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November 10, 2014
(Revised June 24, 2015)

Mr. Thomas J. Fountaine
Borough Manager
Borough of State College
243 S. Allen Street
State College, PA 16801

Re:

Dear Mr. Fountaine,

Walker Parking Consultants is pleased to submit the attached final report of the Task 1 Comprehensive Supply/Demand Study for the Borough of State College. This report summarizes our findings regarding the conceptual parking plan for the downtown area.

We appreciate the opportunity to be of service to you and the Borough of State College. If you have any questions or comments, please call.

Sincerely,

WALKER PARKING CONSULTANTS

Jeffrey Colvin, AICP
Parking Consultant

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Ahead of the Curve
in creative parking solutions

PARKING MASTER PLAN

**TASK 1: COMPREHENSIVE
SUPPLY & DEMAND STUDY**
BOROUGH OF STATE COLLEGE

Prepared for:
BOROUGH OF STATE COLLEGE

JUNE 24, 2015



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EXECUTIVE SUMMARY**EXISTING CONDITIONS**

Walker was engaged by the Borough of State College to determine how future development, specifically those projects identified in the Master Plan, will impact existing parking conditions in the downtown area, how those changes will affect parking operations, and how to successfully incorporate the findings and recommendations of the Comprehensive Parking Study into the Borough's long-term development strategy. In order to achieve these goals, Walker proposed a multi-prong parking approach.

The initial phase focused on data collection. Walker conducted interviews with representatives from various community interests, businesses, civic organizations, municipal leaders, and staff in order to gather qualitative data related to current and future parking in the downtown area. In addition to discussing existing conditions and future goals, Walker conducted a comprehensive parking survey in order to understand current parking supply and demand within the 46-block Study Area.

There are approximately 7,350 parking spaces in the downtown area, including more than 1,500 public structured spaces in four garages. The total supply is adjusted to account for an operating cushion, resulting in an "effective" supply. This effective supply assumes that every last space in the system cannot be used efficiently, due to issues such as mis-parked cars, construction, circulation problems, snow, etc. Essentially, a parking system is at its "effective" capacity before it reaches 100 percent occupancy. In the Borough, the effective parking supply is 6,834 spaces.

Occupancy data was collected on a typical weekday and a football Saturday during the Fall of 2013. Data was collected at 10:00 am, 2:00 pm, 5:00 pm, and 8:00 pm in order to identify peak parking conditions. Peak weekday occupancy occurred with 4,807± vehicles parked, or 65 percent occupancy, around 10:00 am. During the PSU v. Purdue Football Game on November 16th, 2013, peak parking demand was recorded around 2:00 pm with 67 percent of spaces occupied, or 4,960 spaces.

Walker frequently recommends designing the parking supply to satisfy at least the 85th percentile level of activity. This level is usually equivalent to a very busy day that may occur once or twice a month. Because the survey day (the day data was collected) does not always represent design conditions, the observed weekday and Saturday parking demand is adjusted based on historical data to account for design day conditions. Walker compared the parking demand recorded on the survey day to historical data collected by the Borough at the Pugh Street, Fraser Street, and Beaver Street Garages and adjusted the observed public and private occupancy to represent design conditions in the downtown area.

During design conditions, we anticipate a peak weekday parking demand of 5,915 spaces (a 23% increase over survey day conditions). This equates to an 80 percent occupancy rate. The design day occupancy is compared to the effective parking supply in order to determine parking adequacy. A peak weekday parking adequacy occurred with a surplus of 919 spaces during the 10 o'clock hour. However, some experienced minor shortages.



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Similar to the weekday process, Walker compared the occupancy recorded on the weekend survey day, November 16th, 2013, to historical weekend parking occupancy data from each of the three public garages. Based on the annual data, the public parking demand observed on our weekend survey day in the three municipal garages represents the 95th percentile level of weekday activity. There were only five weekend days that experienced parking occupancy levels greater than the survey day, three football games, including Homecoming, Moving On, and the Arts Festival¹.

While Walker typically suggests designing parking to support the 85th percentile activity level, it is also important to understand what a worst case scenario would look like. State College often experiences event level parking demand associated with football games and other special events. Historical data indicates that public parking demand was highest on October 12th, 2013, with 1,357 spaces occupied in three of the four public garages; however there were about seven days last year (weekday and weekend) when parking volumes exceeded 1,300 spaces in the municipal garages. In order to understand parking conditions during the highest levels of activity, Walker adjusted the weekend survey day demand to reflect 100th percentile level of weekend activity. When compared to the 100th percentile day, the survey day parking demand was 40 percent lower.

We adjusted the observed public and private occupancy by 40% to represent design conditions in the downtown area on a Saturday. During design conditions, we anticipate a peak weekend parking demand of 6,941 spaces. This equates to a 94 percent occupancy rate. Again, in order to understand the adequacy of the parking system to support weekend design demand, the design day demand was compared to the effective parking supply, resulting in an approximately 107 space deficit.

