consistently generated positive Net Cash Flow dating back until at least 2010. Additionally, since 2013, the BPA has transferred \$500,000 a year to the City to support its General Fund, a practice which is expected to be discontinued after 2020.

Despite the positive historical financial results achieved by the BPA, several factors are expected to have an impact on the BPA's finances in the near future, including:

1. **New Street Parking Garage Debt Service:** The total cost of the New Street Parking Garage was \$17.7MM, construction of which was financed with debt. The additional debt service associated with the Garage is approximately \$440,000 annually in 2018 and 2019, rising to more than \$830,000 annually in 2020 and beyond. While the additional revenues expected to be generated by the Garage will off-set some of this cost, until additional development occurs in the southside study area, it will be necessary for the revenues generated by the rest of the BPA's assets to support this additional debt service.
2. **Repair/Replacement of the Walnut Street Parking Garage:** Constructed in 1976, the Walnut Street Garage is more than 40 years old and is becoming increasingly expensive to maintain. Based on estimates developed by DESMAN, it would be necessary to spend \$4-\$4.5MM over the next several years, as well as an additional \$5-\$7MM over the next 20 years, in order to maintain the 40-year-old garage in good working condition. These costs have not been factored into the historical financials presented in Table 16. There have also been discussions around demolishing and replacing the Garage entirely. In addition to temporarily disrupting a significant revenue

stream for the BPA, construction of a garage of similar size could cost the BPA around \$20MM, further adding to the Authority's debt load.

3. Ongoing Repair Needs of Other BPA Facilities/Assets: Historically, the BPA has paid for new equipment and repairs to its parking garages and surface lots from operating revenues. However, DESMAN typically recommends that parking owners set aside funds annually to be used for future capital repair and replacement projects, as opposed to financing these projects with debt. If the BPA chooses to follow this practice, that would mean setting aside more than \$200,000 annually to pay for these future costs.

All of the above factors must be taken into consideration as the BPA and City of Bethlehem plan for the future.

7. FUTURE DOWNTOWN PARKING DEMAND

Based on the results of the preceding supply and demand analysis, at present, during periods of typical activity (non-event periods), the BPA maintains a sufficient supply of public parking in both the northside and southside downtowns to satisfy the existing demand. However, as development in both study areas occurs, there is the potential for these projects to both contribute to the demand for parking and also, potentially, eliminate some of the existing supply.

Because this document is intended to be used by the BPA and City for long-term planning purposes, it is important to attempt to quantify the potential impacts of future development projects on both the supply of and demand for public parking.

7.1 Anticipated Future Development

Given the time it takes to build additional parking capacity and implement other improvements to the parking system, it is important to plan for anticipated future development as far in advance as possible. However, it is equally important that the decisions of the BPA and the City be based on realistic assumptions of the type, scale and timing of development and redevelopment projects, so as not to overbuild the parking system or make unnecessary improvements. For these reasons, DESMAN consulted with the City's Community and Economic Development and Planning and Zoning departments in order to establish a realistic picture of development in both the northside and southside study areas.

Tables 17 and 18 include information related to anticipated future development in the northside and southside study areas, respectively, for projects that had plans filed with the City by the end of 2017. In addition, each table identifies a quantity of "Miscellaneous Anticipated Development", which is meant to encompass projects that have been discussed or brought to the City's attention, but for which no official plans have been submitted or approved – these projects are seen as more speculative and long-term.

Figures 15 and 16 identify the geographic locations of the projects identified in the tables, where possible.

Table 17 – Anticipated Future Development in the Northside Study Area

Map ID	Property	New Commercial (Sq Ft)	New Residential (Units/ Hotel Rooms)	Likely Use	Anticipated Completion
1	Hotel Bethlehem 437 Main St.	24,553	73	Conference Space; Hotel Rooms	2022
N/A	Miscellaneous Anticipated Development	185,500	227	Retail; Restaurant; Office; Residential	5+ Years
		220,053	300		

Source: City of Bethlehem

Table 18 – Anticipated Future Development in the Southside Study Area

Map ID	Property	New Commercial (Sq Ft)	New Residential (Units)	Likely Use	Anticipated Completion
2*	Greenway Commons E. 3rd St. & Fillmore St.	21,225	95	Street-Level Retail; Residential	2018
3*	315 Columbia St	71,438	-	Industrial	2018
4*	Greenway Park 306 S. New St	127,694	-	Office	2018
5	Broadway Social 215-217 Broadway St.	4,180	-	Street-Level Retail/ Restaurant	2018
6	Lehigh U dorm 422-440 Brodhead Rd.	850	426	Dorm Rooms; Street-Level Retail	2019
7	Old St. Lukes Space E. 3rd St. & Polk St.	-	43	Residential	2019
8	4th & Vine 24 W. 4th St.	2,161	18	Street-Level Retail; Residential	2019
9	4-story infill 13 W. Morton St.	2,600	3	Office; Residential	2019
10	Goodman 30 E. 3rd St.	7,461	14	Street-Level Retail; Residential	2019
11	404 Building 404 E. 3rd St.	18,450	-	Restaurant	2019
12	4th & Adams 321 Adams St.	9,500	30	Street-Level Retail; Residential	2019
13	Former Starter's 17 W. 2nd St.	21,000	-	Restaurant	2021
N/A	Miscellaneous Anticipated Development	220,000	1,500	Street-Level Retail; Residential	5+ Years
		506,559	2,129		

*Denotes a project already under construction.

Source: City of Bethlehem

Northside and Southside Downtown Parking Study
Bethlehem, Pennsylvania

Figure 16 – Locations of Anticipated Future Development in the Southside Study Area



Source: City of Bethlehem; DESMAN

As shown in Table 17, in the northside study area, only one project has had plans submitted, which is the expansion of the Hotel Bethlehem. The remaining 185,000 SF of commercial development and nearly 230 residential units are more speculative projects, expected to be completed in more than 5 years.

On the southside, as shown in Table 18, a number of projects are currently under construction, with numerous additional projects set for completion by 2021. In addition to the 12 known projects, the City has identified approximately 220,000 SF of commercial space and 1,500 residential units that are anticipated within the southside study area after 2022.

For planning purposes, near-term projects with more certain completion dates and known components (i.e. number of residential units, mix of retail versus restaurant, etc.) are more impactful than longer-term projects whose timing and scope are unknown. For that reason, the analysis of the parking supply and demand impacts of future development projects separates near-term projects from long-term projects. In the following sections, DESMAN has projected the future parking demand associated with each project, added that to the current observed parking demand, and compared the total to the anticipated future supply of public parking in each study area. This analysis will allow the BPA and the City to evaluate the capacity of the public parking supply to accommodate anticipated future demand.

7.2 Near – Term Impact of Development on Future Parking Supply and Demand

For the purposes of this analysis, the near-term projects were assumed to be those projects identified by the City that have submitted plans – in Tables 17 and 18, these projects include everything except the developments grouped in the “Miscellaneous Anticipated Development” category. Based on parking industry standards, DESMAN applied assumed demand factors to each of the proposed developments in order to determine the anticipated parking demand that each project will generate in the future during the weekday peak demand period.

In addition to the anticipated demand, the analysis also factors in the number of existing parkers that are likely to be displaced by each project, the number of spaces assumed to be added and the net parking surplus or deficit for each project.

The rationale behind examining future parking demand during the daytime on a weekday, as opposed to in the evening or on a weekend, is that both the northside and southside downtowns currently experience their peak parking utilization during the daytime on weekdays. In the future, when additional parking demand is generated by new development, this is the time period during which it is mostly likely for the supply of public parking to become constrained. Theoretically, if the future public parking supply is sufficient to satisfy the weekday peak demand, accommodating the evening and weekend demand should not be an issue.

7.2.1 Near-Term Impact of Development on Parking in the Northside Study Area

As shown in **Table 19**, the proposed expansion of the Hotel Bethlehem is anticipated to result in a net parking deficit of 71 spaces during the weekday peak, when the additional 25,000 SF of meeting/event space is in use. These estimates were based on industry standards, as no specific estimates of activity were provided by Hotel Bethlehem.

Table 19 – Anticipated Near-Term Impact of Development on Parking, Northside Study Area

Map ID	Property	New Commercial (Sq Ft)	New Residential (Units/ Hotel Rooms)	Likely Use	Anticipated Completion	Existing Parkers Displaced	Parking Spaces Added	Anticipated Peak Weekday Demand ¹	Projected Net Parking Surplus/(Deficit)
1	Hotel Bethlehem 437 Main St.	24,553	73	Conference Space; Hotel Rooms	2022	100	460	431	(71)
TOTALS						100	460	431	(71)

1) Based on the Urban Land Institute parking demand factors, adjusted for local conditions.

Source: DESMAN

The expansion's impact on public parking is muted by the fact that the Hotel is also planning to add a net of 360 parking spaces. Should the hotel choose to build less than 360 additional parking spaces as part of the expansion, it would result in additional vehicles having to be accommodated elsewhere in downtown.

The BPA's nearby Walnut Street Garage was observed to have more than 150 spaces available during the weekday peak demand period. Based on this analysis, the combination of the Hotel's expanded parking structure and the Walnut Street Garage should provide sufficient capacity to accommodate the future demand growth during typical days. However, should the BPA decide to demolish and replace the Walnut Street Garage, as discussed previously, not only would the existing demand for the Garage have to be accommodated elsewhere while the facility is rebuilt, the Garage would also need to be designed to account for anticipated future parking demand growth. Additionally, this analysis provides only a snapshot of the parking activity associated with an assumed activity level at the Hotel expansion.

Should more detailed information be provided regarding banquet, conference and event activities, a more comprehensive assessment of parking needs could be developed. Absent this information, and room occupancy projections, we have chosen to include industry standard best practices. We are also not able to assess the need for the hotel to continue to rely on the Bridge Street surface lot to meet its parking demands.

7.2.2 Near-Term Impact of Development on Parking in the Southside Study Area

Given the physical size of the southside study area and the number of anticipated development projects identified by the City, the projects on the southside were divided into two groups – "East" and "West". This was done to address concerns that, while the southside downtown as a whole currently has a surplus of parking, localized parking shortages do exist and will only be made worse in the future as new development occurs and surface parking lots are taken out of service. The geographical size of the southside downtown makes it impractical for the parkers generated by a development on one side of downtown to park on the other side of downtown.

The four development projects that were included in the "east" group are all located east of Taylor Street, while the remaining nine "west" projects are all located west of Adams Street.

Table 20 presents the anticipated parking impacts of the near-term developments on the southside.

