THA CONSULTING

Walnut Street Garage Displacement and Development Study

Bethlehem, Pennsylvania

FINAL

December 2, 2022

THA Consulting. Inc.
144 Livingston Ave
New Brunswick, NJ 08904
(732) 253-0690

December 2, 2022

Steven Fernstrom
Bethlehem Parking Authority
Executive Director
85 West North St
Bethlehem, PA 18018

RE: Walnut Street Garage – Displacement and Development Study – FINAL

Dear Mr. Fernstrom,

Attached for your review and comment is the Walnut Street Garage Displacement and Development Study (the "Study") – FINAL. We look forward to discussing any questions or comments you may have regarding the Final Study at your convenience. Thank you for allowing THA to work with Bethlehem Parking Authority on this project.

Included in the Displacement and Development Study are the following sections:

1) Study Area Parking Supply and Demand Assessment
2) Parking and Mixed-Use Development Site Feasibility Analysis
3) Interim Parking Plan
4) Request for Qualifications- Proposal for The Development of Property Located at 33 W Walnut St
5) Walnut Street Parking Structure Site Retail Market Analysis
6) Walnut Street Parking Structure Site Residential Market Analysis

Sincerely,

James Zullo, AICP, PP, CAPP
President

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INTRODUCTION

The Bethlehem Parking Authority (BPA) is planning for the redevelopment of the Walnut Street Garage (WSG) site and area. The WSG is a 770-space structured parking facility. The garage is approximately 45 years old. Additionally, within THA's condition appraisal surveys on March 9 and 25, 2021, limited portions of the structural steel frame were found to be in dangerous condition, which means "immediate action is required to temporarily or permanently correct the deficiency." Therefore, BPA anticipates demolishing the garage and redeveloping the site with other land uses in conjunction with a parking structure.

The BPA has requested a parking supply and demand assessment and site feasibility study of the WSG site and the adjacent areas to understand the level of development that the site and any available adjacent property can accommodate. The BPA also seeks to understand how the new parking structure on the site should be sized to support anticipated development, replace parking for existing users of the WSG, and provide sufficient parking to support business activity in the area.

THA Consulting, Inc. (THA) has undertaken study to determine the amount of development that can occur at or adjacent to the WSG site along with a new, right size, efficient garage that maximizes the site for development. To "right size" the parking structure, THA has performed a parking analysis that identifies the existing utilization of the WSG that needs to be replaced, the anticipated parking demand associated with new development at the site, and any existing and likely future demand in the study area. THA then prepared a shared parking analysis to determine the extent to which parking can be shared among the anticipated user groups in the study area so as to further determine the amount of parking to be constructed.

Understanding the importance of this planning study and its potential impact on both the City of Bethlehem and the BPA, THA has worked collaboratively with the BPA and the City to obtain valuable input and feedback related to the planning and redevelopment of the study area, and for the development of a future RFP soliciting a preferred developer. Finally, acknowledging that the public and local businesses will need replacement parking throughout the demolition and construction of the new parking facility, THA worked with the BPA to develop an Interim Parking plan. The plan identifies potential sites near the WSG that can be used as temporary parking.

THA CONSULTING

Parking Supply and Demand Assessment

PARKING SUPPLY AND DEMAND ASSESSMENT

OVERVIEW

THA has undertaken a Parking Supply and Demand Assessment for the WSG and a defined study area surrounding the garage to understand the level of development that the site and any available adjacent property can accommodate, along with a parking structure sized to support potential development, replace parking for existing users of the WSG, and provide sufficient parking to support area business activity. The intent of this analysis is to accurately inventory existing parking resources within the study area and measure current parking demand and historic data to quantify future parking demand.

To undertake the parking assessment study, THA developed an inventory of both on-street and off-street parking assets within the study area, performed field observations with parking counts, and obtained occupancy data from the access control systems for both the WSG and North Street Garage (NSG) to gauge the utilization of these parking facilities. Based on this information, THA prepared the assessment of the current parking inventory and its level of utilization. The assessment attempts to accomplish the following:

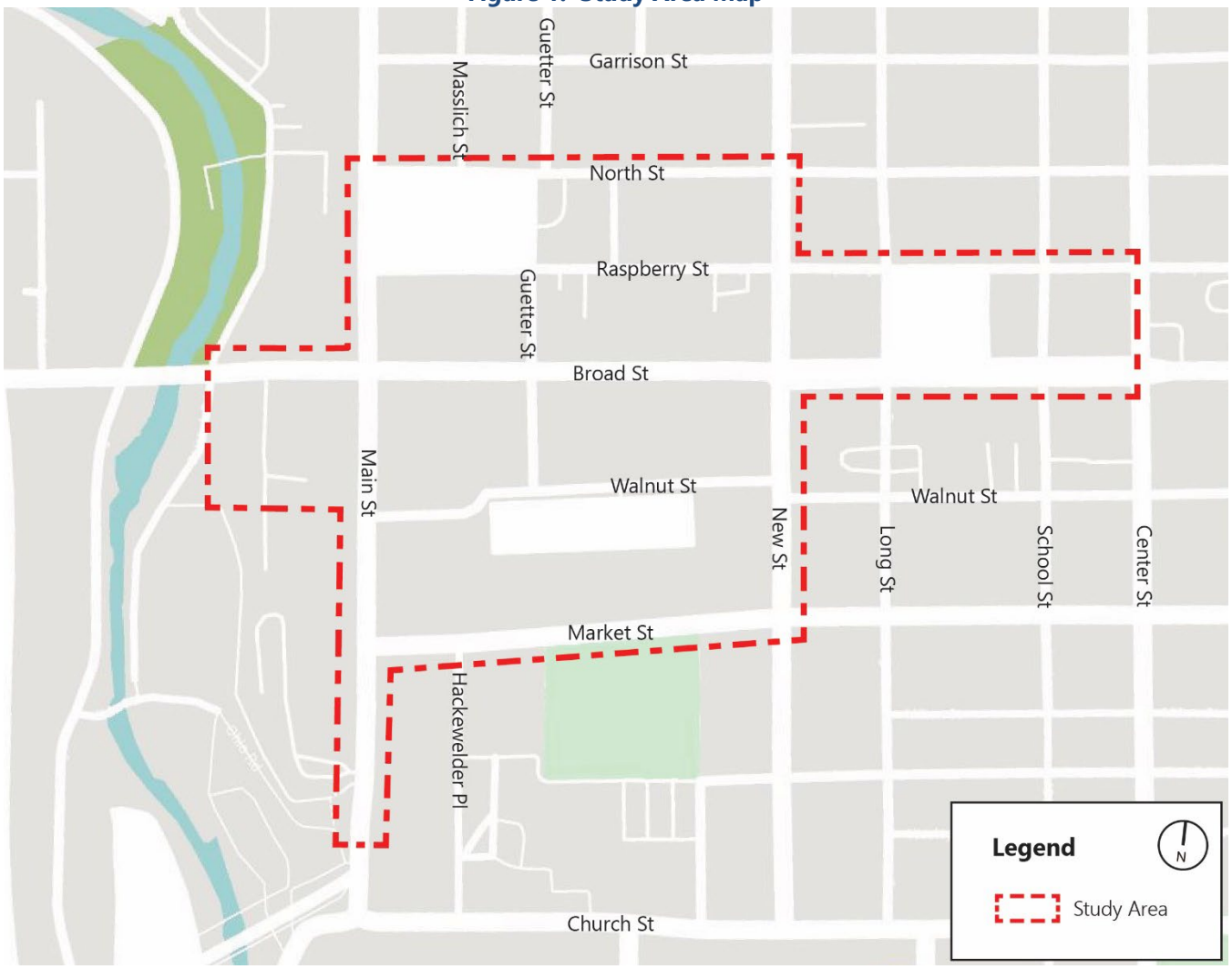
- Inventory existing on-street and public off-street parking supply in the study area.
- Determine peak parking occupancy levels based on occupancy counts for on-street and public off-street parking assets.
- Summarize the results of the parking inventory, the associated current parking demand, and present it graphically on maps and charts.
- Project additional parking demand from anticipated post pandemic business activity, future development projects, increased economic activity due to anticipated growth of the area and increased tourism from the historic heritage designation, and planned future developments.
- Estimate the amount of parking spaces to be included in the new parking structure to meet current and projected parking demand.

PARKING SUPPLY AND DEMAND

STUDY AREA

The study area for the Parking Supply and Demand Assessment is primarily centered around the historic commercial center north of the Lehigh River. The boundaries are defined as follows: North Street to the north; Market Street to the south; Main Street to the west; New Street to the east; as well as a three-block appendage along Broad Street between New Street to Center Street to include the East Broad Street Garage; and an annex to include the Commons Garage between Main Street and the Monocacy Creek. Figure 1 below illustrates the boundary of study area.

Figure 1: Study Area Map



Source: THA Consulting, Inc. 2022

STUDY AREA PARKING SUPPLY

The parking resources in the study area are utilized by multiple user groups. The user groups consist of business patrons, owners and employees of the businesses, and downtown residents. The following section of the report outlines the current parking study area supply and parking occupancy based on THA's field work.

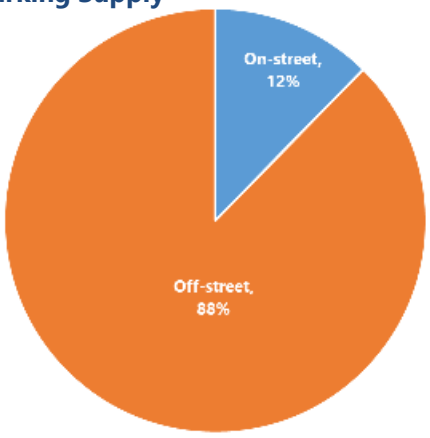
The top floor of the Walnut Street Garage

Second Level Commons Garage

The study area's public parking supply consists of approximately 258 on-street parking spaces and 1,828 off-street public facilities spaces, totaling 2,086 spaces. THA surveyed six (6) off-street lots and garages available to the public including the multi-level North Street (NSG), Walnut Street (WSG), and Main Street Commons Garages, and the Commons, Walnut Street and Broad Street Lots. On-street parking consists of metered parking. The public off-street lots are metered or permit parking. The publicly owned on-street and off-street parking inventory is the primary focus of our assessment. Table 1 lists the number of parking spaces included in the on- and off-street parking inventory.

Table 1: On- & Off-Street Parking Supply

Type	Supply	%
On-street	258	12%
Off-street	1,828	88%
Total	**2,086**	**100%**



Source: THA Consulting, Inc, 2022

On-Street Parking Supply

The study area includes 258 on-street parking spaces. All metered spaces are priced at $1.50 / hour with a 2-hour time limit. Table 2 lists the number of existing on-street parking spaces for each street within the study area.

Table 2: On-Street Parking Supply

Street	Supply
Broad St- Main to New	41
Broad St- New to Center	45
Walnut St	15
Market St	58
Main St	45
Guetter St	18
New St	30
Long St	6
Total	**258**

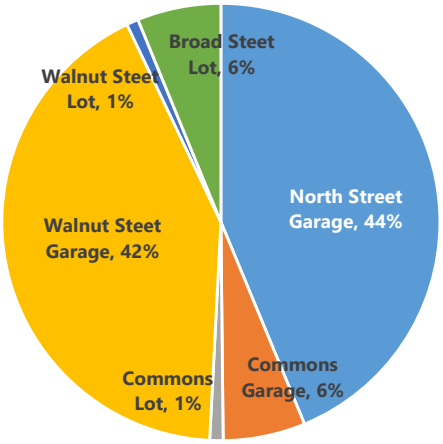
Source: THA Consulting, Inc, 2022

Off-Street Public Parking Supply

There are 1,828 off-street public parking spaces in six (6) BPA-owned off-street facilities surveyed in the study area. The off-street public parking spaces are available to permit parkers and transient parkers. The fee for transient parkers is $1.00 / hour up to $10 / day. The monthly parking fee for the off-street Broad Street Lot is $60 per month, and the fee for the NSG or WSG is $70. Figure 2 illustrates the on- and off-street parking resource locations within the study area.