FUTURE CONDITIONS

Future parking demand in the Borough was based on a combination of anticipated future development and a general assumed overall growth rate of 1% in the downtown area. In addition to projecting future parking demand, Walker adjusted the future parking supply in the downtown area based on the assumed developments. Walker estimated the total available parking supply will be increased to 7,603 spaces. This figure includes the introduction of new parking with each of the three new developments as required by code. It is our understanding that the Pugh Street Garage is not being demolished at this time.

¹ While November 16th represents the 95th percentile level of weekend activity, with only five weekend days experiencing higher occupancy levels, it only represents the 70th percentile level of activity when compared to the activity level for the year. There are 100 total days that experienced greater parking occupancy than November 16th.



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2017 DEMAND

Walker is projecting an overall occupancy rate of 84 percent or 6,412 spaces during weekday conditions in 2017. When compared to the future effective supply, a surplus of 664 spaces is expected during the weekday. It is important to note that while an overall surplus is anticipated, Zone B is expected to experience a small parking deficit.

By 2017, a peak weekend parking demand of 7,423 spaces is projected, resulting in an overall occupancy rate of 98 percent during weekend conditions. Zones A, B and D are expected to experience occupancy rates greater than 100 percent, especially Zones B and D where a 112 percent and 120 percent occupancy rate is projected, respectively. When the 2017 weekend parking demand is compared to the future effective supply, a 347-space deficit is expected during weekend conditions.

2019 DEMAND

In 2019, an 87 percent weekday occupancy rate, or 6,615 occupied spaces, is anticipated for the Study Area as a whole. Similar to 2017, the majority of zones are expected to have sufficient parking to support demand. However, in Zone B, a parking shortage is still anticipated. Walker compared the 2019 projected parking demand to the future effective parking supply in order to determine parking adequacy. A parking surplus of 461 spaces is anticipated.

A 100 percent occupancy rate is anticipated for the Study Area as a whole by 2019 during peak weekend conditions. Similar to 2017, Zones A, B and D are projected to experience parking occupancy above 100 percent. The peak parking demand is expected to reach 7,604 spaces. When compared to the future effective supply of 7,076 spaces, a parking deficit of approximately 528 spaces is anticipated. On a zone by zone basis, deficits are projected in Zones A, B, and D, with the largest deficit in Zone B.

2024 DEMAND

By 2024, a peak weekday parking demand of 6,982 spaces or 92 percent of capacity is projected for the Study Area. Walker determined the adequacy of the State College parking system by comparing the 2024 projected parking demand to the future effective parking supply. A parking surplus of 94 spaces is anticipated.

During peak weekend conditions, a 104 percent occupancy rate is projected for the Study Area in 2024. Parking occupancy rates are expected to exceed 100 percent in Zones A, B and D. It is important to remember that the parking occupancy levels for weekend conditions are based on 100th percentile design day conditions. During the majority of the year, parking occupancy levels will be less than the projected 7,944 occupied spaces. However, we anticipate five to ten days per year when demand will meet those levels. When the 2024 weekend parking demand is compared to the future effective supply, a parking shortage of 868 spaces is expected.



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The figure below summarizes the peak weekday and weekend parking demand during current and future conditions.

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TASK 1 – EXECUTIVE SUMMARY



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		Weekday					Weekend				
		Survey	Design	2017	2019	2024	Survey	Design	2017	2019	2024
On-Street	Supply	575	575	575	575	575	575	575	575	575	575
	Effective Supply	488	488	488	488	488	488	488	488	488	488
	Demand	328	407	415	427	450	428	598	618	628	661
	Occupancy	57%	71%	72%	74%	78%	74%	104%	107%	109%	115%
	Adequacy	160	81	73	61	38	60	(110)	(130)	(140)	(173)
Private Off-Street	Supply	4,916	4,916	5,230	5,230	5,230	4,916	4,916	5,230	5,230	5,230
	Effective Supply	4,671	4,671	4,968	4,968	4,968	4,671	4,671	4,968	4,968	4,968
	Demand	3,340	4,107	4,419	4,574	4,840	3,255	4,555	4,859	5,014	5,296
	Occupancy	68%	84%	84%	87%	93%	66%	93%	93%	96%	101%
	Adequacy	1,331	564	549	394	128	1,416	116	109	(46)	(328)
Public Off-Street	Supply	1,859	1,859	1,798	1,798	1,798	1,859	1,859	1,798	1,798	1,798
	Effective Supply	1,675	1,675	1,620	1,620	1,620	1,675	1,675	1,620	1,620	1,620
	Demand	1,139	1,401	1,578	1,614	1,692	1,277	1,788	1,946	1,962	1,987
	Occupancy	61%	75%	88%	90%	94%	69%	96%	108%	109%	111%
	Adequacy	536	274	42	6	(72)	398	(113)	(326)	(342)	(367)
Total	Supply	7,350	7,350	7,603	7,603	7,603	7,350	7,350	7,603	7,603	7,603
	Effective Supply	6,834	6,834	7,076	7,076	7,076	6,834	6,834	7,076	7,076	7,076
	Demand	4,807	5,915	6,412	6,615	6,982	4,960	6,941	7,423	7,604	7,944
	Occupancy	65%	80%	84%	87%	92%	67%	94%	98%	100%	104%
	Adequacy	2,027	919	664	461	94	1,874	(107)	(347)	(528)	(868)