Table 20 – Anticipated Near-Term Impact of Development on Parking, Southside Study Area

Map ID	Property	New Commercial (Sq Ft)	New Residential (Units)	Likely Use	Anticipated Completion	Existing Parkers Displaced	Parking Spaces Added	Anticipated Peak Weekday Demand ¹	Projected Net Parking Surplus/(Deficit)
2*	Greenway Commons E. 3rd St. & Fillmore St.	21,225	95	Street-Level Retail; Residential	2018	0	68	130	(62)
3*	315 Columbia St	71,438	-	Industrial	2018	0	42	42	0
7	Old St. Lukes Space E. 3rd St. & Polk St.	-	43	Residential	2019	0	0	43	(43)
11	404 Building 404 E. 3rd St.	18,450	-	Restaurant	2019	0	0	159	(159)
EAST TOTALS						0	110	374	(264)
4*	Greenway Park ³ 306 S. New St	127,694	-	Office	2018	0	626	476	150
5	Broadway Social 215-217 Broadway St.	4,180	-	Street-Level Retail/ Restaurant	2018	10	0	36	(46)
6 ²	Lehigh U dorm 422-440 Brodhead Rd.	850	426	Dorm Rooms; Street-Level Retail	2019	146	0	43	(189)
8	4th & Vine 24 W. 4th St.	2,161	18	Street-Level Retail; Residential	2019	0	0	24	(24)
9	4-story infill 13 W. Morton St.	2,600	3	Office; Residential	2019	0	0	14	(14)
10	Goodman 30 E. 3rd St.	7,461	14	Street-Level Retail; Residential	2019	0	0	22	(22)
12	4th & Adams 321 Adams St.	9,500	30	Street-Level Retail; Residential	2019	0	0	43	(43)
13	Former Starter's 17 W. 2nd St.	21,000	-	Restaurant	2021	0	0	181	(181)
WEST TOTALS						156	626	839	(369)

*Denotes a project already under construction.

1) Based on the Urban Land Institute parking demand factors, adjusted for local conditions.

2) Only 10% of dormitory residents were assumed to bring cars to campus, based on Lehigh's policy of prohibiting freshman from having cars on campus.

3) The parking supply in the BPA's recently-completed New Street Parking Garage was included here due to the fact that this project is adjacent to the Garage and will be connected to the Garage by a pedestrian bridge.

Source: DESMAN

East Side of the Southside Study Area

As shown in the table, the projects located on the east side of the southside study area are projected to generate the demand for 374 parking spaces during the weekday peak demand period, while providing only 110 spaces; the 68 spaces at Greenway Commons and the 42 spaces at 315 Columbia St. are assumed to be self-contained on those properties and not available for public parking. Additionally, while the 404 Building has an existing 48-space parking lot, plans for the project show that lot being eliminated.

While the SteelStacks parking lots currently provide an ample supply of parking on this side of the study area during non-event periods, the inventory of public parking that is controlled by the BPA/City is very limited: the Mechanic & Taylor Lot (Map ID P) is 100% leased to a single entity and not available for use; the Third & Taylor Lot (Map ID M) has slightly more than 30 spaces available at peak, and; there are approximately 50 on-street metered spaces total within 1 block of these projects. Not including the SteelStacks parking lots, this analysis indicates that there are currently approximately 80 public parking spaces available to accommodate a future peak demand of 264 vehicles, a real deficit of more than 180 spaces – this does not take into consideration the vehicles observed currently parking in the SteelStacks lots during the daytime on weekdays (a maximum of 275 vehicles were observed parking in the Ruins East and Ruins West lots during the field surveys). Additionally, the above deficit does not include the 30-40 new Northampton Community College students expected to attend classes at the Fowler Center (511 E. 3rd Street) by Summer 2018.

Over the past several years, the BPA and City have studied the feasibility of constructing a parking garage at the northeast corner of Polk Street and E. 3rd Street, to accommodate anticipated future parking

shortfalls on this side of the southside downtown. In consultation with DESMAN, plans were developed for the Bethlehem Redevelopment Authority for construction of an approximately 600-space garage to replace the existing surface parking lot. While the final sizing of the garage is dependent on the future use of the Ruins Lots, a parking garage in this location could help to satisfy the anticipated parking shortfall created by development on this side of the southside downtown.

West Side of the Southside Study Area

On the west side of the southside downtown, the 8 projects identified by the City as being completed in the near-term are projected to generate the demand for 839 parking spaces during the weekday peak. In addition, based on the current utilization of the BPA's Broadway Street Lot (Map ID J), which will be eliminated by the expansion of Broadway Social, and the current utilization of Lehigh University's lot on Brodhead Avenue, which will be eliminated by the University's new dormitory project, approximately 156 peak parkers will be displaced from these facilities. The result is 995 parkers in need of a space during the weekday peak. While the recently-completed New Street Parking Garage will make 626 spaces available in the vicinity of these developments, the result is an anticipated shortfall of 369 spaces at peak.

Given the location of the former Starter's restaurant in the Lehigh Riverport and the significant parking availability that exists in the Lehigh Riverport Garage (Map ID F), the Lehigh Riverport Lot (Map ID G) and on-street metered and unmetered spaces in the immediate vicinity, it can be reasonably assumed that the parking demand generated by a future restaurant in this location (181 vehicles during the weekday peak) could be entirely satisfied by those parking facilities. This assumption reduces the remaining parking deficit resulting from the west side redevelopment projects to 188 spaces.

While it is unclear where the parkers being displaced by the Lehigh dormitory project will park in the future, the University was granted a parking variance for this project by the City, based on the location of the project along University bus routes and an excess of student parking on the campus as a whole. Assuming that the 189 parkers to be displaced as a result of or generated by this development will be satisfied elsewhere on Lehigh's campus, the remaining parking deficit from these future development projects can be satisfied by the excess capacity in the New Street Parking Garage, as well as existing on-street metered spaces along Brodhead Avenue, Morton Street, W. 4th Street, and other streets in the area.

7.2.3 Summary of the Near-Term Impact of Development on Parking

Based on the list of development projects for which plans had been submitted as of the date of this report, there is the potential for a number of these projects to have a significant impact on the supply of and demand for public parking in both the northside and southside downtowns.

In the northside downtown, the planned expansion of the Hotel Bethlehem has the potential to draw more than 400 additional parkers to the area. While much of this demand would be satisfied by an expanded on-site parking garage, if the garage expansion is not included in the project, the existing supply of on-site parking and the public parking supply in the vicinity of the Hotel would be insufficient to satisfy the additional demand. Furthermore, if the BPA's existing Walnut Street Garage is demolished and rebuilt, which may be necessary due to the structure's age and condition, there would be a need to temporarily accommodate any new parking demand, plus the more than 600 vehicles that currently use the garage at peak, in an alternate location or locations.

On the southside, the number of development projects and their geographic distribution means that the parking impacts from these projects will be felt throughout this study area. On the east side of the southside downtown, 2 in-progress and 2 proposed projects have the potential to generate a parking deficit of more than 180 spaces. This deficit could be even larger should the Sands Corporation choose to prohibit daily public parking in its Ruins East and Ruins West parking lots – eliminating public parking in these lots could increase the peak parking deficit to more than 450 spaces in this area of the southside downtown.

On the west side of the southside downtown, despite significant parking demand being generated by development and existing parking supply being eliminated, available public parking capacity, in older BPA facilities, on-street and in the recently-completed New Street Parking Garage, should be sufficient to satisfy the net new demand in the short-term. The capacity available in the existing public parking around the Lehigh Riverport should be more than adequate to satisfy the new demand generated by the proposed restaurant (Figure 16, Map ID 13). Current parkers displaced and new parkers generated by Lehigh University's new dormitory project (Map ID 6) will either be accommodated on-site or in other Lehigh parking facilities, per the University's plans for the project. Any spillover demand from this project, as well as the demand generated by the other developments on the west side (noted in Table 20), can be accommodated in the excess capacity in the New Street Parking Garage or in the public on- and off-street spaces in the vicinity of each project.

7.3 Long – Term Impact of Development on Future Parking Supply and Demand

In addition to the project-specific development information, the City's Community and Economic Development and Planning and Zoning departments were also able to generally quantify the level of development being targeted in both downtowns between 5- and 10-years from now. Per the City, these estimates are based on informal discussions with developers, an internal assessment of currently-vacant buildings and existing buildable parcels, among other information. While the total development square footages and residential unit numbers have been provided, these figures are not location-specific. Rather, this is the total amount of additional development expected in the northside and the southside downtowns over the medium- and long-term.

Identified as "Miscellaneous Anticipated Development" in Tables 17 and 18 (above), in the northside downtown, the City is anticipating approximately 185,500 SF of commercial space and 227 residential units will be developed in the long-term. On the southside, 220,000 SF of commercial space and 1,500 residential units are expected.

Ideally, in order to reasonably project the additional parking demand that will accompany this development, we would need to know the type of commercial space that will be developed (i.e. retail, residential, office, etc.), as well as the mix of owner-occupied versus residential rental units. Additionally, in order to understand the ability of the existing parking supply to satisfy the future demand, we would need to know where each project will be located. However, given the fact that neither the development mix nor the locations of these future projects are available at this time, any detailed parking demand projections are impossible.

To provide a broad sense of the impact that these levels of development could have on parking, if we assume that commercial square footage could generate from a low of 3 vehicles per 1,000 SF (Office) to a high of 18 vehicles per 1,000 SF (Fine Dining) and housing could generate from 0.5 to 2.0 vehicles per

unit (or more), then the impact of the “Miscellaneous Anticipated Development” on peak parking demand in each downtown could be in the range of:

Northside Downtown

- Minimum: 670 vehicles
- Maximum: 3,800 vehicles

Southside Downtown

- Minimum: 1,400 vehicles
- Maximum: 7,000 vehicles

At a minimum, barring a dramatic shift in personal vehicle usage, the northside downtown would need to accommodate more than 670 additional vehicles, while the southside downtown would need to accommodate more than 1,400 additional vehicles, based on these development estimates.

Given the uncertainty surrounding this longer-term development, we do not recommend factoring any additional future parking demand from this development into the BPA’s/City’s decision-making at this time. However, as more information about these (or other) projects comes to light, the future parking supply and demand projections presented in section 7.2 should be updated to account for the impact of these projects.

8. CONCLUSIONS AND SUMMARY OF ISSUES

Based on the data collected, the stakeholder discussions and the analysis performed, the following is a list of the key issues to be addressed. As best as possible, the issues are grouped into similar categories and correspond to the recommendations presented later in the document. While this list of issues is intended to be comprehensive, as this report was drafted to be a living planning document to be used by the BPA and the City for years to come, other issues may arise in the future which could not have been foreseen at the time this document was authored.

Public Parking Supply and Demand

- a. In the northside downtown, during the early afternoon peak demand period (weekday), there is an ample amount of public parking available; at this time, none of the off-street public parking facilities in the northside downtown were observed to be more than 80% occupied; on certain street segments, the on-street metered parking spaces were between 85% and 100% occupied, but an on-street metered space was typically available within 1 or 2 blocks of any destination.
- b. In the southside downtown, during the morning peak demand period (weekday), there is an ample amount of public parking available; at this time, none of the BPA’s off-street public parking facilities were observed to be more than 60% occupied; only a handful of street segments with on-street meters were between 85% and 100% occupied – on-street spaces were available on most blocks.
- c. In certain off-street parking facilities providing monthly parking, consistently-low levels of utilization may justify an increase in the oversell of monthly permits.
- d. A lack of 10-hour metered parking on W. Broad Street, west of 4th Avenue, makes it difficult for some businesses to accommodate customers.