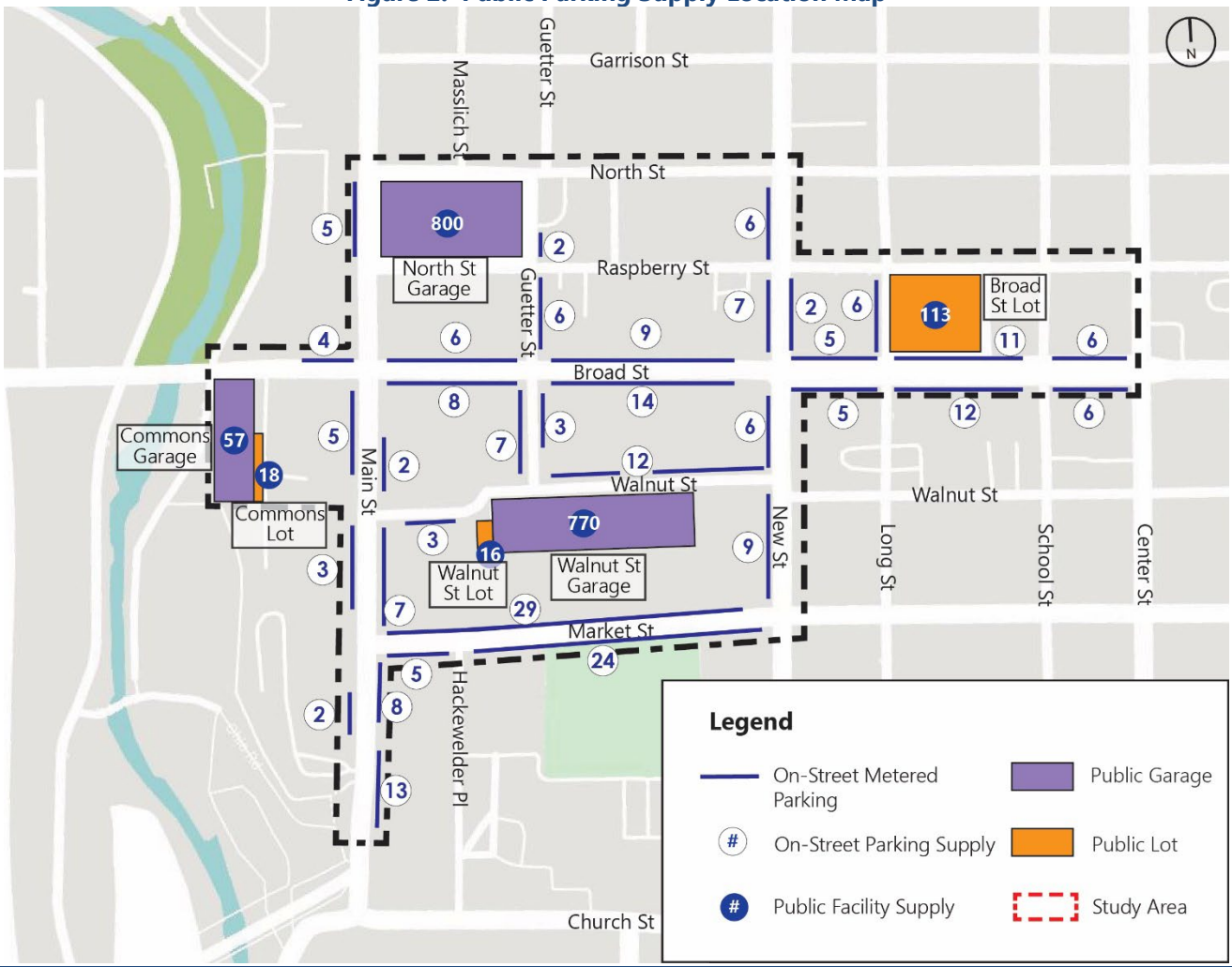
Table 3: Off-Street Public Parking Supply

Facility Name	Supply
North Street Garage	800
Commons Garage	111
Commons Lot	18
Walnut Street Garage	770
Walnut Street Lot	16
Broad Street Lot	113
Total	**1,828**



Source: THA Consulting, Inc, 2022

Figure 2: Public Parking Supply Location Map



Source: THA Consulting, Inc, 2022

Study Area Parking Occupancy

Parking occupancy refers to the number of vehicles in parking spaces at a particular time of day. THA conducted observations and parking counts on Saturday, March 26, 2022, from 10 AM to 8 PM, and Friday, April 1, 2022, from 10 AM to 8 PM. Additionally, to get a better understanding of a typical weekday's off-street parking occupancy and to validate data from the Parking Access Revenue Control Systems (PARCS) at the WSG and NSG, THA performed a third parking count on Thursday, May 5, 2022, from 10 AM to 8 PM, for the WSG, NSG and East Broad Street Lot.

Counts were conducted approximately every two (2) hours. During our fieldwork, the weather was temperate for the time of year. THA identified the peak occupancy for on-street and off-street parking, which is presented in the narratives and tables below.

On-Street Parking Occupancy

During the weekday count (April 1), the overall peak on-street parking occupancy in the study area was 234 spaces or 91% occupancy, which occurred at 8 PM. On the observed weekday, the on-street parking occupancy exceeded 80% occupancy during the lunch hour and in the early evening. Since the weekday observation was conducted on a Friday, occupancies were higher at night than is typical on other weekdays.

During the weekend count (March 26), the overall peak on-street parking occupancy in the study area was 239 spaces or 93% occupancy, which occurred at 6PM. Excluding the on-street parking on Broad Street between New Street and Center Street (which was not as heavily utilized as the rest of the study area), occupancy **remained at or above 88% from noon until 8 PM**. Parking spots on Main Street between Broad Street and Church Street were filled the entire day, with several cars illegally parked along non-metered parts of the roadway. Table 4 illustrates the weekday and weekend on-street parking occupancy.

Table 4: On-Street Parking Occupancy

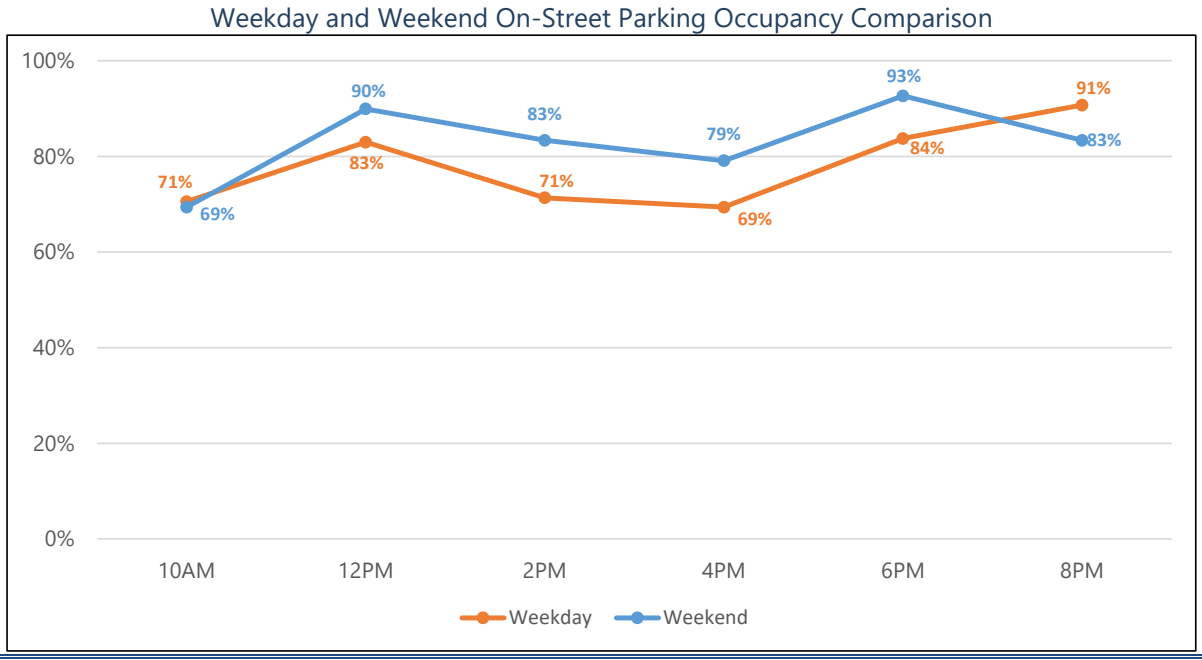
Weekday On-Street Parking Occupancy, Friday, April 1, 2022

Street	Supply	10AM		12PM		2PM		4PM		6PM		8PM	
Broad St- Main to New	41	32	78%	33	80%	31	76%	29	71%	39	95%	41	100%
Broad St- New to Center	45	23	51%	36	80%	44	98%	22	49%	16	36%	30	67%
Walnut St	15	14	93%	14	93%	10	67%	11	73%	14	93%	15	100%
Market St	58	36	62%	48	83%	28	48%	38	66%	53	91%	56	97%
Main St	45	46	102%	42	93%	35	78%	40	89%	49	109%	41	91%
Guetter St	18	14	78%	17	94%	13	72%	21	117%	19	106%	19	106%
New St	30	13	43%	19	63%	19	63%	14	47%	23	77%	28	93%
Long St	6	4	67%	5	83%	4	67%	4	67%	3	50%	4	67%
Total	**258**	**182**	**71%**	**214**	**83%**	**184**	**71%**	**179**	**69%**	**216**	**84%**	**234**	**91%**

Weekend On-Street Parking Occupancy, Saturday, March 26, 2022

Street	Supply	10AM		12PM		2PM		4PM		6PM		8PM	
Broad St- Main to New	41	22	54%	38	93%	39	95%	38	93%	43	105%	37	90%
Broad St- New to Center	45	31	69%	36	80%	28	62%	15	33%	34	76%	28	62%
Walnut St	15	6	40%	17	113%	14	93%	14	93%	11	73%	14	93%
Market St	58	53	91%	57	98%	50	86%	56	97%	58	100%	55	95%
Main St	45	40	89%	46	102%	46	102%	46	102%	46	102%	43	96%
Guetter St	18	11	61%	17	94%	15	83%	15	83%	16	89%	18	100%
New St	30	12	40%	17	57%	23	77%	18	60%	27	90%	19	63%
Long St	6	4	67%	4	67%	0	0%	2	33%	4	67%	1	17%
Total	**258**	**179**	**69%**	**232**	**90%**	**215**	**83%**	**204**	**79%**	**239**	**93%**	**215**	**83%**

Note: Yellow highlighted cells indicate the parking occupancy above 85% or the peak occupancy of the data collection date.



Source: THA Consulting, Inc, 2022

Off-Street Public Parking Occupancy

During the first weekday count (April 1), the combined peak off-street parking occupancy in public facilities was **759 spaces or 42% occupancy, which occurred at 2 PM**. During the weekend count (March 26), the combined peak off-street parking occupancy was **700 spaces or 38% occupancy, which occurred at 6 PM**. The Main Street Commons Garage was more heavily utilized than the other garages for both counts. During the second weekday count (May 5), the peak off-street parking occupancy for the NSG, WSG and East Broad Street Lot was **752 spaces or 45% occupancy, which occurred at 12 PM**. Table 5 illustrates the two weekdays and weekend off-street parking occupancy in the public facilities.

Table 5: Off-Street Public Parking Occupancy

Weekday Off-Street Public Parking Occupancy, Friday, April 1, 2022

Facility Name	Supply	10AM		12PM		2PM		4PM		6PM		8PM	
North St Garage	800	335	42%	344	43%	347	43%	276	35%	187	23%	194	24%
Commons Garage	111	25	23%	54	49%	64	58%	56	50%	72	65%	99	89%
Commons Lot	18	4	22%	8	44%	4	22%	8	44%	6	33%	7	39%
Walnut St Garage	770	232	30%	280	36%	279	36%	241	31%	242	31%	246	32%
Walnut St Lot	16	10	63%	8	50%	10	63%	7	44%	4	25%	1	6%
East Broad St Lot	113	60	53%	61	54%	55	49%	56	50%	41	36%	41	36%
Total	**1,828**	**666**	**36%**	**755**	**41%**	**759**	**42%**	**644**	**35%**	**552**	**30%**	**588**	**32%**

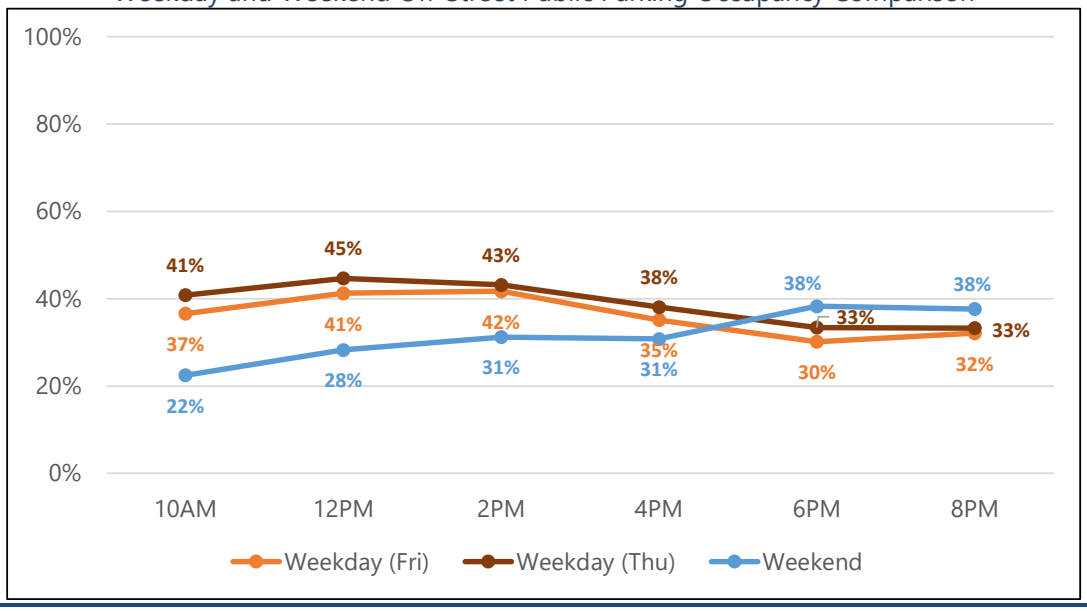
Weekday Off-Street Public Parking Occupancy, Thursday, May 5, 2022

Facility Name	Supply	10AM		12PM		2PM		4PM		6PM		8PM	
North St Garage	800	362	45%	366	46%	359	45%	315	39%	230	29%	194	24%
Walnut St Garage	770	261	34%	323	42%	309	40%	272	35%	306	40%	346	45%
East Broad St Lot	113	64	57%	63	56%	59	52%	54	48%	26	23%	20	18%
Total	**1,683**	**687**	**41%**	**752**	**45%**	**727**	**43%**	**641**	**38%**	**562**	**33%**	**560**	**33%**

Weekend Off-Street Public Parking Occupancy, Saturday, March 26, 2022

Facility Name	Supply	10AM		12PM		2PM		4PM		6PM		8PM	
North St Garage	800	212	27%	202	25%	224	28%	191	24%	216	27%	228	29%
Commons Garage	111	25	23%	53	48%	67	60%	77	69%	98	88%	99	89%
Commons Lot	18	3	17%	5	28%	5	28%	6	33%	6	33%	7	39%
Walnut St Garage	770	133	17%	230	30%	244	32%	253	33%	324	42%	315	41%
Walnut St Lot	16	10	63%	8	50%	12	75%	7	44%	7	44%	7	44%
East Broad St Lot	113	28	25%	19	17%	19	17%	29	26%	49	43%	32	28%
Total	**1,828**	**411**	**22%**	**517**	**28%**	**571**	**31%**	**563**	**31%**	**700**	**38%**	**688**	**38%**