- e. Having four different parking time limits at the on-street meters in the southside downtown is inconsistent with the operation of the meters in the northside downtown and makes metered parking more cumbersome to enforce.
- f. The mix of monthly versus hourly spaces in certain off-street parking facilities does not appear to satisfy the prevailing demand.
- g. In the southside downtown, in non-residential areas, a significant amount of free on-street parking located in close proximity to the BPA's/City's metered parking spaces appears to negatively impact the management and revenue-generating potential of the meter system.
- h. At present, it appears that a significant number of public vehicles park in the SteelStacks parking lots on a daily basis, particularly the Ruins East and Ruins West lots, which are not associated with SteelStacks-related activities; if restrictions were imposed on the lots to prohibit daily public parking, the result would be an influx of several hundred vehicles to the BPA's/City's public parking system.
- i. Based on development information provided to DESMAN, in the northside downtown, the existing supply of public parking appears adequate to satisfy the future demand for parking.
- j. Based on development information provided to DESMAN, in the southside downtown, the existing supply of public parking appears adequate to satisfy the future demand for parking on the west side of the study area, while there appears to be a significant parking shortfall on the east side of the study area.
- k. During Musikfest, many of the BPA's parking facilities in the southside downtown are underutilized, despite their proximity to the event's largest music venues.
- l. During large events, Musikfest in particular, property owners in the vicinity of the events often charge for public parking on their property, negatively impacting the revenue of the BPA.

Operations

- a. According to several business owners/managers, event parking information is not clearly presented and is not provided far enough in advance of events to allow for proper planning.
- b. Several members of the public, business-owners/managers and on-line survey respondents expressed concern over the cleanliness of the BPA's Walnut Street and North Street parking garages.
- c. Directional signage and wayfinding to the off-street parking facilities is lacking or confusing; having proper and clear signage can greatly enhance the customer experience.
- d. The user experience, particularly for visitors, could be improved at the Walnut Street, North Street and New Street parking garages if information about each downtown and their major points of interest were posted within the facilities.

Parking Rates and Fines for Violations

- a. Compared to other similar municipalities both in the Commonwealth and in neighboring states, the parking rates and fine amounts for violations in Bethlehem are below market rate.
- b. The hourly rate at on-street meters is equal to the hourly rate in the BPA's off-street facilities, creating no financial incentive for longer-term parkers to use the off-street facilities.
- c. There is no mechanism in place to allow the Authority to increase or decrease parking rates at its discretion to adjust to the changing needs of the parking operation – parking rates and fines for violations must be approved by the Mayor and/or City Council, with changes occurring only infrequently.
- d. Parking rates need to be adjusted from time-to-time to allow the Authority to fund capital improvements, maintenance and repairs.

Technology

- a. In general, the BPA has been diligent in upgrading its revenue control and enforcement technology.
- b. There is an opportunity for the BPA to increase the efficiency of its enforcement operation by continuing to expand its use of license plate recognition (“LPR”) technology to enforce on-street permits, as well as transient and monthly parking in ungated, off-street facilities; in the future, this technology could also be used to enforce on-street metered parking.
- c. The BPA has room to improve the environmental-sustainability of their operations – at present, none of the BPA’s parking facilities contain electric vehicle charging stations and only one has been upgraded with LED lighting.

Future Capital Repair/Replacement and Development Opportunities

- a. A decision must be made as to the disposition of the Walnut Street Garage – should the facility be restored and maintained or is it more advantageous to demolish the structure and rebuild. An engineering assessment of the Garage has been completed by DESMAN which details the cost to repair and maintain this facility over the long-term – the total cost was estimated at \$9-\$11.5MM over the next 20 years. If the Walnut Street Garage is to be demolished, a well-thought-out plan must be developed for how to accommodate the facility’s existing parkers during demolition and reconstruction. The cost of such a plan should be factored into the repair or replace decision-making process.
- b. Historically, the BPA has paid for new equipment and repairs to its parking garages and surface lots from operating revenues. If the Authority’s future operating revenues are insufficient to properly fund these repairs/replacements, the physical assets of the parking system will deteriorate and lead to a decline in the customer experience and higher future repair/replacement costs.
- c. In the northside downtown, the Broad Street Lot is one of the largest developable parcels still available in the heart of the downtown. Developing this parcel would help the BPA and City to maximize the value of this land, but it may also have an impact on the parking characteristics of the northside downtown.
- d. In the southside downtown, the surface lots on Mechanic Street and the 4th & Buchanan Lot are prime locations for development. However, developing these parcels may have an impact on the parking characteristics of the southside downtown.

9. NORTHSIDE AND SOUTHSIDE DOWNTOWN PARKING STUDY RECOMMENDATIONS

9.1 Purpose of Recommendations

The recommendations which follow were developed by DESMAN in order to address each of the issues identified throughout the course of this study. The recommended changes to the operations, management, policies, and physical assets which makeup the City of Bethlehem’s public parking system are intended to address the current needs of the northside and southside downtown study areas, as well as the anticipated needs of these areas over the next several years. While none of the recommended changes will, by themselves, remedy all of the existing or future parking-related issues within the two study areas, the goal is to make incremental improvements in order to address anticipated future parking shortfalls, to improve the experience of parking users, to address the concerns raised by the City’s stakeholders, and to ensure that the Bethlehem Parking Authority remains financially self-sustaining.

As these recommendations are implemented, the BPA and the City should cooperate in marketing the changes to the public, so that the City's stakeholders are informed about efforts to improve the parking system.

9.2 Timing of Recommendations

While the impacts of the recommended changes can be predicted to a certain extent, there is a degree of uncertainty in how each change could impact the rest of the public parking system. Additionally, if anticipated development does not occur to the extent predicted or is more intense than expected, this could impact the implementation of some of the recommendations.

Due to the uncertainty around the impact that these recommendations will have on the current and future parking dynamics within the two study areas, the proposed implementation timetable has been designed to allow time for the impacts of the changes to be felt, before additional changes are made to the system. In our experience, this approach is more successful than attempting to implement all of the recommended changes at one time and dealing with any unintended consequences in a piecemeal way. Hopefully, this will allow changes to the parking system to be made in a methodical way, avoiding a situation where the BPA spends resources on recommendations that do not result in an improved parking operation or must walk back a change that had an unintended, negative consequence.

9.3 Anticipated Costs/Benefits of Implementation

For each of the recommended changes or improvements, an anticipated financial impact has been provided. While the actual costs of implementing the recommendations and/or revenue generated is yet to be determined, these indicators are intended to provide the BPA and the City with an idea of the financial commitment associated with each recommendation.

9.4 Recommendations

To the extent possible, the recommendations which follow generally correspond to the categories presented in Section 8: Conclusions and Summary of Issues. Presented at the end of the detailed recommendations, **Table 21** provides a brief summary of each recommendation, along with its anticipated cost and anticipated implementation timeframe.

Public Parking Supply and Demand

- a. ***Increase the oversell of monthly permits in off-street facilities.*** The BPA currently oversells monthly permits in their off-street parking facilities to some extent. However, based on the utilization data gathered as part of this study, there is the opportunity for the BPA to increase the amount of oversell.

It is recommended that the BPA conduct weekly peak utilization surveys of its high-demand off-street facilities (i.e. Broad Street Lot, Walnut Street Garage, Upper/Lower Commons Garage, and Mechanic Street lots), to determine which facilities have the ability to accommodate additional monthly permit parkers. It is further recommended that these facilities continue to be oversold to the point where the peak utilization of the facilities approaches 90%.

<i>Estimated Cost to Implement:</i>	Nominal (minimal BPA staff time)
<i>Estimated Revenue Impact:</i>	Nominal positive impact
<i>Estimated Timeframe:</i>	Short-Term

- b. ***Adjust the mix of monthly versus transient parking spaces in off-street facilities.*** Based on surveys of the utilization of the Upper/Lower Commons Garage, the metered spaces on the upper portion of the garage were consistently observed to be significantly more well utilized than the monthly permit spaces on the lower level of the garage. Additionally, the availability of on-street metered parking spaces in the vicinity of the Broad Street Lot indicates that few, if any, transient spaces need to be set aside in this lot to serve transients during regular business hours.

In the southside downtown, stakeholders expressed a desire for the BPA to allow transient parking in the Mechanic Street parking lots after regular business hours. At present, these lots are restricted for use by monthly permit parkers at all times.

In the Upper/Lower Commons Garage, it is recommended that additional spaces in this facility be made available for daytime transient parking; the existing payment kiosk at the lower level of the facility can be used for payment. However, this change may require renegotiation of an existing lease governing use of the lower level of this facility.

In the Broad Street Lot, it is recommended that fewer spaces be set aside for transient parking.

In the Mechanic & Taylor Lot and/or the Mechanic & Webster Lot, it is recommended that a portion of the spaces be made available for public parking after regular business hours and on weekends; this could be accomplished through the installation of a pay-by-plate or pay-by-space kiosk and appropriate signage indicating the restrictions on use. Again, existing leases at these facilities may have to be renegotiated in order to allow this change.

Finally, it is recommended that the mix of monthly versus transient parking be examined in all of the BPA's off-street public parking facilities, in order to establish the proper mix of spaces to maximize utilization.

If the current contracts for monthly permit parking preclude these changes, the existing contracts should be adjusted, cancelled or renegotiated.

<i>Estimated Cost to Implement:</i>	\$8,000-\$24,000 (payment technology in Mechanic Street lots)
<i>Estimated Revenue Impact:</i>	Nominal positive impact
<i>Estimated Timeframe:</i>	Short-Term

- c. ***Convert existing 3-hr. meters to 10-hr. meters in the northside downtown.*** In order to address the needs of northside business owners, it is recommended that the 3-hr. meters on the north side of Broad Street between 4th Avenue and 6th Avenue be converted to 10-hr. meters. The longer time limits will help provide businesses that lack off-street parking with a longer-term parking option for their patrons. Based on utilization data for this area of W. Broad Street, there will still be an ample number of 3-hr. meter spaces available in close proximity for any short-term parkers that are displaced by this change.

<i>Estimated Cost to Implement:</i>	Nominal (minimal BPA staff time)
<i>Estimated Revenue Impact:</i>	Nominal positive impact
<i>Estimated Timeframe:</i>	Short-Term

- d. **Convert existing 3-hr. meters to 10-hr. meters in the southside downtown.** In an effort to capture some of the Lehigh University parking demand displaced by construction of the new dormitory project on Brodhead Avenue, it is recommended that the following 3-hr. meters be converted to 10-hr. meters: the 26 meters on the west side of Brodhead between W. 4th Street and W. Packer Avenue; the 16 meters on the east side of Brodhead between W. Morton Street and W. Packer Avenue; the 28 meters on the north and south sides of the 100 block of W. Packer Avenue, and; the 34 meters on the east and west sides of Vine Street between W. Morton Street and W. Packer Avenue.

These spaces do not serve retail or restaurant businesses that may desire shorter durations of stay. In addition, most of these spaces are currently very underutilized. Converting these meters to longer durations may draw additional Lehigh University student and/or faculty and staff parkers to the BPA's parking system, generating additional revenue for the City.