Weekday and Weekend Off-Street Public Parking Occupancy Comparison



Source: THA Consulting, Inc, 2022

** Note that the Thursday weekday count did not include the Main Street Commons Garage, Commons Lot, or Walnut Street Lot.*

Parking Supply and Demand Summary

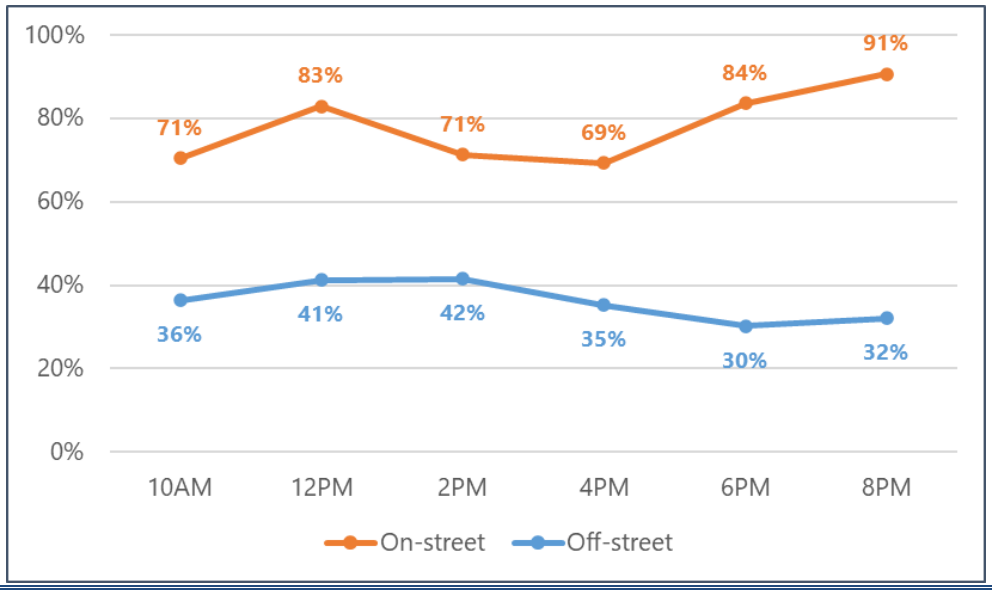
Weekday Parking Occupancy

On-street parking was 83% occupied at 12 PM and was 84% and 91% occupied at 6 PM and 8 PM respectively. Off-street parking was peaked at 12 PM with an occupancy of 41%, then the occupancy decreased afterwards. Parking along Broad Street between New Street and Center Street was more occupied during the day, but most other streets in the downtown had higher occupancy after 6 PM. This can be attributed to the fact that our observation was on a Friday, with more people at restaurants along Main Street than they would be on another weekday. Historically, Fridays are a popular weekday to park in downtown Bethlehem. **The total overall peak parking occupancy in the study area is approximately 969 spaces or 46% occupancy, which occurred at 12 PM.** Table 6 lists the total overall weekday and weekend on- and off-street parking occupancy from 10 AM to 8 PM.

Table 6: Overall Weekday Parking Occupancy Summary

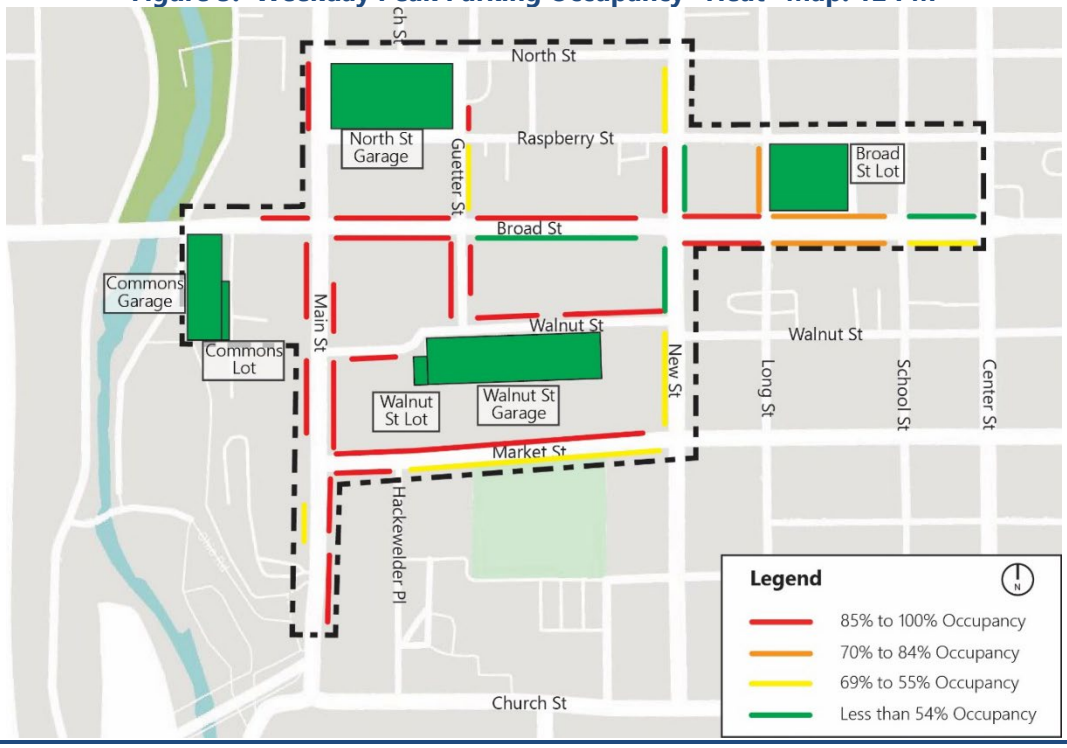
Weekday Parking Occupancy, Friday, April 1, 2022

Type	Supply	10AM		12PM		2PM		4PM		6PM		8PM	
On-street	258	182	71%	214	83%	184	71%	179	69%	216	84%	234	91%
Off-street	1,828	666	36%	755	41%	759	42%	644	35%	552	30%	588	32%
Total	**2,086**	**848**	**41%**	**969**	**46%**	**943**	**45%**	**823**	**39%**	**768**	**37%**	**822**	**39%**



Source: THA Consulting, Inc, 2022

Figure 3: Weekday Peak Parking Occupancy "Heat" Map: 12 PM



Source: THA Consulting, Inc, 2022

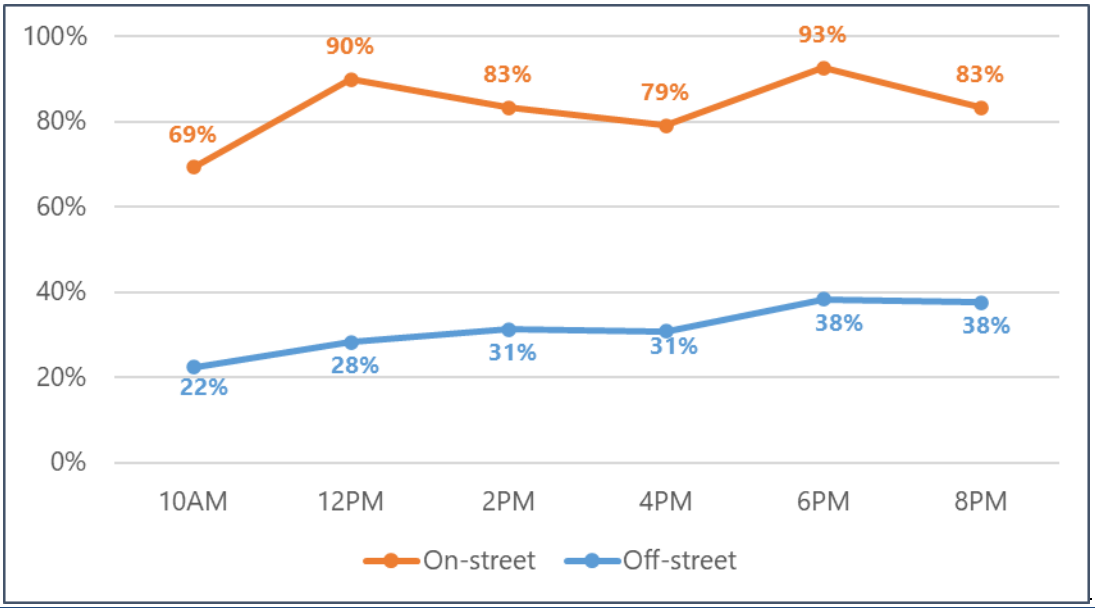
Weekend Parking Occupancy

On-street parking was 90% occupied at 12 PM and was 93% occupied at 6 PM. On-street parking was approximately 38% occupied at 6 PM and 8 PM. While off-street parking facilities can hold many more vehicles than on-street parking supply, parkers prefer the convenience of on-street spaces if they are available since they are usually closer to the shoppers/employee's destination and easier to navigate to. Therefore, the on-street parking resource utilization was much greater than the off-street utilization. **The overall peak parking occupancy in the study area was 939 spaces or 45% occupancy, which occurred at 6PM.** Table 7 lists the total overall weekend on- and off-street parking occupancy from 10 AM to 8 PM.

Table 7: Overall Weekend Parking Occupancy Summary

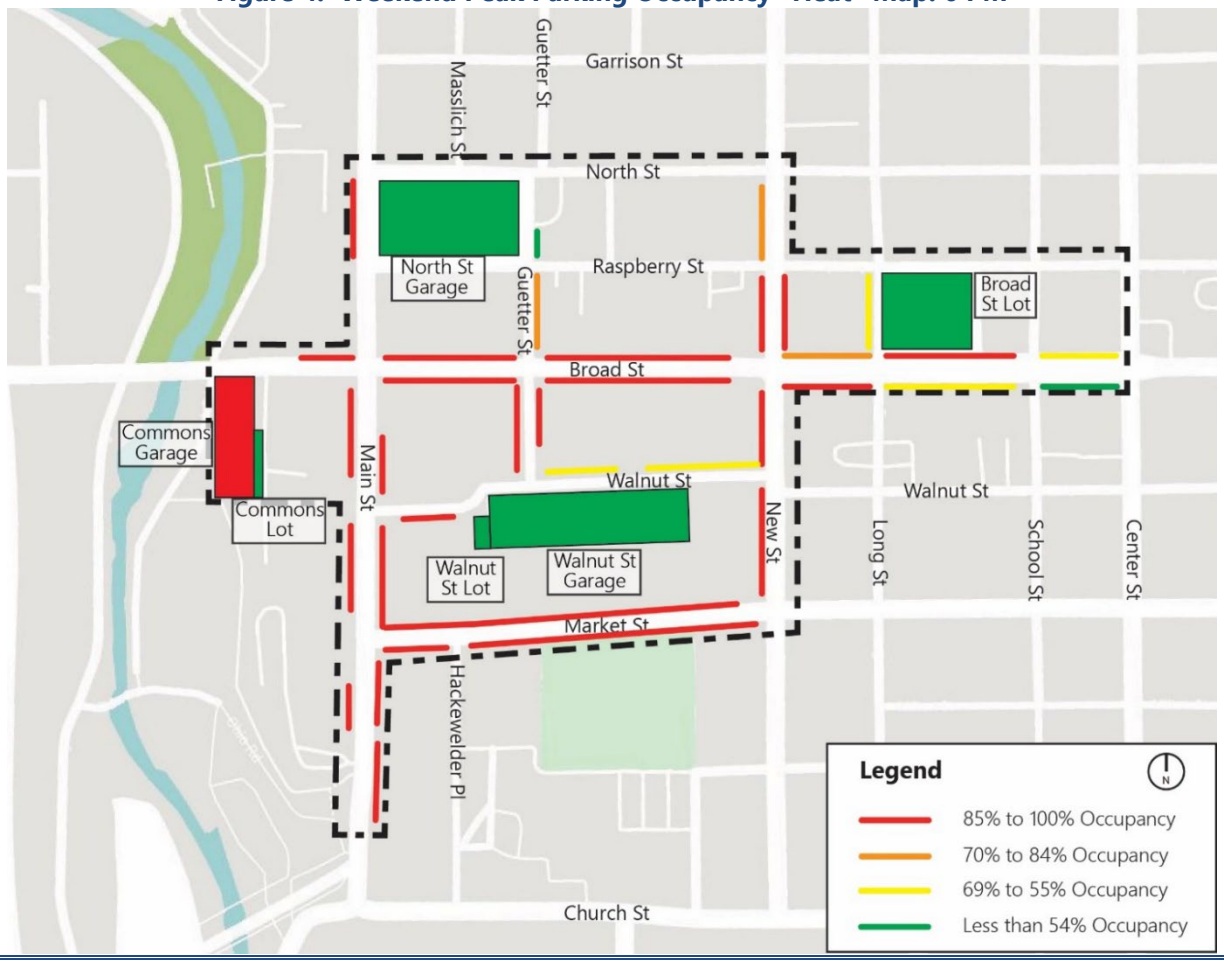
Weekend Parking Occupancy, Saturday, March 26, 2022

Type	Supply	10AM		12PM		2PM		4PM		6PM		8PM	
On-street	258	179	69%	232	90%	215	83%	204	79%	239	93%	215	83%
Off-street	1,828	411	22%	517	28%	571	31%	563	31%	700	38%	688	38%
Total	**2,086**	**590**	**28%**	**749**	**36%**	**786**	**38%**	**767**	**37%**	**939**	**45%**	**903**	**43%**



Source: THA Consulting, Inc, 2022

Figure 4: Weekend Peak Parking Occupancy "Heat" Map: 6 PM



Source: THA Consulting, Inc, 2022

WALNUT STREET GARAGE AND NORTH STREET GARAGE PARCS OCCUPANCY DATA ANALYSIS

After the field data collection on March 26th and April 1st, THA obtained the May 2022 and October 2022 parking occupancy reports for WSG and NSG from the WSG and NSG Parking Access Revenue Control (Flash's portal) to further validate the WSG, NSG and Broad Street Lot's parking occupancy. Based on the review of data, THA determined that there is no significant difference for WSG and NSG's transient and permit parker utilizations between May 2022 and October 2022 occupancy reports.