<i>Estimated Cost to Implement:</i>	Nominal (minimal BPA staff time)
<i>Estimated Revenue Impact:</i>	Potentially significant positive impact
<i>Estimated Timeframe:</i>	Short-Term

- e. **Convert existing 4-hr. meters to 3-hr. meters.** Reducing the number of different on-street parking time limits will help simplify the process of parking enforcement, while helping to reduce confusion for parkers who use on-street meters in different parts of the city. It is unclear why a 4-hr. time limit was imposed for the parking meters on 4th Street between Brodhead Avenue and Adams Street, where the mix of businesses could be equally well-served by 3-hr. spaces. For these reasons, it is recommended that the 60 4-hr. meters on 4th Street be converted to 3-hr. meters to align with the prevailing parking meter time limit in both downtowns.

<i>Estimated Cost to Implement:</i>	Nominal (minimal BPA staff time)
<i>Estimated Revenue Impact:</i>	N/A
<i>Estimated Timeframe:</i>	Short-Term

- f. **Convert existing 13-hr. meters to 3-hr. or 10-hr. meters.** Reducing the number of different on-street parking time limits will help simplify the process of parking enforcement, while helping to reduce confusion for parkers who use on-street meters in different parts of the city. It is unclear why a 13-hr. time limit was imposed for a small segment of meters on Mechanic Street. However, the mix of businesses in this area could be equally well-served by 3-hr. or 10-hr. meter spaces, a monthly permit in one of the Mechanic Street lots or parking in the New Street Parking Garage. For these reasons, it is recommended that the 5 13-hr. meters on Mechanic Street be converted to either 3-hr. or 10-hr. meters, based on discussions with businesses in the area.

<i>Estimated Cost to Implement:</i>	Nominal (minimal BPA staff time)
<i>Estimated Revenue Impact:</i>	N/A
<i>Estimated Timeframe:</i>	Short-Term

- g. **Impose on-street parking restrictions and add meters in non-metered areas in the southside downtown.** Unrestricted on-street parking spaces near southside downtown businesses directly compete with the BPA's paid parking facilities. These unregulated stretches of streets provide free parking to dozens of vehicles, sometimes immediately adjacent to an on-street metered parking space or a paid off-street facility. Imposing parking restrictions and installing meters on these streets will

drive parkers to the BPA's off-street facilities. Restricting and metering parking on these streets will not impose a burden on any residential properties in the southside downtown, nor discourage business activity, it will simply act to move long-term employee parkers off the street and short-term parkers to metered spaces and improve parking operations.

Over the course of the utilization surveys, a significant number of vehicles were regularly observed during normal business hours parking on the following streets: the north and south sides of W. 2nd Street, just west of the Lehigh Riverport; the south side of Columbia Street between Webster Street and Taylor Street; the east and west sides of Webster Street between Columbia Street and E. 1st Street, and; the west side of Polk Street between Columbia Street and E. 1st Street. In addition, adding metered parking spaces on E. 3rd Street east of Fillmore Street will not only add to the public parking supply, it will also serve to calm traffic on E. 3rd Street, making the area safer for both vehicles and pedestrians.

<i>Estimated Cost to Implement:</i>	Unknown (dependent on number of new meters)
<i>Estimated Revenue Impact:</i>	Potentially significant positive impact
<i>Estimated Timeframe:</i>	Medium-Term

- h. ***Pre-sell event parking in the Mechanic Street parking lots during Musikfest.*** Despite their proximity to the largest Musikfest venues, the BPA's Mechanic Street parking lots often go unused or under-used during the festival. Conversely, a number of temporary competing parking locations, some of which are across the street from the Mechanic Street lots, often fill to capacity. Given their locations, these lots are not visible to potential customers driving along 3rd or 4th streets. Low demand for these lots can result in the BPA expending resources to staff the facilities, while not generating much revenue.

Instead of relying on drive-up traffic to fill the Mechanic Street parking lots during Musikfest and other large events, it is recommended that the BPA pre-sell parking in these facilities. This will reduce the cost to operate these lots, by replacing a cashier who must remain on-site constantly with a Parking Enforcement Officer who can patrol the lot on their regular enforcement route. There is also the potential to generate additional revenue from visitors who want to know they have a guaranteed parking spot before arriving in Bethlehem.

<i>Estimated Cost to Implement:</i>	Nominal (minimal BPA staff time for enforcement and administration)
<i>Estimated Revenue Impact:</i>	Potentially significant positive impact
<i>Estimated Timeframe:</i>	Short-Term

- i. ***Develop a plan to manage the impending parking shortfall on the east side of the southside downtown.*** As noted previously, the combination of new development and an unreliable source of existing parking on the east side of the southside downtown has the potential to create a significant parking shortage within the next few years. The nearly 300 vehicles parking in the Ruins East and Ruins West lots during the weekday peak period could be displaced, if and when restrictions are imposed on parking in these facilities. In addition, development which is expected to be completed by 2019 is anticipated to generate demand for approximately 180 more parking spaces than are being constructed as part of the projects. Finally, additional future development on this side of the southside

downtown has the potential to generate the demand for hundreds, if not thousands, of additional parking spaces.

For these reasons, it is recommended that a plan be developed to manage the impending parking shortfall on the east side of the southside downtown. This plan could include a new parking structure, which has been discussed in the past for the corner of E. 3rd Street and Polk Street, or a formalized agreement with the Sands Corporation to ensure that the SteelStacks parking lots will remain available for public parking in the long-term.

<i>Estimated Cost to Implement:</i>	Unknown
<i>Estimated Revenue Impact:</i>	Potentially significant negative impact
<i>Estimated Timeframe:</i>	Medium-Term

- j. ***Bring operational control of the Ruins Lots under the BPA.*** At the present time, the Bethlehem Redevelopment Authority controls parking in the Ruins Lots, despite not having the personnel or operations expertise to maximize the use of these spaces or properly maintain the facilities. For continuity in the operation of public parking, it is recommended that the BPA operate, manage, and control these facilities including, potentially, charging for parking. The BPA can ensure that these facilities are operated in a manner consistent with the rest of the public parking system, providing a consistent experience for the users of the entire public parking system.

<i>Estimated Cost to Implement:</i>	Nominal (minimal BPA staff time for enforcement and administration)
<i>Estimated Revenue Impact:</i>	Potentially significant positive impact
<i>Estimated Timeframe:</i>	Medium-Term

- k. ***Implement policies and procedures for licensing paid public parking facilities not controlled by the BPA/City.*** As noted during DESMAN's observations of Musikfest, a number of private property owners posted signs indicating that paid public parking was available on their property. In most instances, it was unclear who was charging for parking, only that a person could park their vehicle for a fee. Additionally, most of these temporary paid parking operations were located in close proximity to a BPA off-street parking facility or on-street metered spaces. These facilities are in direct competition with the BPA's/City's public parking system, resulting in estimated lost revenue of more than \$30,000 per year. At present, these operations are unregulated.

In order to ensure that the individuals operating paid parking facilities are actually the owners of the properties where vehicles are being parked and to provide a means for users of the facilities to contact the responsible party in cases of emergency, theft or other issues, it is recommended that policies and procedures be implemented to regulate paid public parking in the City. It is recommended that each property owner who chooses to charge for public parking be required to obtain a license to operate parking and to pay a fee to cover the City's/BPA's costs for administering and enforcing the regulations. In order to obtain a license, it is recommended that the property owner be required to provide: 1) the name and contact information of the person responsible for overseeing the operation; 2) proof of ownership of the property or proof that they have been granted permission by the property owner to use their property for public parking; 3) proof that the property is insured for this type of business activity; 4) a maximum number of vehicles that will be parked on the property at any one time, and; 5) payment of any applicable licensing fee.

<i>Estimated Cost to Implement:</i>	Nominal (minimal BPA and City staff time)
<i>Estimated Revenue Impact:</i>	N/A (costs of administration and enforcement should be off-set by licensing fees)
<i>Estimated Timeframe:</i>	Medium-Term

Operations

- a. ***Increase notifications/information available to public related to impending system changes.*** According to the input received during the stakeholder meetings, many business owners/managers and large institutions indicated that have not been made aware of changes to the parking operation that have been implemented, which significantly impact their businesses/operations, prior to their implementation. There was a sense that the BPA changes rules or restricts the use of spaces as they see fit, without notice or for no reason.

It is understood that, despite the fact that some temporary operational changes are not under the control of the BPA, such as street closures for large events, the BPA often takes the brunt of the fallout for anything that impacts parking. However, it is recommended that the BPA, in conjunction with the City, work to make notifying/informing the public of impending changes to the parking system more frequent and more thorough. In addition to posting information about upcoming event parking and other temporary or permanent operational changes on the BPA's website, it is recommended that this information also be published in the local newspaper, posted in the BPA's off-street parking facilities, advertised via social media, and shown on the City's website, whenever possible. Additionally, the existing notifications that are provided by the BPA to those who sign-up on its website should be expanded for business use. Finally, it is recommended that the BPA investigate the potential of using the MobileNOW! application to push system notifications directly to parking system users.

This additional level of notification and information sharing should hopefully reduce the number of issues that arise when changes to the parking system's assets or operations are made.

<i>Estimated Cost to Implement:</i>	Nominal (minimal BPA staff time)
<i>Estimated Revenue Impact:</i>	N/A
<i>Estimated Timeframe:</i>	Short-Term

- b. ***Increase the frequency with which the parking garages are cleaned.*** A number of city stakeholders, including both business-owners/managers and regular citizens who responded to the on-line survey, expressed concern over the cleanliness of the BPA's Walnut Street and North Street parking garages. The cleanliness of a parking facility can influence a visitor's future parking behavior. If a facility is clean and well maintained, a parker who uses the facility is more likely to do so again when visiting in the future. An unkept parking facility can have the opposite effect.

Per the BPA, a parking deck scrubber was recently purchased in order to address some of the concerns related to the cleanliness of the parking garages. On top of this, DESMAN recommends that the BPA's maintenance personnel be directed to increase the number of times per week that the parking garages are cleaned and the trash emptied. This is especially important before regular monthly parkers arrive on Monday morning and after downtown events.

Estimated Cost to Implement: Nominal (minimal BPA staff time)
Estimated Revenue Impact: N/A
Estimated Timeframe: Periodically, as needed

- c. **Ensure directional and wayfinding signage is clear and appropriate.** According to the BPA, a signage consultant was hired by the City to conduct a thorough assessment of signage throughout Bethlehem, including parking-related signage. Subsequently, the BPA hired this same consultant to complete an assessment of and make recommendations regarding the signage related to the parking system. It is recommended that the recommendations that result from this assessment be implemented and that the BPA ensure that all old wayfinding and informational signage related to parking has been removed.

Estimated Cost to Implement: Nominal (minimal BPA staff time)
Estimated Revenue Impact: N/A
Estimated Timeframe: Short-Term

- d. **Install informational signage and maps within the BPA's off-street parking facilities.** It was pointed out during the stakeholder meetings that there is very little, if any, permanent signage in the BPA's parking garages showing parkers where they are in relation to the rest of the city or where to go once they leave the facilities. Providing simple maps near the elevators in the garages showing the location of the facility in relation to major points of interest could help improve the parking customer experience, especially for infrequent visitors to the two downtowns.