FUTURE PARKING DEMAND PROJECTION

To project future parking demand in the study area, THA considered the following factors: return to work after COVID, normal economic and population growth, increased tourism from the historic heritage designation, and planned future developments. A description of each factor and their potential impact on future parking demand is included below.

PERMIT PARKING COVID ADJUSTMENT FACTOR

THA assessed the number of permits issued for the NSG and WSG. Permits are available to nearby companies and individuals. As of October 2022, **WSG had 592 permits issued and NSG had 671 permits issued, excluding permits used by the Bethlehem Police Department and Bethlehem Parking Authority.**

Table 8: Companies with More Than 10 Parking Permits at the WSG

Rank	Walnut Street Garage - Permit Issued	# of Permits
1	King Spry Herman Freund & Faul	64
2	BSI Corporate Benefits, LLC	35
3	Diversified Capital	30
4	DHuy Engineering, Inc.	27
5	L.V. Chamber of Commerce	14
5	Buxmont Academy	13
7	Buckno Lisicky & Co	12

Source: Bethlehem Parking Authority, THA Consulting, Inc, 2022

As Table 9 indicates below, WSG's permit **peak utilization between October 1 and October 31, 2022, was 45% or 269 spaces on weekdays, and the permit peak utilization was 20% or 120 spaces on weekends**. NSG's permit **peak utilization between October 1 and October 31, 2022, was 45% or 303 spaces on weekdays, and the permit peak utilization was 14% or 93 spaces on weekends.**

Table 9: WSG and NSG May 2021 Permit Holders Parking Occupancy and Utilization

Walnut Street Garage

Date		Permit Utilization	
		Number	%
10/1	**Sat**	**120**	**20%**
10/2	Sun	90	15%
10/3	Mon	232	39%
10/4	Tue	232	39%
10/5	Wed	247	42%
10/6	Thu	262	44%
10/7	Fri	211	36%
10/8	Sat	114	19%
10/9	Sun	89	15%
10/10	Mon	221	37%
10/11	Tue	237	40%
10/12	Wed	255	43%
10/13	Thu	246	42%
10/14	Fri	234	40%
10/15	Sat	118	20%
10/16	Sun	90	15%
10/17	Mon	244	41%
10/18	Tue	251	42%
10/19	Wed	250	42%
10/20	Thu	260	44%
10/21	Fri	217	37%
10/22	**Sat**	**120**	**20%**
10/23	Sun	88	15%
10/24	Mon	242	41%
10/25	Tue	249	42%
10/26	**Wed**	**269**	**45%**
10/27	Thu	250	42%
10/28	Fri	218	37%
10/29	Sat	108	18%
10/30	Sun	96	16%
10/31	Mon	231	39%

North Street Garage

Date		Permit Utilization	
		Number	%
10/1	Sat	84	13%
10/2	Sun	57	8%
10/3	Mon	230	34%
10/4	Tue	289	43%
10/5	**Wed**	**303**	**45%**
10/6	Thu	265	39%
10/7	Fri	235	35%
10/8	**Sat**	**93**	**14%**
10/9	Sun	70	10%
10/10	Mon	224	33%
10/11	Tue	294	44%
10/12	Wed	300	45%
10/13	Thu	289	43%
10/14	Fri	241	36%
10/15	Sat	86	13%
10/16	Sun	71	11%
10/17	Mon	238	35%
10/18	Tue	293	44%
10/19	Wed	291	43%
10/20	Thu	275	41%
10/21	Fri	236	35%
10/22	Sat	83	12%
10/23	Sun	73	11%
10/24	Mon	242	36%
10/25	Tue	299	45%
10/26	Wed	298	44%
10/27	Thu	286	43%
10/28	Fri	236	35%
10/29	Sat	86	13%
10/30	Sun	77	11%
10/31	Mon	275	41%

Source: FlashParking, Bethlehem Parking Authority, THA Consulting, Inc, 2022

The COVID-19 pandemic demonstrated that a considerable amount of the work that historically took place in offices or outside the home can occur remotely. A study done by OwlLabs and Global Workplace Analytics[1] in September 2021 outlines some remote work statistics and trends during the COVID-19 pandemic including the following:

- Over two-thirds of respondents worked or are continuing to work remotely
- Nearly 1 in 2 people said that if they were no longer able to work remotely, they would start looking for another job that offered more flexibility in when they worked

Work from Home (WFH) policies and hybrid workdays could potentially result in permanently lower peak parking demand compared to pre-COVID parking demand levels. However, we still expect some workplace recovery as the pandemic recedes, especially on Tuesdays, Wednesdays, and Thursdays. To attempt to project a post-COVID permit parking utilization, THA assumed **a 50% permit utilization increase above current permit demand (October 2022), which would generate an additional 286 space parking demand on weekdays in both WSG and NSG.**

Table 10: WSG and NSG May 2021 Permit Holders' Parking Occupancy and Utilization

Facility Name	# of Permit Issued	Oct 2022 Utilization %		Oct 2022 Utilization Occupancy		Post-COVID Utilization %		Post-COVID Utilization Occupancy		COVID Adjustment	
		Wkday	Wknd	Wkday	Wknd	Wkday	Wknd	Wkday	Wknd	Wkday	Wknd
Walnut Street Garage	592	45%	20%	269	120	68%	20%	404	120	135	0
North Street Garage	671	45%	14%	303	93	68%	14%	455	93	152	0
Total										**286**	**0**

Source: FlashParking, Bethlehem Parking Authority, THA Consulting, Inc, 2022

TRANSIENT PARKING COVID ADJUSTMENT FACTOR

Cities across the nation made dynamic changes to encourage economic activities in their downtowns throughout the COVID pandemic. Many, including Bethlehem, created reserved curb space for "streeteries" to encourage people to safely eat outside. Even as COVID recedes, people are still enjoying the additional dining capacity, which means that there will be more dining patrons and less on-street parking going forward. Because Bethlehem has successfully adapted to support changing dining and entertainment preferences, downtown economic activity has already mostly recovered. Therefore, THA assumed **only a 10% parking utilization increase for transient parkers above current demand, which will approximately generate an additional 60 space parking demand on weekdays and 70 spaces on weekends.**

NORMAL GROWTH

To determine the increase in parking demand from changes in population growth and increased economic activity in the study and surrounding areas, we used census tracts to assess the population growth in Northampton and Lehigh Counties, City of Bethlehem, Central Neighborhood, and Census Tract 108 (which roughly aligns with the North Side Historic District).

Figure 5 defines the boundary of Central Neighborhood, census tracts and study area. The Central Neighborhood is defined by the City's Bureau of Planning and Zoning and includes the following Census Tracts:

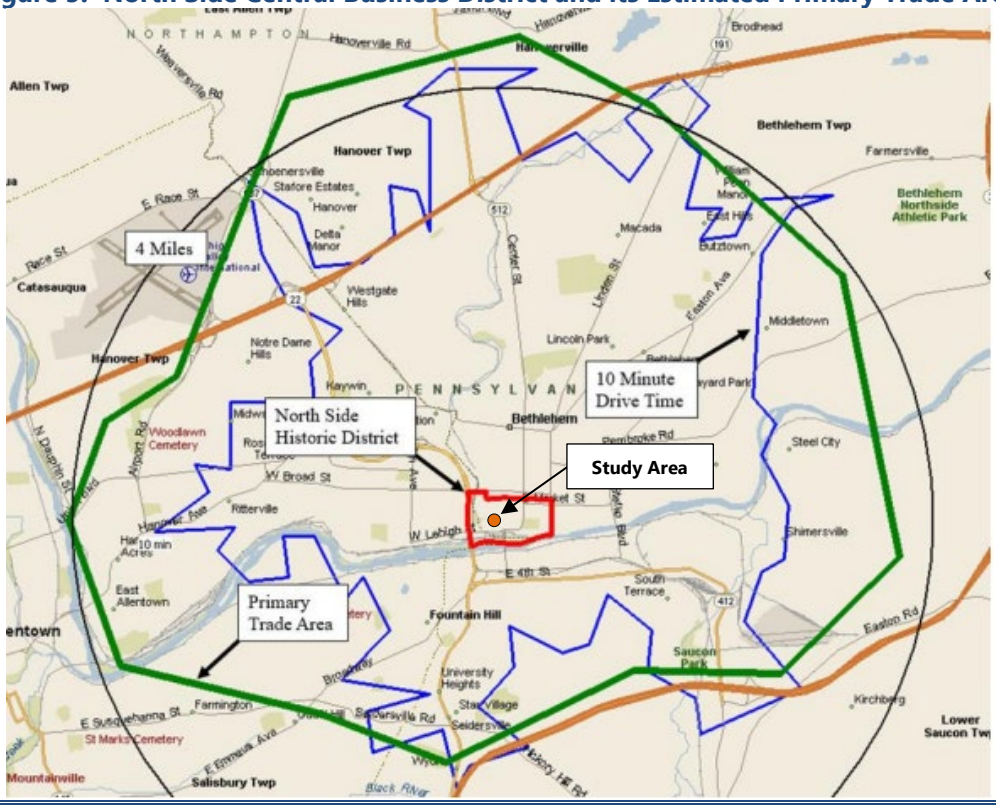
Central Neighborhood (Neighborhood 3)

- *Tract 105*

[1] State of Remote Work, 2021

- *Tract 106.01*
- *Tract 106.02*
- *Tract 107*
- *Tract 108*

Figure 5: North Side Central Business District and its Estimated Primary Trade Area



Source: Gibbs Planning Group, Inc., "Bethlehem North Side Historic District Retail Market Analysis", December 2019

From 2016 to 2020, the population of Northampton and Lehigh Counties increased at a rate of 0.5% annually. From 2016 to 2020, the population of Bethlehem has on average increased by 0.2% annually and increased by 0.9% overall. From 2016 to 2020, the population in the Central Neighborhood increased by 2.4% with an average annual increase of 0.6%. Between 2016 and 2020, census tract 108's average annual population increase was 4.3%. Between 2016 and 2020, **the average annual change percentage among these four (4) geographic areas is 1.4%.**

Table 11: Population Trend from 2016 to 2020

Year	Northampton and Lehigh Counties		City of Bethlehem		Central Neighborhood (Neighborhood 3)		Census Tract 108		Average Change %
	Total	Change %	Total	Change %	Total	Change %	Total	Change %	
2016	659,312	**0.4%**	75,110	**0.1%**	18,946	**-2.9%**	2,177	**-4.3%**	
2017	661,715	**0.4%**	75,240	**0.2%**	19,198	**1.3%**	2,161	**-0.7%**	
2018	664,391	**0.4%**	75,296	**0.1%**	18,893	**-1.6%**	2,261	**4.6%**	
2019	667,861	**0.5%**	75,461	**0.2%**	18,577	**-1.7%**	2,226	**-1.5%**	
2020	671,571	**0.6%**	75,781	**0.4%**	19,400	**4.4%**	2,560	**15.0%**	
5-Year Annual Avg. Change (2016-2020)		**0.5%**		**0.2%**		**0.6%**		**4.3%**	**1.4%**
5-Year Change		**1.9%**		**0.9%**		**2.4%**		**17.6%**	**5.7%**

Source: US Census, Selected Housing Characteristics ACS 2010-2019, THA Consulting, Inc, 2022

In order to estimate the increase in parking demand from changes in population growth and increased economic activity in the study area, we applied a **1.4% annual increase** on the existing peak weekday and weekend parking demand. As a result, the total parking demand attributed to normal growth is estimated to **increase 74 spaces on weekdays and 71 spaces on weekends over the next 5 years**.

Table 12: Estimated Future Parking Demand (Weekday and Weekend) from Normal Growth

	2022 (Baseline)	2023	2024	2025	2026	2027	Total Increase
Weekday Demand	1,031	1,046	1,060	1,075	1,090	1,106	**74**
Weekend Demand	993	1,007	1,021	1,035	1,050	1,064	**71**

Source: THA Consulting, Inc, 2022

HISTORIC HERITAGE DESIGNATION

Because tourism plays an important role in parking demand, THA reviewed Bethlehem's historic heritage designation to attempt to quantify changes in parking needs. In 2012, the Moravian Settlement at Bethlehem became part of a National Historic Landmark district, and in 2022 the site was added to the United Nations Educational, Scientific and Cultural Organization's (UNESCO) Tentative List. The Moravian Settlement at Bethlehem would be part of four (4) multinational Moravian heritage sites, including a component in Germany, Northern Ireland, and Denmark. If the Moravian Settlements are designated, Bethlehem would become part of the first cross-national UNESCO site in the United States.

To attempt to create an estimated range of additional parkers, THA, the BPA, and the City engaged in discussions with Historic Bethlehem, which operates the historic district and is the agent working to achieve UNESCO status. Historic Bethlehem predicts that the Moravian Settlement, Frank Lloyd Wright's Fallingwater, and Philadelphia's Independence Hall may become a popular trio in Pennsylvania that is attractive for international tourists. While they thought that several of these visitors may come by tour bus instead of a personal car, they were not sure what percent that might be.

Regardless, it is likely that designation status will attract weekend travelers from within the heavily populated Northeast megapolis. There are no comparable existing UNESCO sites in mid-sized U.S. cities, which makes the process of quantifying increased parking demand mostly speculative. As Bethlehem becomes more well-known because of its National Historic Landmark status and recent Tentative UNESCO designation, more tourist facilities are being constructed in the historic downtown, which will increase parking demand over time.