It is recommended that the BPA work with the City and, possibly, the businesses within each downtown to develop maps and other information that can be posted inside each garage. Involving the downtown businesses in the process could help improve relations between the BPA and the parking system's users. These permanent informational signs and maps should conform to the City's overall signage and wayfinding plan.

Estimated Cost to Implement: Nominal (minimal BPA staff time and sign production costs)
Estimated Revenue Impact: N/A
Estimated Timeframe: Short-Term

Parking Rates and Fines for Violations

- a. **Increase on-street metered parking rates.** When the hourly parking rate at on-street meters is equal to the hourly rate in off-street facilities, there is no financial incentive for longer-term parkers to park off-street. The principal behind charging a higher per hour rate on-street is to increase the turnover of on-street spaces, increasing the likelihood that a space will be available when the next parker arrives.

Unlike the off-street transient rates and monthly permit rates, which were increased in 2016, the on-street hourly parking rate has not increased since 2012. Not only has this created a situation where the on-street hourly rate matches the off-street rate, on-street rates have not been allowed to increase to off-set the rising costs of operating and maintaining the parking system.

For these reasons, it is recommended that the hourly rate to park at an on-street metered space be increased.

Estimated Cost to Implement: Nominal (minimal BPA staff time)
Estimated Revenue Impact: \$250,000 or more annually
Estimated Timeframe: Short-Term

- b. ***Increase fines for parking violations.*** At \$10 for a metered parking violation, Bethlehem is at half of the \$20 average fine imposed by comparable municipalities. In addition, if the on-street meter rate is increased as recommended, the current fine amount will likely not provide significant enough of an incentive for drivers to pay their meters. Based on the industry best practice that the fine for a parking meter violation should be 10-15 times the hourly rate charged, it is recommended that the fine for metered parking violations be increased from \$10 to \$15. It is further recommended that this \$5 increase be applied to all other parking violations, in order to account for the rising cost of operating and enforcing parking regulations in the city.

Estimated Cost to Implement: Nominal (minimal BPA staff time)
Estimated Revenue Impact: \$400,000 annually
Estimated Timeframe: Short-Term

- c. ***Institute a policy of regular rate increases.*** The costs associated with operating and maintaining a parking system are substantial and increase consistently over time due to inflationary pressure. However, often times, parking rate and fine increases do not occur frequently enough to keep pace with rising operating costs. Due to the substantial debt obligations of the BPA (which the City guarantees) and ongoing capital needs of the parking system, it is crucial that parking rates and fines increase in the future with reasonable regularity, in order to ensure that the BPA can meet its obligations and properly maintain the system. Additionally, the BPA has a bond obligation to set rates at levels necessary to maintain a 1.25 Debt Service Coverage Ratio and pay the rest of their obligations, which needs to be considered when setting on-street parking rates, off-street parking rates and parking fine amounts.

For these reasons, it is recommended that regular rate and fine increases be implemented as a matter of policy. This should apply not only to the transient and monthly rates in the BPA's off-street public parking facilities, but also to the fines for parking violations and the on-street permit rates. In the event that surplus revenues result from any future parking rate or fine increases, these funds can be used to finance initiatives aimed at improving both downtowns.

Estimated Cost to Implement: Nominal (minimal BPA staff time)
Estimated Revenue Impact: TBD
Estimated Timeframe: Periodically

Technology

- a. ***Expand use of license plate recognition for enforcement.*** While the BPA currently uses license plate recognition ("LPR") technology to enforce parking time limits and meter feeding activity, there is an opportunity for the technology to be employed to further increase the Authority's enforcement operation. Per the Executive Director of the BPA, the Authority already has plans to increase the use

of LPR technology in the future, using license plate numbers to identify on-street permit holders, instead of the existing sticker system, and moving to pay-by-plate in its off-street facilities that offer transient parking.

In addition to these uses of LPR, it is recommended that the BPA use the technology to monitor and enforce monthly parking in its ungated parking facilities. Eliminating monthly permit hangtags and enforcing using LPR will greatly improve the efficiency of the enforcement operation and eliminate any potential duplication or misuse of the existing hangtags.

In the future, when the BPA's existing inventory of IPS single-space meters have reached the end of their useful life, it is recommended that the BPA evaluate the implementation of multi-space, pay-by-plate technology for on-street parking. This type of metering technology works in conjunction with LPR technology, eliminating the need for manual enforcement of parking meters.

<i>Estimated Cost to Implement:</i>	Already budgeted by the BPA
<i>Estimated Revenue Impact:</i>	N/A
<i>Estimated Timeframe:</i>	Medium-Term

- b. ***Expand use of environmentally-friendly technologies in BPA facilities.*** Aside from the New Street Garage, which was constructed with an energy-efficient LED lighting system, none of the BPA's other facilities currently employ this technology. Converting legacy lighting systems in parking facilities to more efficient LED systems can yield significant cost savings for the BPA, in addition to the obvious environmental benefits associated with lower electricity consumption. For these reasons, it is recommended that the BPA continue to upgrade the lighting in all of its parking facilities to LED technology, as the budget allows; the BPA has already set aside \$35,000 in its current budget for this purpose.

With the growing prevalence of electric and hybrid vehicles, there is a growing need for EV charging stations that are available for public use. Being the largest provider of public parking in Bethlehem, the BPA should strive to accommodate this trend in vehicle ownership by providing EV charging stations in its parking facilities. For this reason, it is recommended that at least one EV charging station be installed in both the North Street Garage and New Street Garage to serve this segment of parkers. To ensure that the EV charging stations are available for use by owners of rechargeable vehicles, it is recommended that rules be put in place to prohibit parking in these spaces by non-electric or hybrid vehicles. In addition, a fee structure should be established so that the BPA can recoup the cost of the electricity that is provided via the EV charging stations. Finally, once the technology is installed, the BPA should promote the new stations both on its website and with signage in each facility.

In addition to these specific recommendations, as new technology becomes available and as budgets permit, it is recommended that the BPA seek to improve the energy-efficiency and environmental-sustainability of other aspects of its operation. For instance, when it is time to replace the BPA's enforcement or maintenance vehicles, the costs and benefits of purchasing or leasing alternative fuel vehicles for this purpose should be investigated. Additionally, if the Walnut Street Garage is demolished and replaced, the BPA should seek to incorporate green technologies into the replacement parking garage where financially and technically feasible.

<i>Estimated Cost to Implement:</i>	Unknown (dependent on lighting technology and number of EV charging stations purchased versus electricity cost savings)
<i>Estimated Revenue Impact:</i>	N/A
<i>Estimated Timeframe:</i>	Medium-Term

Future Capital Repair/Replacement and Development Opportunities

- a. ***Demolish and reconstruct the Walnut Street Garage.*** Based on the results of DESMAN’s engineering assessment of the Walnut Street Garage, as well as an estimate of the cost to build a replacement facility, it is recommended that the Garage be demolished and replaced. It is further recommended that a separate evaluation be completed to determine the appropriate size of the replacement facility, as well as opportunities to include other uses in the existing property footprint. In addition, it is recommended that the BPA and City work collaboratively to develop a plan for how to accommodate the facility’s existing parkers during demolition and reconstruction. It is further recommended that the northside downtown business community be involved, to some extent, in the process of developing the interim plan or, at a minimum, that they be regularly updated on the interim operating plan.

<i>Estimated Cost to Implement:</i>	Approximately \$20,000,000
<i>Estimated Revenue Impact:</i>	Temporary decline in revenue during construction; no anticipated long-term negative impact
<i>Estimated Timeframe:</i>	Medium-Term

- b. ***Establish a capital repair and replacement reserved fund.*** In order to ensure that the BPA has sufficient resources to fund future parking facility repairs and equipment purchases, it is recommended that a dedicated fund be created for this purpose and that the BPA set aside \$200,000 annually in this fund; this equates to roughly \$100/space for the garages and \$25/space for the surface lots and on-street meters. It is further recommended that this amount be increased annually in order to keep pace with inflation.

<i>Estimated Cost to Implement:</i>	\$200,000 in the first year
<i>Estimated Revenue Impact:</i>	N/A
<i>Estimated Timeframe:</i>	Short-Term

- c. ***Explore opportunities to develop the BPA’s surface parking lots.*** In dense downtowns, such as Bethlehem, surface parking lots are not the highest and best use of the land. These pieces of property may be more valuable to the citizens of Bethlehem and the City if they are developed into commercial and/or residential uses. For this reason, it is recommended that the BPA, in cooperation with the City’s Community & Economic Development and Planning & Zoning Departments, explore opportunities to develop its existing surface parking lots for the highest and best use for the City. Policies for the study and replacement of surface parking lots with development shall follow guidelines established and in place.

<i>Estimated Cost to Implement:</i>	N/A
<i>Estimated Revenue Impact:</i>	TBD
<i>Estimated Timeframe:</i>	Medium-Term

Table 21 – Northside and Southside Downtown Parking Study Recommendations Summary

Recommendation	Estimated Financial Impact	Estimated Timeframe
<i>Public Parking Supply and Demand</i>		
a. Increase the oversell of monthly permits in off-street facilities	Nominal positive impact	Short-Term
b. Adjust the mix of monthly vs. transient spaces in off-street facilities	Nominal positive impact	Short-Term
c. Convert existing 3-hr. meters to 10-hr. meters in the northside downtown	Nominal positive impact	Short-Term
d. Convert existing 3-hr. meters to 10-hr. meters in the southside downtown	Positive impact	Short-Term
e. Convert existing 4-hr. meters to 3-hr. meters	Nominal positive impact	Short-Term
f. Convert existing 13-hr. meters to 3-hr. or 10-hr. meters	Nominal positive impact	Short-Term
g. Impose on-street parking restrictions and add meters in non-metered areas in the southside downtown	Positive impact	Medium-Term
h. Pre-sell event parking in the Mechanic Street parking lots during Musikfest	Positive impact	Short-Term
i. Develop a plan to manage the impending parking shortfall on the east side of the southside downtown	Negative impact	Medium-Term
j. Bring operational control of the Ruins Lots under the BPA	Positive impact	Medium-Term
k. Implement policies and procedures for licensing paid public parking facilities not controlled by the BPA/City	No impact	Medium-Term
<i>Operations</i>		
a. Increase notifications/information available to public related to impending system changes	No impact	Short-Term
b. Increase the frequency with which the parking garages are cleaned	Nominal negative impact	Short-Term
c. Ensure directional and wayfinding signage is clear and appropriate	Nominal negative impact	Short-Term
d. Install informational signage and maps within the BPA's off-street parking facilities	Nominal negative impact	Short-Term
<i>Parking Rates and Fines for Violations</i>		
a. Increase on-street metered parking rates	Positive \$250,000+ annually	Short-Term
b. Increase fines for parking violations	Positive \$400,000+ annually	Short-Term
c. Institute a policy of regular rate increases	Positive impact	Medium-Term
<i>Technology</i>		
a. Expand use of license plate recognition for enforcement	No impact	Medium-Term
b. Expand use of environmentally-friendly technologies in BPA facilities	TBD	Medium-Term
<i>Future Capital Repair/Replacement and Development Opportunities</i>		
a. Demolish and reconstruct the Walnut Street Garage	~\$20,000,000 total cost	Medium-Term
b. Establish a capital repair and replacement reserved fund	Negative \$200,000 annually	Short-Term
c. Explore opportunities to develop the BPA's surface parking lots	TBD	Medium-Term

Source: DESMAN

10. FEEDBACK FROM FINAL REPORT PRESENTATION

On Thursday, April 12, 2018, DESMAN presented the full draft of the Northside and Southside Downtown Parking Study to a meeting of the public, City officials and Parking Authority officials. The intent of this presentation was to describe the process undertaken during the course of the study, to summarize the results of our analysis and to present the draft recommendations that were developed as a result of the analysis.