Due to the unpredictable nature of the Historic Heritage Designation process, and its future impact on parking demand, THA did not incorporate any additional parking demand associated with the potential designation.

DEVELOPMENT GROWTH

Project Program

To project future parking demand from real estate development in the study area, THA assessed four (4) future development projects in the study area to gauge their combined effects on parking in the study area. Table 13 indicates the projects' anticipated development program, including number of units, commercial square footage, and effects on parking supply. The first project, Boyd Theater, has been approved by the planning board and site demolition is underway. The second project, 548 N. New St. Apartment, consisting of commercial and residential space, has been

approved by the planning department but permits have not been issued. The third project is a development proposal that has not been approved by the planning board. The fourth project is the redevelopment program based on the draft Site Feasibility Plan for the redevelopment of the WSG site, which is included in the Parking and Mixed-Use Site Feasibility section of this study.

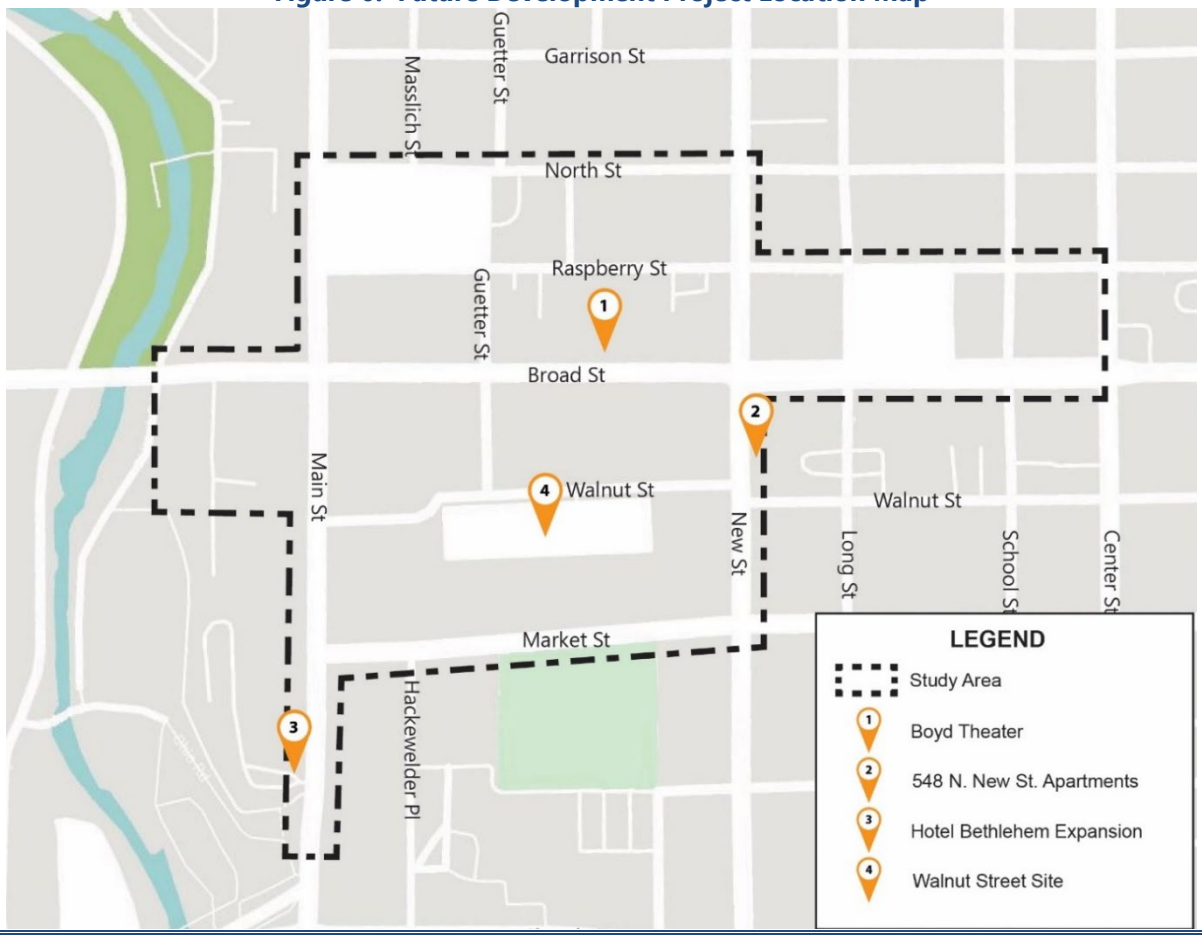
In summary, these projects are proposed to have approximately 400 residential units or hotel rooms, 2,500 SF of retail space, 10,530 SF of restaurant space, and 4,000 SF of event space.

Table 13: Future Development Projects' Number of Units and Square Footage by Land Use

No.	Project Name	Resd. Unit / Hotel Room	Retail SF	Restaurant SF	Event SF
1	Boyd Theater	204	0	6,530	0
2	548 N. New St. Apartments	33	0	1,500	0
3	Hotel Bethlehem Expansion	73	0	0	4,000
4	Walnut Street Site Development	90	2,500	2,500	0
Total		**400**	**2,500**	**10,530**	**4,000**

Source: City of Bethlehem, THA Consulting, Inc- Walnut Street Garage Site Feasability Study (July 2022)

Figure 6: Future Development Project Location Map



Source: City of Bethlehem, THA Consulting, Inc, 2022

Project I:
Boyd Theater Demolition Site

Project II:
548 N. New St. Apartments

Project III:
Hotel Bethlehem Expansion

Changes to Parking Resource Inventory from Future Development

The first three projects are projected to displace 30 parking spaces and add 104 public parking spaces, **contributing a net total of 74 spaces to the study area's public parking system.** The demolition of the WSG and Walnut Street Lot will displace another 786 parking spaces, to be replaced with a new "right-sized" garage.

Recommended Parking Ratios for Future Development

According to the City's Zoning Ordinance Article 1319, "Off-Street Parking and Loading", off-street parking is not required in the Central Business (CB) District.

> *In any district other than the CB District, off-street parking spaces shall be provided and satisfactorily maintained in accordance with the following provisions for each building which, after the effective date of this Ordinance, is erected, enlarged or altered for any of the following purposes in any district. Although off-street parking shall not be required in the CB District, any provided off-street parking shall conform with Article 1319: (Amended by Ordinance 2015-17, April 7, 2015)*

All four (4) projects are located in the CB District, which does not have parking requirements. However, these projects will generate parking demand. Accordingly, THA proposed the following parking ratios for these projects based on the City's zoning ordinance for other districts and our experience with similar downtown development projects.

Table 14: Proposed Parking Ratio for the CB District

Land Use	Off-Street Parking Ratio
Residential	1.35 / Unit
Hotel	0.80 / Room
Retail	4.00 / 1,000 sf
Restaurant	8.00 / 1,000 sf
Event	15.00 / 1,000 sf

Source: THA Consulting, Inc, 2022

To develop the projected parking ratios outlined above, we made the following assumptions which are based on the parking standards set forth by the Urban Land Institute (ULI) and Institute for Transportation Engineers (ITE) along with adjustments associated with the characteristics of these projects.

1. **Walkability:** The area and the proposed developments are highly walkable with an existing "Walk Score[2]" of 89. The future projects and their mix of uses will likely increase the walkability of the area.

2. **Unbundled Parking Fees**: We have assumed that parking fees for the rental residential units in the future projects will be "unbundled" from the rent and set at a level that would not incentivize the use of private, single passenger vehicles.

3. **Residential Parking**: There are 204 residential units in Boyd Theater project, 33 residential units in 548 N. New St. Apartment project, and approximately 90 units in Walnut St Site Development project. THA has assumed a peak-hour ratio of 1.35 spaces per unit. Parking for residential guests is included in the parking ratios referenced above.

4. **Service Retail Customers:** We assumed a customer demand ratio of 2.50 and 2.80 spaces per 1,000 square feet (KSF) for the weekday and weekend, respectively.

5. **Service Retail Employees:** We assumed an employee demand ratio of 1.00 and 1.20 spaces per KSF for the weekday and weekend, respectively.

6. **Family Restaurant Customers:** We assumed a customer demand ratio of 4.40 and 6.20 spaces per KSF for the weekday and weekend. We assumed that 30% of the weekday and weekend family restaurant customers will utilize an alternative mode of transportation and that 30% of all weekday and weekend customers will be on-site for another purpose.

7. **Family Restaurant Employees:** We assumed an employee demand ratio of 1.20 and 1.80 spaces per KSF for the weekday and weekend. We assumed that 20% of the weekday and weekend family restaurant employees will utilize an alternative mode of transportation.

Future Projects' Parking Demand

The impact of the four (4) proposed development projects will increase the parking demand in the study area. Using the future development project information and the parking ratios referenced above, we conducted a preliminary demand analysis to estimate the future parking demand associated with proposed development.

Table 15 summarizes that these developments are projected to create an additional parking demand of 654 spaces prior to undertaking a shared parking analysis.

Table 15: Estimated Parking Demand by Future Development Projects

No.	Project Name	Resd. / Hotel	Retail	Restaurant	Event	Total Parking Demand
1	Boyd Theater	275	0	53	0	328
2	548 N. New St. Apartments	45	0	12	0	57
3	Hotel Bethlehem Expansion	58	0	0	60	118
4	Walnut Street Site Development	122	10	20	0	152
Total		**500**	**10**	**85**	**60**	**655**

Source: City of Bethlehem, THA Consulting, Inc, 2022

[2] https://www.walkscore.com/score/61-w-walnut-st-bethlehem-pa-18018

Future Development Shared Parking Analysis

To estimate the amount of parking necessary to meet the existing and projected demand for the study area, THA next performed two (2) shared parking analyses. A shared parking analysis projects the extent to which parking resources can be shared among different land uses and user groups without conflict because the different uses often have varying peak utilization times. Sharing parking resources reduces the amount of parking spaces that need to be built, and if parking fees are charged, increases facility utilization thereby financially supporting capital and operating expense budgets.

To understand the extent to which parking resources in the study area can be shared, THA first prepared a shared parking analysis for the proposed four (4) future development projects. Considering that the new developments will have a mix of land uses, some parking can be shared at different times and on different days. **Allowing for shared parking, we project the future developments will have an estimated peak weekday parking demand of 478 spaces at 7 PM and an estimated peak weekend parking demand of 503 spaces at 8 PM.** Figure 7 illustrates the parking demand trend by future development projects land use.

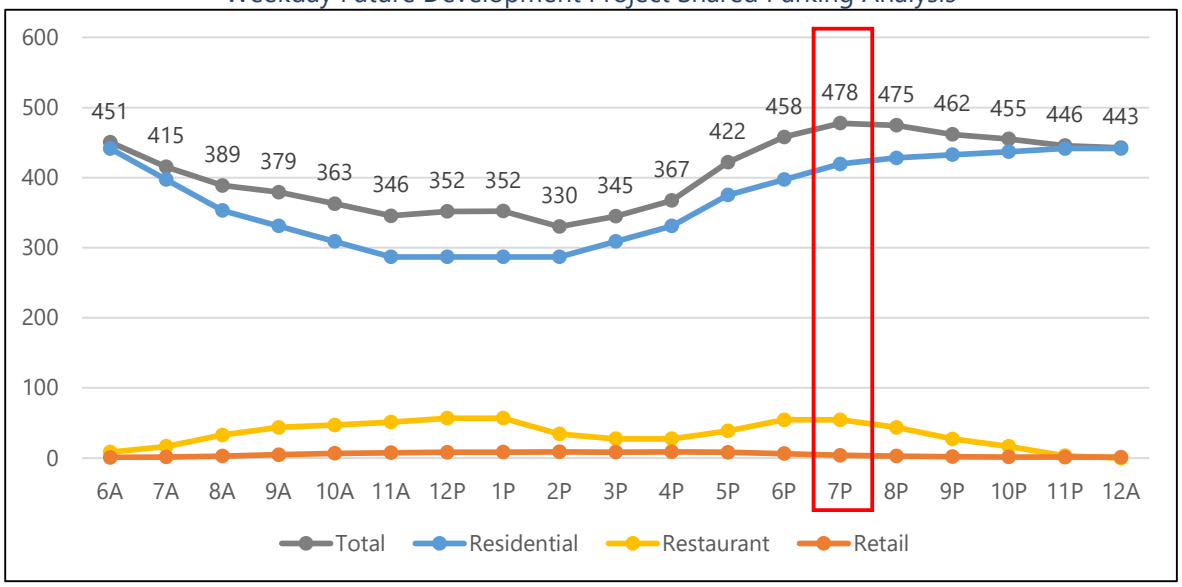
Table 16: Estimated Parking Demand by Development Projects with Shared Parking Analysis