The following public comments and feedback were received during that meeting:

- Were any site-specific analyses done, for instance at the parking garage under the Library/City Hall?
- Was angled parking considered?
- Was there consideration given to striping on-street parking spaces in time-restricted parking areas?
- A majority of respondents to the online surveys indicated that the current parking rates are too high – in light of this, why did we recommend raising on-street parking rates?
- What is the expected timeline for the demolition and reconstruction of the Walnut Street Garage?
- At the south end of Main Street, there is a lack of proximate available parking and the topography of the area makes it very difficult for retail customers to use available spaces
- Why did a 2008 study identify a 500-space deficit in the area of S. Main Street, but our study did not find the same condition?
- Has the City considered instituting a downtown trolley system? Is there a way to work with LANTA to institute this service?
- What is being done, if anything, with the “Wooden Match Lot” down Spring Street?
- Would another parking deck be built in the Northside prior to the demolition and reconstruction of the Walnut Street Garage?
- What is the maximum number of spaces that would be built in a reconstructed Walnut Street Garage?
- Can retail space be added as a wrap to the new Walnut Street Garage in order to better connect the Garage with Main Street?
- With the proposed Polk Street Garage, is there a way to build small at the beginning and make the garage expandable in the future, to account for the fact that not all of the demand for the garage currently exists?
- Will the Market Street Condominium Association be consulted as plans for demolishing and redeveloping the Walnut Street Garage progress?
- Free parking in the “Ruins Lots” on the Southside provide a significant public benefit.
- Is there a need for more parking in Bethlehem?
- During snow emergencies, there is a lack of parking in the Authority’s off-street facilities.
- There is concern about the Authority’s debt load.
- The idea of new garages on both the Northside and Southside is a good one, but there is concern that garages will be built and the expected development will not occur to occupy and pay for those facilities.
- There should be more consideration and accommodation for the use of alternative modes of transportation in the city.

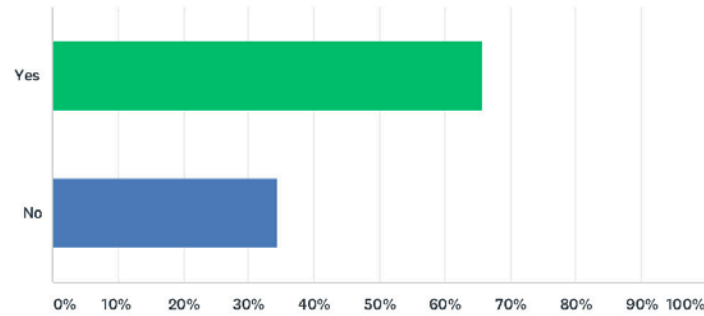
- Is it possible for the City/Authority to take back the Spring Street Lot or partner with Historic Bethlehem so that the lot can be used for additional transient parking for the S. Main Street businesses or for low-cost or free parking for downtown employees?

Throughout the course of the meeting, a number of the questions posed by the public were answered by DESMAN and/or the Authority. All of the questions and feedback have been memorialized here so that the Parking Authority and City can refer back to this document as the recommendations are implemented and as future plans to change parking in Bethlehem are developed.

APPENDIX: Online Parking Survey Summary

Q1 Do you live in Bethlehem?

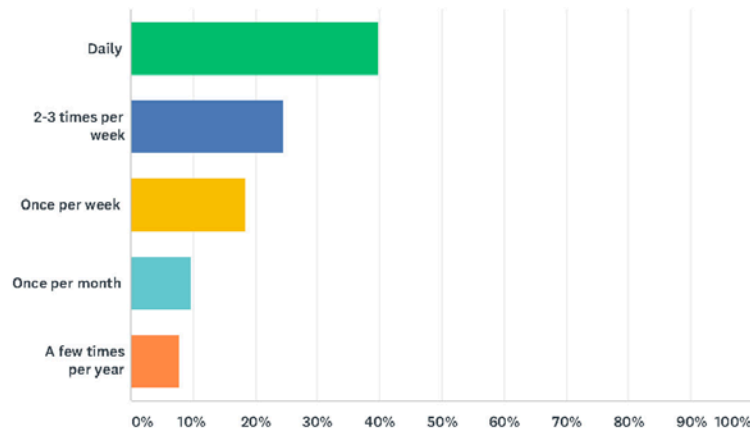
Answered: 721 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	65.74%	474
No	34.26%	247
TOTAL		721

Q2 How often do you visit either of the downtown study areas?

Answered: 721 Skipped: 0

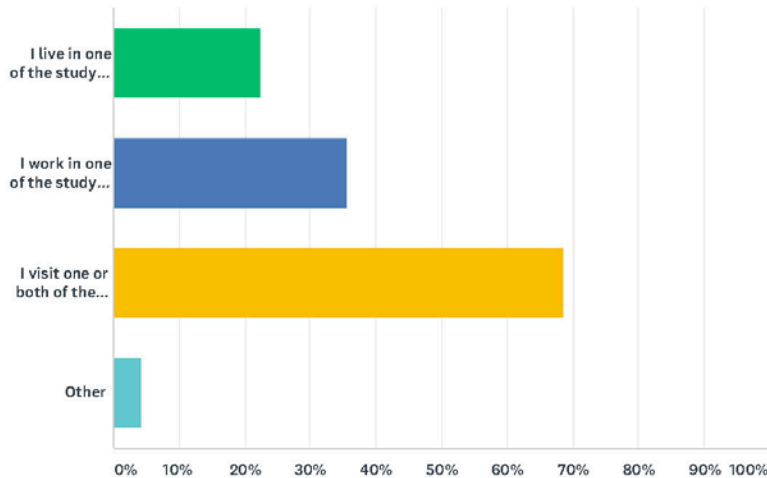


ANSWER CHOICES	RESPONSES	
Daily	39.81%	287
2-3 times per week	24.55%	177
Once per week	18.31%	132
Once per month	9.57%	69
A few times per year	7.77%	56
TOTAL		721

APPENDIX: Online Parking Survey Summary (cont.)

Q3 Please select all of the following that describe you:

Answered: 721 Skipped: 0

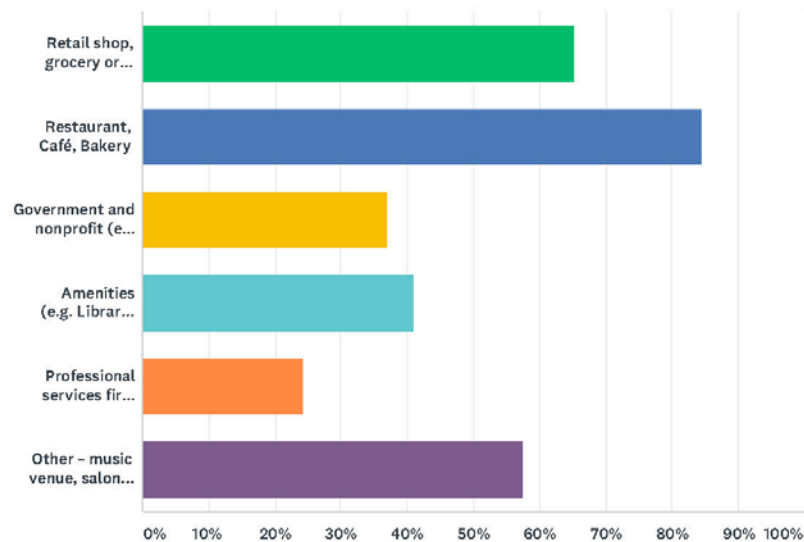


ANSWER CHOICES	RESPONSES	
I live in one of the study areas	22.47%	162
I work in one of the study areas	35.51%	256
I visit one or both of the study areas to access downtown businesses, services, attractions, etc.	68.65%	495
Other	4.16%	30
Total Respondents: 721		

APPENDIX: Online Parking Survey Summary (cont.)

Q4 What types of businesses do you visit when making a trip to either of the study areas? (Please select all that apply)

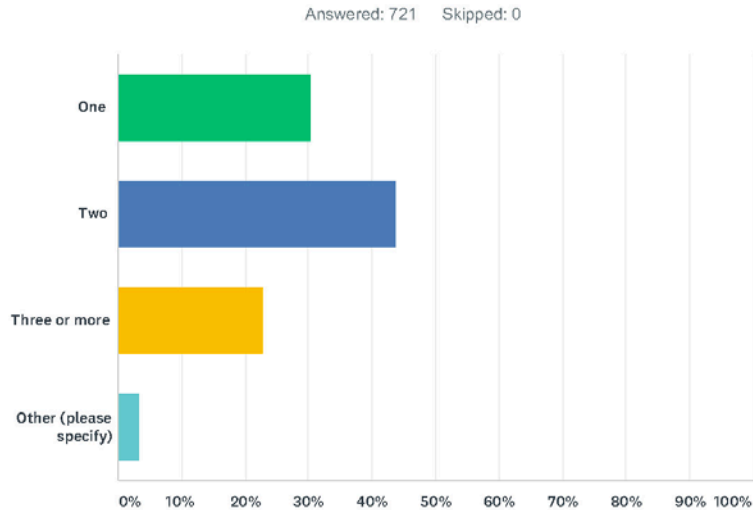
Answered: 721 Skipped: 0



ANSWER CHOICES	RESPONSES	
Retail shop, grocery or convenience store	65.33%	471
Restaurant, Café, Bakery	84.60%	610
Government and nonprofit (e.g. city offices, county offices, Post Office, etc.)	37.03%	267
Amenities (e.g. Library, museum, swimming pool, parks, etc.)	40.92%	295
Professional services firms (e.g. law, architecture/engineering, accounting, realty, marketing, medical, etc.)	24.27%	175
Other – music venue, salon, spa, barber shop, etc.	57.56%	415
Total Respondents: 721		

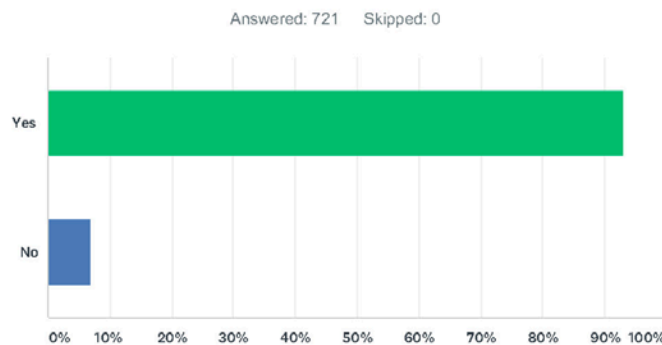
APPENDIX: Online Parking Survey Summary (cont.)

Q5 How many businesses or destinations do you typically visit/patronize when making a single trip to either of the study areas?



ANSWER CHOICES	RESPONSES	
One	30.24%	218
Two	43.69%	315
Three or more	22.75%	164
Other (please specify)	3.33%	24
TOTAL		721

Q6 When visiting either of the downtown study areas, do you typically drive a personal vehicle?

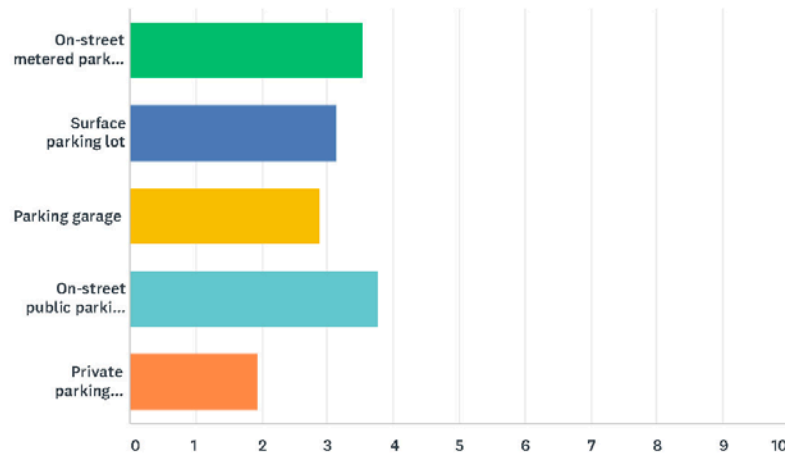


ANSWER CHOICES	RESPONSES	
Yes	93.07%	671
No	6.93%	50
TOTAL		721

APPENDIX: Online Parking Survey Summary (cont.)

Q7 If "yes" to Question 6, where do you typically prefer to park when you visit? (Please rank your parking preference, with "1" being the place you are most likely to park and "5" being the place you are least likely to park)

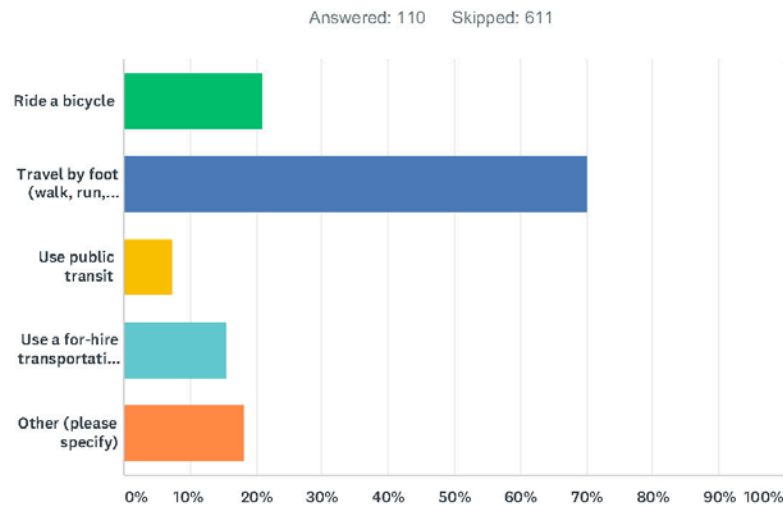
Answered: 675 Skipped: 46



	1	2	3	4	5	TOTAL	SCORE
On-street metered parking space	25.92% 155	32.78% 196	19.57% 117	12.71% 76	9.03% 54	598	3.54
Surface parking lot	13.46% 77	23.25% 133	32.52% 186	24.13% 138	6.64% 38	572	3.13
Parking garage	17.91% 108	15.59% 94	21.06% 127	27.20% 164	18.24% 110	603	2.88
On-street public parking space (no meter)	41.97% 251	19.73% 118	16.89% 101	15.38% 92	6.02% 36	598	3.76
Private parking facility	11.40% 65	7.02% 40	7.37% 42	12.28% 70	61.93% 353	570	1.94

APPENDIX: Online Parking Survey Summary (cont.)

Q8 If "no" to Question 6, what mode(s) of transportation do you typically utilize when traveling to Downtown Bethlehem? (Please select all that apply)

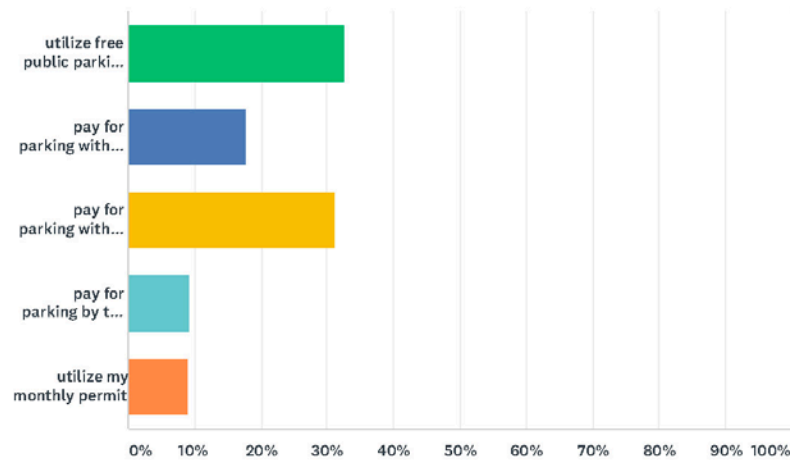


ANSWER CHOICES	RESPONSES	
Ride a bicycle	20.91%	23
Travel by foot (walk, run, etc.)	70.00%	77
Use public transit	7.27%	8
Use a for-hire transportation service (e.g. taxi or Uber)	15.45%	17
Other (please specify)	18.18%	20
Total Respondents: 110		

APPENDIX: Online Parking Survey Summary (cont.)

Q9 Please select the one statement that best describes you: When using public parking in Bethlehem, I typically...

Answered: 721 Skipped: 0

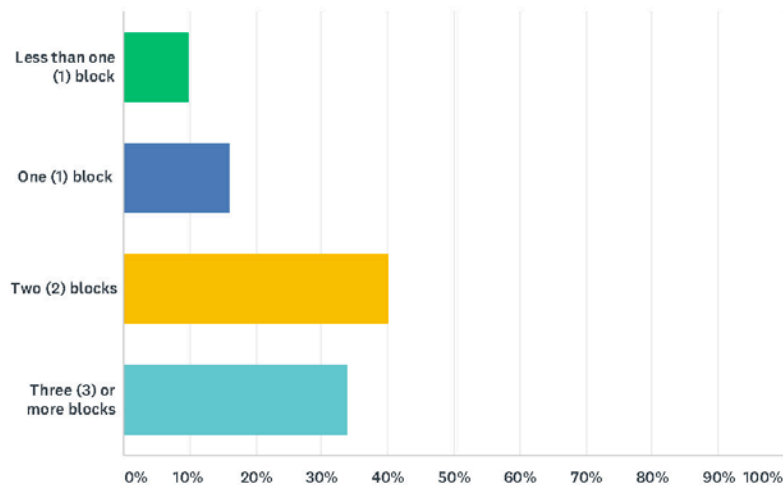


ANSWER CHOICES	RESPONSES	
utilize free public parking spaces	32.73%	236
pay for parking with coins at the parking meters	17.75%	128
pay for parking with a credit card or mobile application at the parking meters	31.21%	225
pay for parking by the hour at a parking garage or surface lot	9.29%	67
utilize my monthly permit	9.02%	65
TOTAL		721

APPENDIX: Online Parking Survey Summary (cont.)

Q10 What is the maximum distance you are willing to walk from public parking to your destination(s) in Bethlehem?

Answered: 721 Skipped: 0

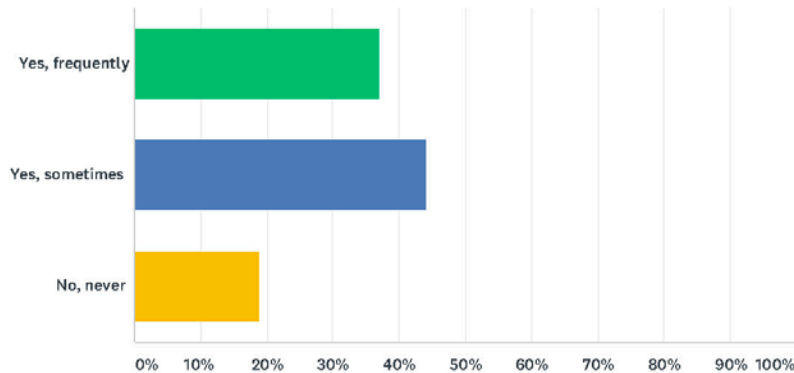


ANSWER CHOICES	RESPONSES	
Less than one (1) block	9.85%	71
One (1) block	16.09%	116
Two (2) blocks	40.08%	289
Three (3) or more blocks	33.98%	245
TOTAL		721

APPENDIX: Online Parking Survey Summary (cont.)

Q11 When using public parking in either of the study areas, do you have difficulty finding an available parking stall/space within an acceptable distance from your destination?

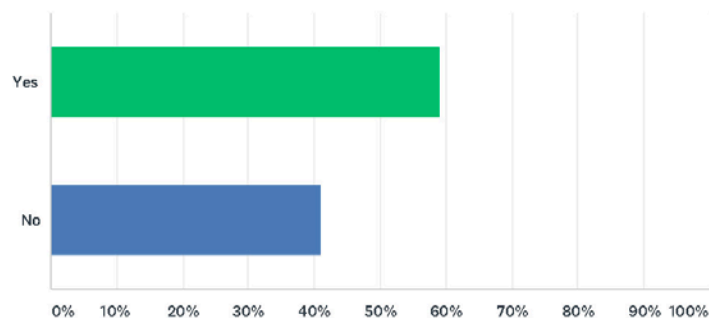
Answered: 721 Skipped: 0



ANSWER CHOICES		RESPONSES	
Yes, frequently		37.03%	267
Yes, sometimes		44.24%	319
No, never		18.72%	135
TOTAL			721

Q12 If you have difficulty finding available public parking within an acceptable distance from your destination, does this discourage you from visiting Bethlehem?

Answered: 721 Skipped: 0

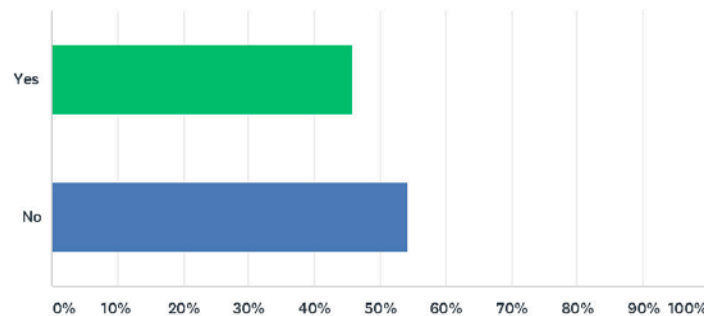


ANSWER CHOICES		RESPONSES	
Yes		59.08%	426
No		40.92%	295
TOTAL			721

APPENDIX: Online Parking Survey Summary (cont.)