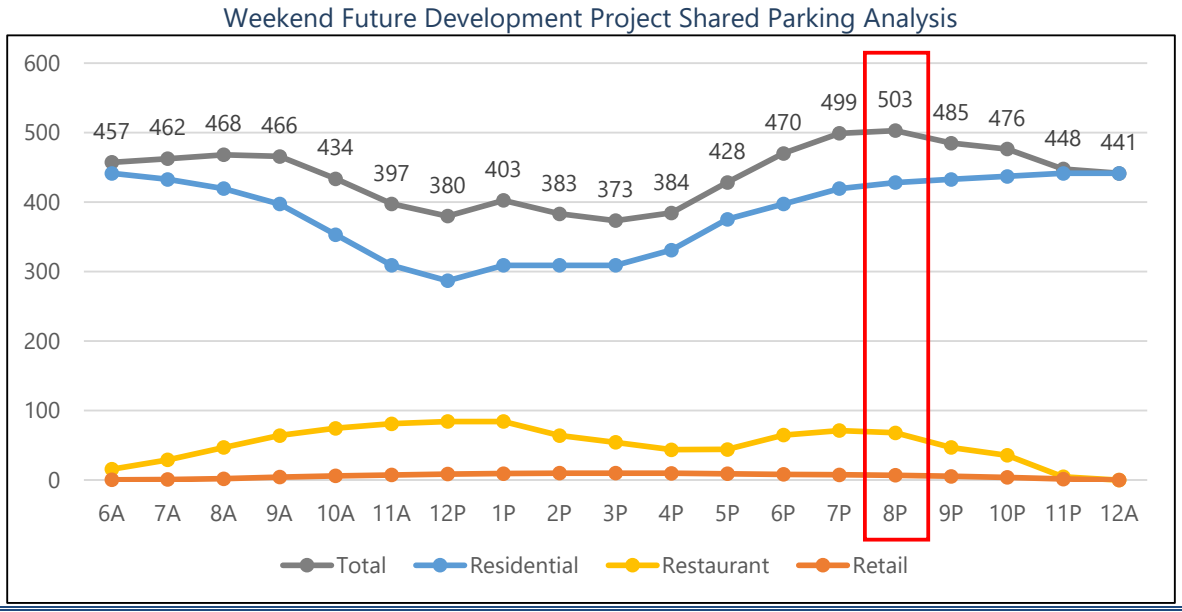
No.	Project Name	Total Parking Demand	Total with Shared Parking (Weekday)	Total with Shared Parking (Weekend)
1	Boyd Theater	328	296	309
2	548 N. New St. Apartments	57	50	53
3	Hotel Bethlehem Expansion	118	N/A	N/A
4	Walnut Street Site Development	152	132	141
Total		**654**	**478**	**503**

Source: City of Bethlehem, THA Consulting, Inc, 2022

Figure 7: Weekday and Weekend Future Development Project Shared Parking Analysis

Weekday Future Development Project Shared Parking Analysis



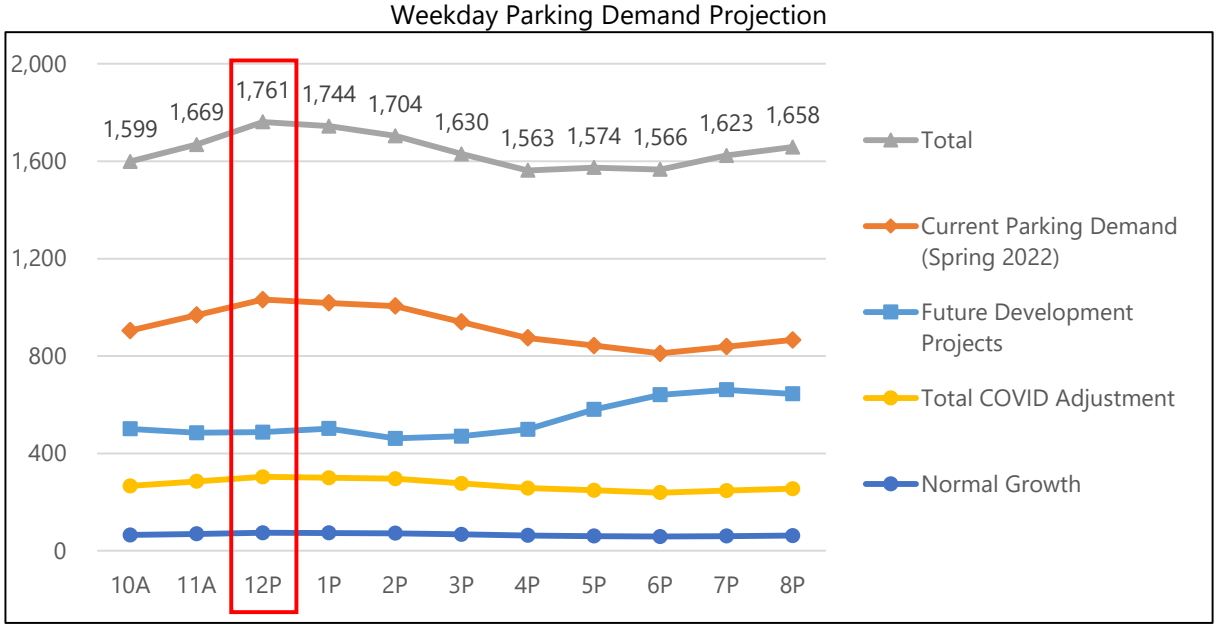


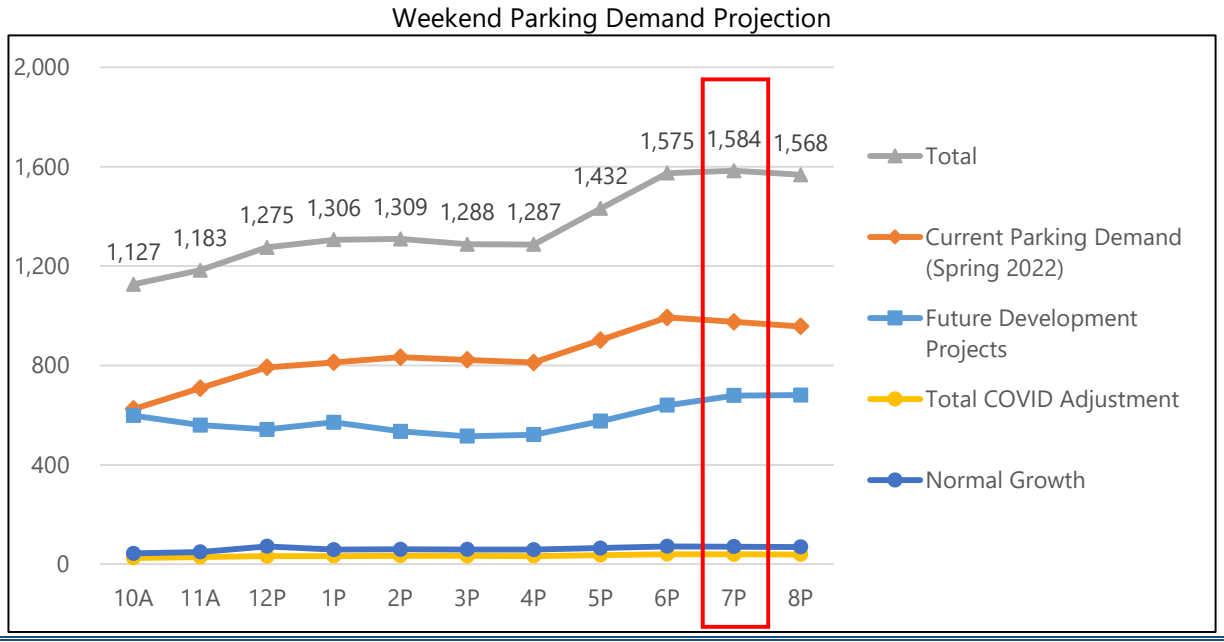
Source: THA Consulting, Inc, 2022

Shared Parking with Existing Demand

To understand the ability to share parking within the study area, THA applied the shared parking demand of the future development projects to the existing parking demand in the study area. On weekdays, the current parking demand peaks at 12 PM, while we expect parking demand for future projects to peak in the evenings at around 7 PM. Because they peak at different times, future parking demand will be able to share parking spaces with existing uses. On weekends, however, both current and future parking demand uses are expected to exhibit similar peak demand periods. Therefore, after adjusting for the ability to share parking between current use and future development projects, there is a **6.7% or 126-space reduction from the combined current and future projects' peak parking demand on weekdays, and only a 1.5% or 24-space reduction on weekends**.

Figure 8: Parking Trend Breakdown on Weekdays and Weekends





Source: THA Consulting, Inc, 2022

Please note that these parking demand projections are based on anticipated development projects presently under consideration. Many factors can impact the progress or the ultimate fruition of a project and should one or more of these projects not proceed within the 5-year time frame, the parking demand projection outlined herein may change significantly. For example, if the anticipated developments include a highly successful restaurant establishment, the parking demand for that particular restaurant may exceed the estimated demand projected in this analysis or if a development project does not proceed, the parking demand will be reduced.

Effective Parking Supply Reduction

Another consideration in projecting future parking adequacy is the "effective" parking supply. It is essentially a cushion used to account for parking spaces lost due to misparked vehicles, construction, the difficulty to locate parking, and the natural ebb and flow of vehicles. It considers that a parking supply operates at a peak efficiency when parking occupancy is less than 85% to 95% of the supply. When occupancy exceeds this level, patrons may experience delays and frustration while searching for the last few remaining spaces. This creates a perception that the supply is inadequate even when there are some spaces still available.

For the study area, we have assigned a 5% cushion (i.e. a 95% effective supply factor) to all on- and off-street parking spaces. The result is 1,305 projected "effective" parking spaces which **reflects a supply reduction of 69 spaces**.

EVENT PARKING

Due to its diverse history, renowned cultural attractions, and accessible venue space, the city hosts many events throughout the year that attract people from the Lehigh Valley, the Northeast, and even the globe. The following events bring a significant number of visitors to Bethlehem who tend to use the NSG and WSG facilities.

- **Musikfest (August)**
- **Celtic Fest (Late September)**
- **Christmas Live Advent (December)**

Musikfest

Celtic Fest

Christmas Live Advent

While accommodating event parking is extremely important to the success of the referenced events, **THA did not incorporate the major event parking demand in the future demand summary.** Sizing the replacement for the WSG to accommodate these events would be extremely costly and result in vacant parking for most of the year.

FUTURE PARKING DEMAND PROJECTION SUMMARY

Based on the parking adequacy analysis above, and the future demolition of the WSG and Walnut Street Lot, **we anticipate a parking deficit of approximately 500 spaces in the study area on weekdays and 310 spaces on weekends. Based on the finding of the parking study, we recommend a replacement parking facility with approximately 500 spaces to support the downtown actives and future adjacent projects. Table 17** summarizes the future parking adequacy analysis.

Table 17: Proposed WSG Weekday Parking Demand on Weekday and Weekend

Future Weekday Projected Parking Need	Parking Spaces
Demand	
Current Parking Demand (Spring 2022)	1,031
COVID Adjustment Factor	346
Normal Growth (2023 - 2027)	74
Projected Future Development Demand (with Shared Parking Analysis)	478
Shared Parking Reduction - Existing Demand and Future Developments - 6.7%	(126)
Total Demand	**1,803**
Supply	
Current Parking Supply	2,086
Additional Parking by New Development Projects	74
Displaced Walnut Street Garage/Lot Parking	(786)
Effective Supply Reduction - 5%	(69)
Total Supply	**1,305**
Projected Future Parking Need	**(498)**

Future Weekend Projected Parking Need	Parking Spaces
Demand	
Current Parking Demand (Spring 2022)	993
COVID Adjustment Factor	70
Normal Growth (2023 - 2027)	71
Projected Future Development Demand (with Shared Parking Analysis)	503
Shared Parking Reduction - Existing Demand and Future Developments - 1.5%	(24)
Total Demand	**1,613**
Supply	
Current Parking Supply	2,086
Additional Parking by New Development Projects	74
Displaced Walnut Street Garage/Lot Parking	(786)
Effective Supply Reduction - 5%	(69)
Total Supply	**1,305**
Projected Future Parking Need	**(308)**

Source: THA Consulting, Inc, 2022

Based on the Peak Demand Parking Supply and Demand Assessment resulting in a future parking need of 498 spaces, THA anticipates that the development of a 565 +/- space garage as presented in the Site Feasibility Study section of this report, is adequate to meet the study area's parking needs for the foreseeable future. To properly size the replacement of the Walnut Street Garage (WSG), the Parking Supply and Demand Assessment accounts the following parking demand:

1. The existing peak parking demand in the study area, Weekdays 12-2pm - 1,031 spaces.
2. Additional parking demand recognizing that downtown business activity may not have yet normalized due to Covid - 346 spaces.
3. Additional parking demand associated with potential new development and normal growth based on a shared parking analysis amongst the various land uses - 426 spaces.

4. Additional parking effective supply "cushion" - 69 spaces.

   Total = 1,872 spaces

The parking supply to satisfy the referenced parking demand includes the following:

1. The existing parking in the study area without the WSG - 1,300 spaces.
2. The additional parking anticipated from new development projects - 74 spaces.
3. The new WSG – 565 spaces

   Total = 1,939 spaces

Event and Holiday Parking

Recognizing that there are major annual events in Bethlehem (Musikfest and the Celtic Fest) where parking demand in the study area may exceed available supply, the BPA has additional parking resources - the Riverport Garage, New Street Garage and Polk Street Garage totaling over 800 available spaces that can be utilized with a shuttle operation to help meet event parking demand.

Regarding increased parking demand in the study area during the holiday season, THA reviewed of the occupancy levels of the WSG and NSG's occupancy during the peak December 2021 Holiday Season, which occurred on Saturday, December 11, 2021. On that date the peak occupancy at WSG's was 97%, and the NSG's peak occupancy was only 50%, with approximately 400 spaces available. As such, even with a smaller replacement WSG, there is significant additional capacity at the NSG to accommodate the holiday season parking demand. In addition, the Lehigh Street Lot and Spring Street Lot can serve as additional parking resources to satisfy the holiday season parking demand.

Why "right size" the New Walnut Street Parking Garage?

The replacement of the WSG is expensive to construct! The construction cost of an above-ground structured parking facility in the Bethlehem area today can easily exceed $30,000 per space based on various site constraints, conditions, and other factors, especially considering recent supply chain and building material cost premiums. In addition, the parking revenue typically generated at a new public structured parking facility is rarely adequate to cover the associated debt service, operating, and capital reserve costs, which typically equates to $250 per space per month. Accordingly, a new facility must often be subsidized by the revenue from the overall municipal parking system.
As an example, if the BPA were to replace the WSG with the existing number of spaces in the garage and the adjacent lot (786 spaces) versus what has been identified as adequate for all activity area parking demand (565 spaces), expect for certain event days as outlined above, the replacement cost differential in broad terms, may approach or exceed $6,600,000 (221 spaces @ $30,000 per spaces = $6,630,000). The debt service alone on this additional cost, based on a 30-year amortization and 5% interest rate (tax exempt), would be approximately $420,000 per year in addition to additional operating costs associated with the larger garage.