Q13 Do the parking time limits in Bethlehem meet your needs?

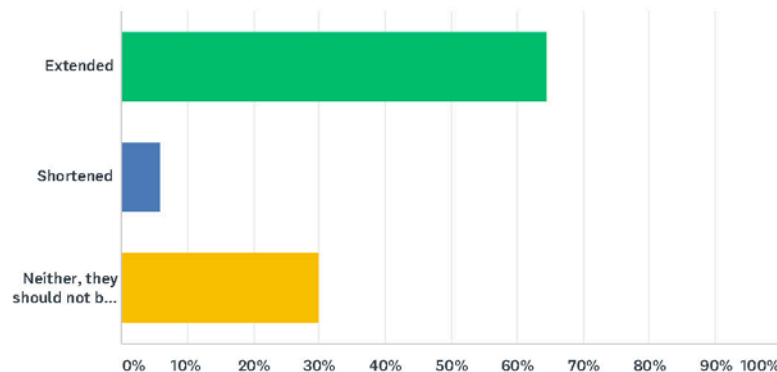
Answered: 721 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	45.77%	330
No	54.23%	391
TOTAL		721

Q14 Do you believe public parking time limits should be extended or shortened?

Answered: 721 Skipped: 0

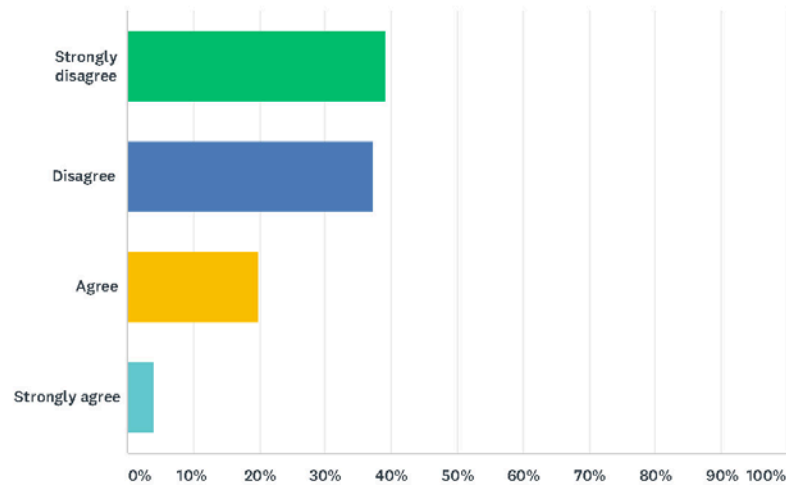


ANSWER CHOICES	RESPONSES	
Extended	64.36%	464
Shortened	5.83%	42
Neither, they should not be changed	29.82%	215
TOTAL		721

APPENDIX: Online Parking Survey Summary (cont.)

Q15 Rate the degree to which you agree/disagree with the following statement: Compared to the current Bethlehem parking rates, I am willing to pay more in order to improve my experience by making available parking easier to find, use and pay for.

Answered: 721 Skipped: 0

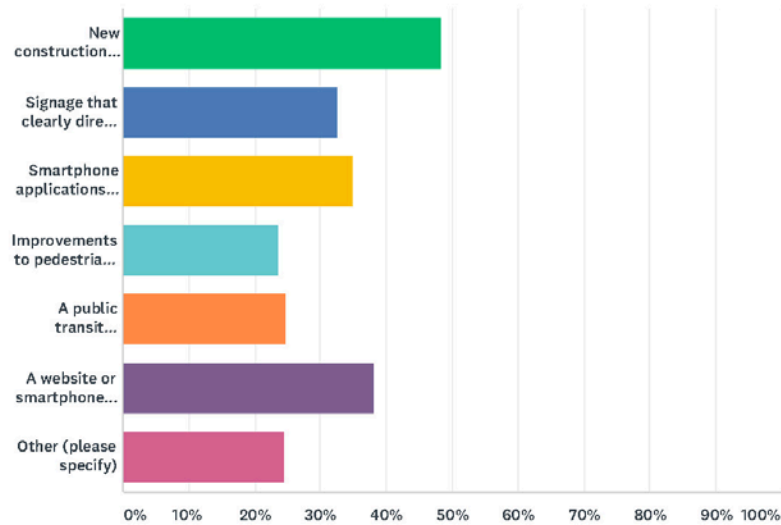


ANSWER CHOICES	RESPONSES	
Strongly disagree	39.11%	282
Disagree	37.17%	268
Agree	19.83%	143
Strongly agree	3.88%	28
TOTAL		721

APPENDIX: Online Parking Survey Summary (cont.)

Q16 What improvements to the public parking system would be most meaningful to you? (Select all that apply)

Answered: 721 Skipped: 0

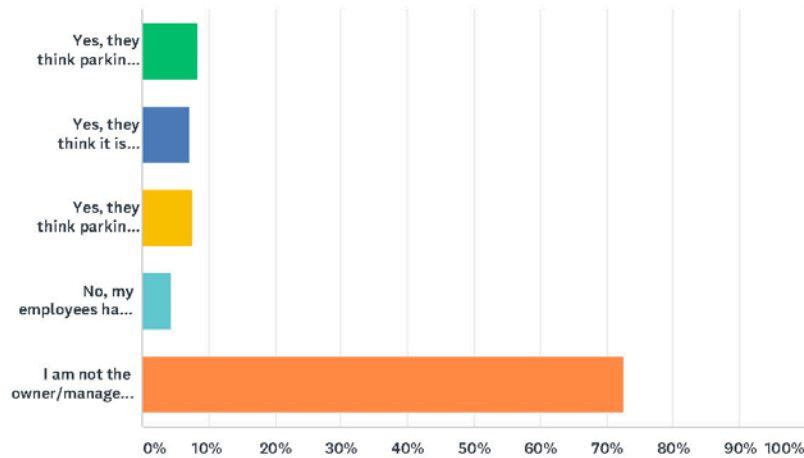


ANSWER CHOICES	RESPONSES	
New construction of additional parking spaces and/or parking facilities	48.27%	348
Signage that clearly directs motorists to parking facilities such as garages and surface lots	32.59%	235
Smartphone applications that enable motorists to find parking spaces	34.95%	252
Improvements to pedestrian and bicycle facilities	23.72%	171
A public transit circulator bus route that serves Bethlehem	24.69%	178
A website or smartphone application that reports real-time availability of parking spaces	38.14%	275
Other (please specify)	24.55%	177
Total Respondents: 721		

APPENDIX: Online Parking Survey Summary (cont.)

Q17 If you are a business owner/manager, have your employees voiced concerns over the cost or availability of parking?

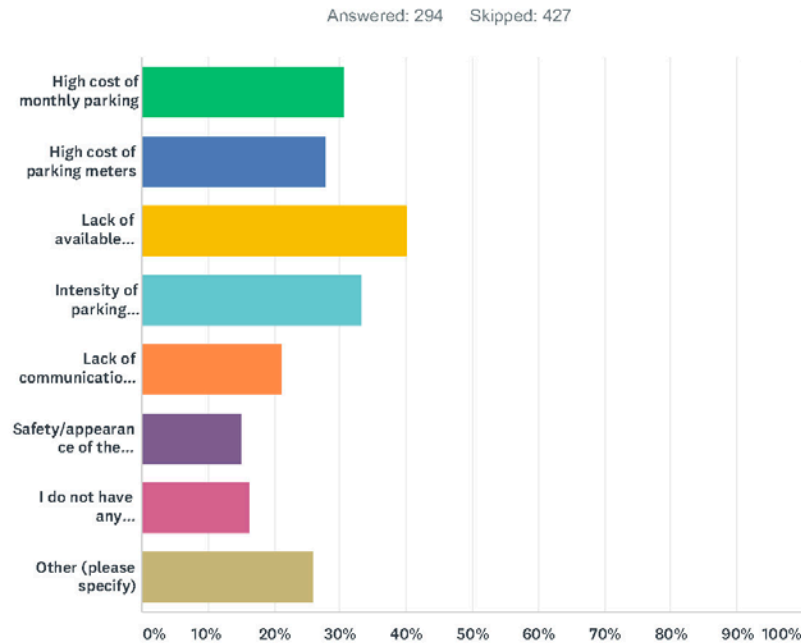
Answered: 721 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes, they think parking is too expensive	8.32%	60
Yes, they think it is hard to find parking	7.21%	52
Yes, they think parking is too expensive and hard to find	7.63%	55
No, my employees have not voiced concerns about parking	4.30%	31
I am not the owner/manager of a business in Downtown Bethlehem	72.54%	523
TOTAL		721

APPENDIX: Online Parking Survey Summary (cont.)

Q18 As the owner/manager of a business in Downtown Bethlehem, do you have any concerns/issues regarding parking? (Please select all that apply)

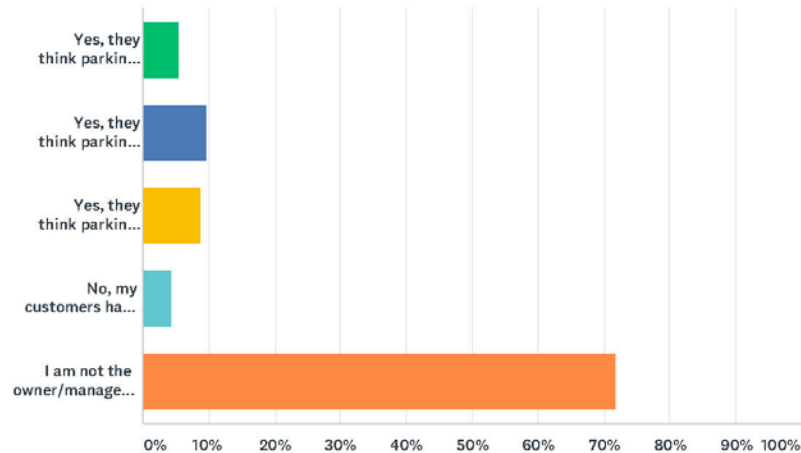


ANSWER CHOICES	RESPONSES	
High cost of monthly parking	30.61%	90
High cost of parking meters	27.89%	82
Lack of available spaces	40.14%	118
Intensity of parking enforcement	33.33%	98
Lack of communication from the Parking Authority/City	21.09%	62
Safety/appearance of the parking facilities	14.97%	44
I do not have any issues/concerns regarding parking	16.33%	48
Other (please specify)	25.85%	76
Total Respondents: 294		

APPENDIX: Online Parking Survey Summary (cont.)

Q19 If you are a business owner/manager, have your customers voiced concerns over the cost or availability of parking?

Answered: 721 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes, they think parking is too expensive	5.41%	39
Yes, they think parking is hard to find	9.57%	69
Yes, they think parking is too expensive and hard to find	8.74%	63
No, my customers have not voiced concerns about parking	4.44%	32
I am not the owner/manager of a business in Downtown Bethlehem	71.84%	518
TOTAL		721