The full replacement of the WSG at 786 spaces will also likely require more land thereby diminishing the opportunity for the development of higher and better uses such as housing, commercial, or retail on the site which will contribute to the downtown's economic activity, ratables, and amenities. Developing the WSG site for both parking and mixed-uses provides a range of benefits including reclaiming land for purposes beyond the simple storage of vehicles. "Right sizing" the new garage provides a better opportunity to develop the remainder of the site in a manner that will contribute to the downtown's economic vibrancy and sustainability. By pursuing this outcome, the BPA and City are participating in an urban planning trend of pursuing policies that consider parking as a component of a downtown rather than their focal point. That said, the BPA recognizes that parking in downtown Bethlehem is vital to business owners, shoppers, diners, and a host of other users and is committed to providing the appropriate amount of parking to support the economic well-being of the downtown.

THA CONSULTING

Parking and Mixed-Use Development Site Feasibility Study

THA CONSULTING

Interim Parking Plan

INTERIM PARKING PLAN

INTRODUCTION

Bethlehem Parking Authority (BPA) plans to demolish and redevelop of the 770-space Walnut Street Garage (WSG) along with the adjacent 16-space Walnut Street Lot (WSL). The garage's demolition and construction of a new facility is anticipated to take approximately 20 months, during which time WSG permit and transient parkers need access to parking alternatives. As part of the Interim Parking Plan, THA in conjunction with the BPA identified potential parking alternatives to accommodate displaced parkers. Table 18 below lists each phase and anticipated duration.

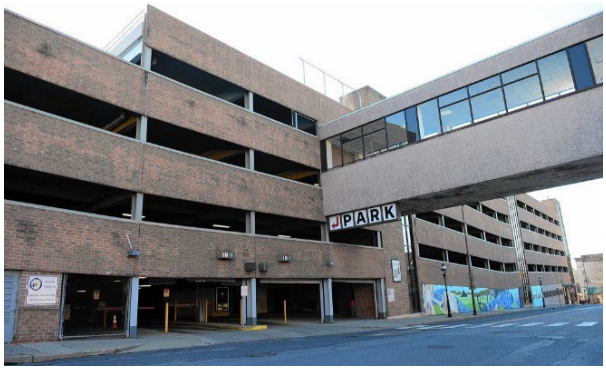


Table 18: Anticipated Schedule

Schedule Phase	Duration (Months)
Garage Demolition	6
Garage Construction	12
Permanent Certificate of Occupancy	2
Total	**20**

Source: THA Consulting, 2022

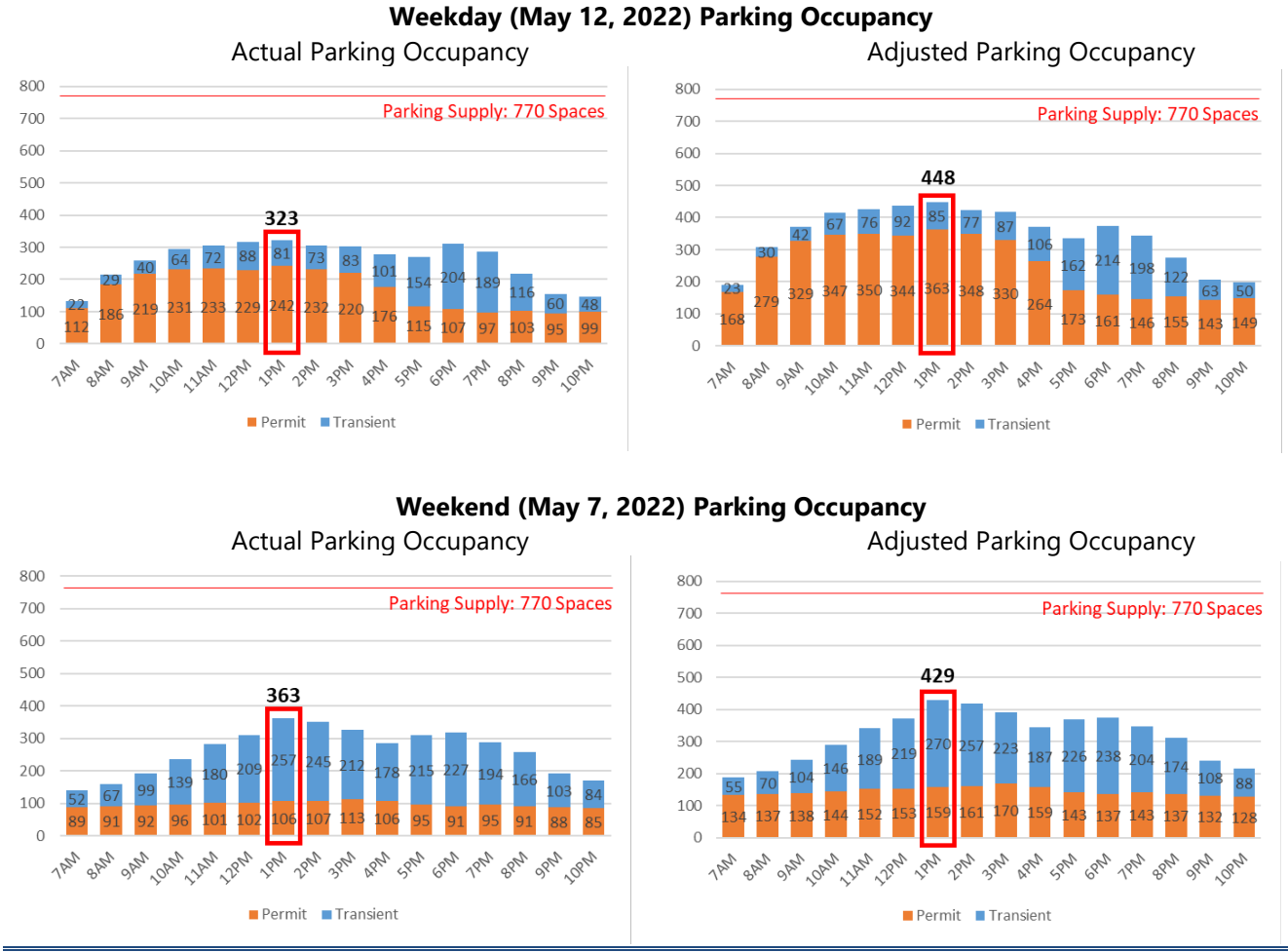
As a first step in developing the interim parking plan, THA considered and identified both private and public parking garages and lots which could be utilized for interim parking during the demolition and construction period to accommodate typical WSG parking demand on both weekdays and weekends. In addition, there are multiple event days throughout the year (typically on weekends) when existing and interim facilities will reach occupancy which will require using more remote facilities serviced by a shuttle service.

WALNUT STREET GARAGE DISPLACED PARKER SUMMARY

Based on the occupancy reports provided by FlashParking (Flash) between May 5 and May 15, 2022, **the WSG parking occupancy for weekdays ranges from 292 to 378 spaces, while for weekends it ranges from 205 to 457.** Also, the Walnut Street Lot (WSL) next to the WSG has 16 spaces for permit-holders only. **Therefore, the overall parking occupancy at the WSG and adjacent lot for weekdays ranges from 302 to 388 spaces, while for weekends it ranges from 217 to 469.**

To fully consider the replacement parking for these facilities, based on present return-to-work trends, we assume that parking demand for permit-holders may increase by approximately 50% on weekdays over the next 12 months. As more downtown Bethlehem employees return to work, at least on Tuesdays, Wednesdays and Thursday. We also anticipate a 5% increase for transient parkers. Figure 9 below shows the weekday and weekend's parking occupancy by permit and transient parkers with and without adjustments.

Figure 9: Weekday and Weekend Permit and Transient Parking Occupancy



Source: FlashParking, 2022.

Based on the May 2022 occupancy data and the referenced adjustments, we anticipate that the parking demand at the WSG and the WSL that will need to be relocated during the demolition and the construction of a new facility will be up to 460 spaces on weekdays and up to 445 on weekends. Please note that as previously stated, major event days will generate more demand than is estimated. Also, considering the changing demand for parking resulting from remote work trends and the state of the pandemic, an additional review of occupancy data can further refine the projected amount of parking to be replaced prior to the demolition of the WSG.

POTENTIAL RELOCATION FACILITIES

Public Parking Resources

1) North Street Garage

The NSG is an 800-space structured parking facility. It is approximately 1,000 feet from WSG. The NSG's current occupancy on weekdays ranges from 37% (293 spaces) to 48% (380 spaces), and on weekends occupancy ranges from 20% (161 spaces) to 31% (247 spaces). We estimate that up to approximately 250 spaces will be available at the NSG on weekdays and 535 spaces on weekends when the garage is sparsely utilized. **On weekdays, 100 permit parkers and 150 transient parkers can be accommodated. On weekends, 100 spaces can be used for permit parking, and the remaining 435 spaces for transient parkers which will satisfy the entire replacement need on a typical weekend.**

2) East Broad Street Lot

The East Broad Street Lot has 113 spaces and is approximately 1,100 feet from WSG. The current occupancy on weekdays ranges from 36% (41 spaces) to 54% (61 spaces), and on weekends occupancy ranges from 17% (19 spaces) to 43% (49 spaces). Based on this level of occupancy, there is an availability of approximately 50 spaces on weekdays and weekends. **We estimate that up to approximately 30 transient parkers can be accommodated on both weekdays and weekends.**

3) Spring Street Lot

The Spring Street Lot has 290 spaces and is approximately 2,000 feet from WSG, and approximately 1,300 feet from Main Street. The lot is currently owned by the City and leased to Historic Bethlehem Museum & Sites (HBMS). Currently, on a typical day fewer than 100 spaces in this lot are being used. **We estimate that up to 170 spaces are available on weekdays and weekends, except for major event days. 60 spaces can be used for transient parking, and 110 spaces can be used for permit-holders.** To maximize the Spring Street Lot's utilization and availability to successfully address and manage the area's interim parking needs during the demolition of the WSG garage and the new garage, we recommend that the BPA oversee the operation of the facility, recognizing that the BPA would honor all existing parking agreements at the facility.

4) Lehigh Street Lot

The Lehigh Street Lot has 87 spaces. It is approximately 2,300 feet from WSG, and approximately 1,600 feet from downtown. The lot is currently used by both permit and transient parkers. However, most of the time on weekdays, this lot is predominantly vacant. **We estimate that up to 80 permit parkers can be accommodated on weekdays, except for major event days hosted on the lot.**

Private Parking Resources

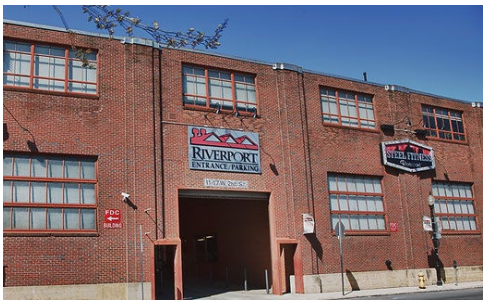
To provide additional interim parking, the BPA could potentially master lease underutilized private parking assets and then administer the sale and provision of permits to downtown employees to utilize these parking resources. To promote cooperation with private owners, the lease terms would need to provide for compensation, insurance, upkeep, and acceptable lease termination terms. THA identified two (2) underutilized private parking lots near the WSG: the Trinity United Church parking lot and the lot at 218 Union Boulevard. **We estimate approximately 50 parkers could be accommodated on weekdays.**

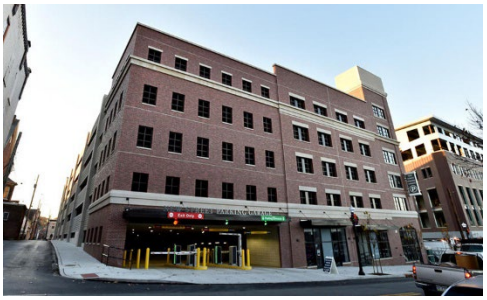
5) Trinity United Church Parking Lot

6) 218 Union Blvd

Event Parking

During major event days, to accommodate the loss of the WSG parking, available spaces can be used in garages on the South Side of Bethlehem or in other remote lots identified by the BPA.





1) Riverport Garage – Event Parking

The Riverport Garage has 412 spaces, and it is located on the south side of the Lehigh River. The garage is approximately 4,000 feet from WSG, and approximately 3,500 feet from downtown. Based on existing demand according to the BPA, we estimate the Riverport Garage can **accommodate approximately 200 parkers on event days.** Due to its distance from downtown, parkers at this garage may need additional transportation to get downtown such as a shuttle or carshare. If a shuttle is offered for the Riverport Garage, it can also connect with the New Street Garage, which is two blocks south.

2) New Street Garage – Event Parking

The New Street Garage has 626 spaces, and it is located on the south side of the Lehigh River. The garage is approximately 4,900 feet from WSG, and approximately 4,500 feet from downtown. Based on existing demand according to the BPA, we estimate the New Street Garage can **accommodate approximately 250 parkers on event days.** Due to its distance from downtown, parkers at this garage may need additional transportation to get downtown such as a shuttle or carshare as referenced above.

3) Polk Street Garage – Event Parking

The Polk Street Garage will be finish construction in July 2023. This garage has approximately 700 spaces, and it is located on the south side of the Lehigh River. The garage is approximately 6,200 feet from WSG, and approximately 5,400 feet from downtown. We estimate the Polk Street Garage can **accommodate approximately 350 parkers on event days.** Due to its distance from downtown, parkers at this garage will need additional transportation to get downtown such as a shuttle or carshare. If a shuttle is offered for the Polk Street Garage, it can also connect other parking structures on the South Side.

POTENTIAL INTERIM FACILITIES SUMMARY

As indicated previously, up to 460 spaces on weekdays and up to 445 spaces on weekends are anticipated to be utilized when demolition of the WSG starts. Table 19 summarizes the estimated number of interim parking spaces available in each facility on a typical weekday and weekend to accommodate the lost WSG/WSL parking. Public facilities are shown in blue and private facilities are orange**. Up to approximately 530 vehicles can be accommodated on weekdays, approximately 785 vehicles on weekends, and approximately 800 spaces during event days.**

Table 19: Interim Parking Resource

#	Facility Name	Total Supply	Weekday			Weekend			Distance to WSG (ft)	Distance to Downtown /Main St (ft)
			Available Supply	Number of Spaces to Accommodate		Available Supply	Number of Spaces to Accommodate			
				Permit	Transient		Permit	Transient		
1	North Street Garage	800	250	100	150	535	100	435	1,000	900
2	East Broad Street Lot	113	30	0	30	30	0	30	1,100	2,000
3	Spring Street Lot	290	170	110	60	120	0	0	2,000	1,300
4	Lehigh Street Lot	89	80	80	0	80	0	0	2,300	1,600
Subtotal		**1,292**	**530**	**290**	**240**	**765**	**100**	**465**	**N/A**	**N/A**
Event Parking										
1	Riverport Garage - Event	412	0	0	0	200	0	0	3,500	4,000
2	New Street Garage - Event	626	0	0	0	250	0	0	4,900	4,500
3	Polk Street Garage - Event	731	0	0	0	350	0	0	6,200	5,400
Subtotal		**1,769**	**0**	**0**	**0**	**800**	**0**	**0**	**N/A**	**N/A**

Source: Bethlehem Parking Authority, THA Consulting, Inc, 2022

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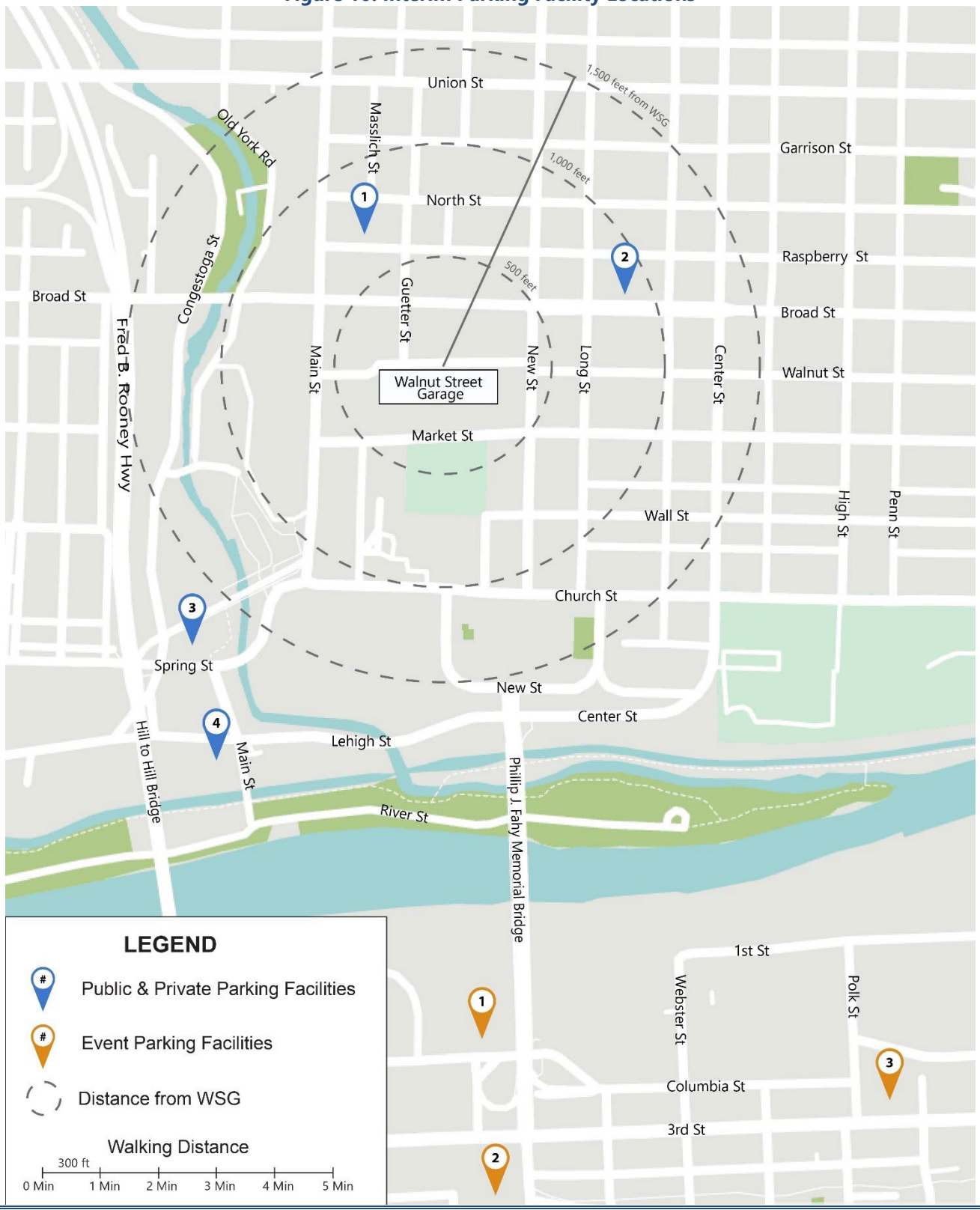
Figure 10: Interim Parking Facility Locations



Source: Bethlehem Parking Authority, THA Consulting, Inc, 2022

PARKING DEMAND MANAGEMENT STRATEGIES

To assist in the management of the BPA's parking resources and the interim parking facilities during the WSG demolition and new facility construction, the BPA can implement the following parking management strategies:

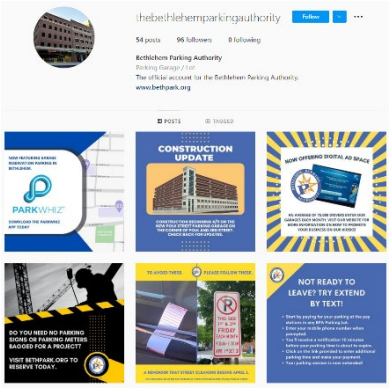
1) Install Updated Wayfinding and Parking Signage

Wayfinding is a comprehensive signage system with a standardized format that clearly communicates the location of parking and various destinations to all types of travelers. The role of the wayfinding system and parking signs are to direct visitors toward available parking facilities. Once the WSG is demolished, drivers will need clearly communicated signage directing them toward the NSG and other interim parking facilities to avoid congestion on surrounding streets and to reduce the frustration of searching for available parking.

The City has wayfinding signs for the WSG, but not for the NSG. To encourage the utilization of the NSG during WSG's demolition / construction, the existing wayfinding system should be updated to direct visitors from downtown along Main Street and New Street toward the NSG. These signs would be installed at key vehicular approach locations and at the entries of each facility so that drivers can easily spot the entrance from both directions along North Street. The estimated cost to create and install the new signage is approximately $25,000.

2) Communicate Parking and Construction Information to Customers on City's Website and Social Media

During the demolition of the WSG and construction of a new facility, the City's website and social media can be a great outlet for communicating and promoting the available parking resources. Currently, the City's parking website offers useful information pertaining to rates, facilities' location, and other parking information. During the demolition / construction of the WSG, the City should use virtual messaging regarding interim facilities, including their location, rates, hours of operation, and accessibility.



In addition to its website, the City should consider using multiple social media outlets (e.g., Facebook, Instagram, Twitter) to provide parking and construction information to customers. The City should also create flyers and pocket cards to distribute to small businesses downtown. Local restaurants, shops, and venues should be aware of the City's messaging so that they can also provide parking information for their patrons on their own social media pages and websites.

Because adequate parking is essential for the success of local businesses, the BPA and the City may consider conducting regular meetings with businesses and other stakeholders to discuss the timing of each of the construction phases and the details of changes to the interim parking plan. The estimated cost to dedicate a part-time BPA staff member to communicate parking info is approximately $18,000.

3) Install Digital Occupancy Signage Systems in the North Street Garage to Monitor Parking Occupancy

Digital Signage Systems are increasingly used to provide real-time space availability to parking patrons. With these systems, parking occupancy is monitored in real-time and displayed on digital signage mounted at the entrance of parking garages and lots. These signs alert parkers of space availability in the parking facility before entering. The information can also be displayed on the City's website or via web-based devices, allowing downtown visitors to check real-time availability from their mobile phones before arrival.

BPA's existing Parking Access Revenue Control System (PARCS) monitors real-time parking occupancy. The BPA should consider procuring a digital signage system that can integrate with the Flash PARCS to display real-time parking occupancy information on digital signage or web-based devices such as websites or mobile apps. This enhancement will provide the ability to optimize existing parking facility utilization and provide parkers with real time occupancy data. The timely communication of accurate parking availability information is a valuable method to combat the negative parking experiences that are often the result of a perceived lack of parking. **The estimated one-time cost to procure and install a digital parking occupancy signage system is approximately $6,500 for signage and signage installation, and a $300 annual software licensing fee.**

4) Identify "Meet Up" Facilities

To reduce permit-holder's parking demand in NSG, the BPA and the City can identify a "meet up" facility that is currently underutilized where permit-holders can conveniently meet and leave one or more vehicles, and then drive a short distance together to the designated parking facility. This will offer more employees the ability to park closer to their offices even if the NSG is near capacity.

5) Downtown Circulator or On-demand Transit Service

Due to the high parking demand during event days, the BPA should consider establishing a shuttle service to provide connections between garages or remote lots and the downtown during event days. The BPA can consider multiple operating options including self-operation or engaging with a third-party transit service.

Two potential ways to utilize a shuttle service option include:

- designating a remote pick-up lot where users would park free of charge or at a nominal fee and then be dropped off at a downtown location; or
- establishing a designated route on main streets through major employment clusters, where users could conveniently access the system.

We expect that based on remote work patterns, permit-holder demand will peak on Tuesdays, Wednesdays, and Thursdays, so the shuttle service with a 14-passenger non-ADA accessible vehicle can be offered for those three days per week, for 50 weeks per year (excluding Thanksgiving and Christmas weeks), between 8am to 10am and 3pm to 6pm. **The estimated cost to operate a circulator shuttle for three days per week is approximately $550 per service day and the annual cost per bus is approximately $82,500.**

6) Valet Assist in North Street Garage

In order to provide additional parking during demolition / construction at the WSG location, a "valet assist" parking program can be implemented during major events to maximize parking at the NSG. With "valet assist", the facility will operate completely as a self-parking facility until such time that there are no self-parking spaces available. After all self-park spaces are occupied, the attendant(s) will direct parkers to the roof level to park in the aisles behind cars parked in the "formal" spaces in a daisy chain formation and collect their keys as they exit the vehicle. Using this method, NSG can accommodate additional **45 vehicles**. As parkers return throughout the day, cars parked in the aisles are transitioned by attendants to "formal" self-park spaces and keys are returned to patrons who parked in aisles so they can retrieve their own vehicles. Assuming the valet assist service will be provided for up to 10 major event days, the estimated hourly cost is $60, **the estimated cost to operate a valet assist program per event at the NSG is approximately $2,500, annual cost is approximately $25,000.**

ESTIMATED COST SUMMARY OF INTERIM PARKING ALTERNATIVES

Outlined below is the cost summary and cost assumptions of interim parking plan's parking demand mitigation.

Items	One-Time Cost	Annual Cost
Install updated wayfinding and interim parking signage	$25,000	N/A
Communicate parking and construction information	N/A	$15,000
Install digital occupancy signage systems in North Street Garage	$6,500	$300
Downtown Circulator or On-Demand Transit Service	N/A	$82,500
Valet assist in North Street Garage	N/A	$25,000

Install updated wayfinding and interim parking signage

Assumptions:

- Includes cost of signage and installation.
- The total estimated **one-time cost** would be approximately **$25,000.**

Communicate Parking and Construction Information

Assumptions:

- Includes cost of BPA staff dedicating 15% of their time toward communication efforts.
- The total estimated **annual** cost would be approximately **$15,000.**

Install digital occupancy signage systems in North Street Garage

Assumptions:

- The North Street Garage occupancy signage system will use the existing Parking Access Revenue Control System (PARCS) to capture the parking counts.
- Based on a quote from Flash Parking, the **one-time cost** of the digital occupancy signage systems for North Street Garage is approximately **$6,500,** and a **$300 annual cost**.

Downtown Circulator or On-Demand Transit Service

Assumptions:

- The Downtown Circulator or On-Demand Transit Service would run on Tuesdays, Wednesdays, and Thursdays for 50 weeks per year (excluding Thanksgiving and Christmas weeks), between 8am to 10am and 3pm to 6pm.
- The estimated cost is approximately **$550 per service day** and **$82,500 annually.**

Valet assist in North Street Garage

Assumptions:

- Valet assist service will be provided for up to 10 major event days.
- The hourly cost is $60, which includes salaries & wages, payroll taxes & burden, liability insurance, management fee, etc.
- The operation hours are 12 hours per day, with up to 3 staff per day.
- The estimated operate cost of a valet assist program per event at the NSG is approximately $2,500.
- The estimated annual cost is approximately **$25,000**.

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Appendix A:
Concept Plan (10/19/2022)

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Appendix B: Boundary and Topographic Survey

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Appendix C: Utility Survey

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Appendix D: Market Street Condo Association Agreement (DRAFT)

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Walnut Street Parking Structure Site Retail Market Analysis

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Walnut Street Parking Structure Site Residential Market Analysis