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RECOMMENDATIONS

During future weekend design conditions, Walker projected a parking deficit of 868 spaces in the downtown area, of which approximately 540 are shortages in the public supply. Please note that the projected shortage is based on a “worst case” scenario that may only happen a dozen times per year; for a majority of the year, the public shortage will be less than 540 spaces. To support the shortage during peak conditions, approximately 600 spaces² would be needed. While the Borough could increase its parking supply, alternative options are also available to help decrease demand.

Based on our analysis of current and future parking demand in the Borough of State College, Walker identified several Transportation Demand Management (TDM) Strategies for the Borough to consider, including revitalizing the existing fee-in-lieu parking program, unbundling parking from office or housing development, and implementing smart parking technologies such as multi-space meters and automated parking guidance systems to improve wayfinding, increase the usable capacity of the system, and improve revenue collection. Walker’s recommendations also included implementing an employee cash-out program and creating a parking benefit district.

In addition to the various TDM strategies available to the Borough, Walker also recommended evaluating the pricing strategies currently utilized in the downtown area. Alternative pricing strategies available include performance based pricing, which focuses on setting the true market rate of an individual space based on demand. This method presents several challenges for municipalities, including the technological requirements and overcoming initial merchant resistance.

Another alternative pricing strategy focuses on shifting users to alternative transportation modes, such as CATA. To decrease traffic congestion and encourage the utilization of the CATA system, the borough could raise the rates for parking in the downtown area to levels higher than the rate of the CATA transit system. By increasing the cost of parking to levels greater than the cost of taking public transportation, some patrons would be inclined to shift from driving to taking the bus. Due to the current service routes of the transit system, this method has some limitations.

² Due to the inherent efficiency in the parking system, 600 spaces are needed to support the 540 space deficit (assuming a 90% effective supply factor).



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INTRODUCTION**BACKGROUND****SCOPE OF SERVICES**

Walker understands that one of the primary goals of this project is to determine how future development will impact existing parking conditions in the Downtown area and how those changes will affect parking operations. Additionally, the Borough plans to use findings and recommendations of the proposed comprehensive parking study to support the development strategy outlined in the Master Plan. After reviewing the main components of the Borough's proposed scope of work for this engagement, we submit the following scope of work. *Note that Walker's suggested approach for accomplishing the main components outlined in the Borough's RFP is presented in blue text. The Borough's original text is presented in black text.*

TASK 1 – COMPREHENSIVE SUPPLY AND DEMAND STUDY

1. Meet with the Borough representatives and stakeholders to review study objectives, boundaries, and deliverables. This meeting shall take place within three weeks of notice to proceed to the selected professional.
 - a. Attend a project kick-off meeting with Borough representatives to discuss their views about parking and goals for this planning effort.
 - b. Meet with select downtown businesses or commercial property owners to elicit their views regarding parking.
2. Obtain and review the recently released Borough's Downtown Master Plan, past reports, plans pertinent to the Borough's current parking conditions, and plans and developments that may impact future parking systems.
 - a. Obtain from Borough land use data for each building located within the Study Area.
 - b. Obtain from Borough projected program of future development projects including square footage, seating capacity, number of rooms, etc. and type of land use.
3. Conduct a comprehensive parking inventory of all hourly or long term rental parking facilities available for public use within the Borough of State College.
 - a. The Study Area is as defined in the "Borough of State College RFP Questions and Responses" as provided on August 29, 2013.
 - b. Inventory the publicly- and privately-owned, on-street and off-street parking facilities within the Study Area. Record the type of parking (e.g. public, commercial, or private and whether surface lot or structure), number of spaces reserved, and parking rates (if applicable).
4. Conduct a minimum of two parking occupancy surveys for both on- and off-street parking to determine typical peak hours and occupancy. One survey shall be conducted during the Pennsylvania State University school season on a football game day to determine the impact of Penn State University on the Borough's parking operations and conditions, and one shall be conducted on a "typical" day. Survey days shall be approved by the Borough in advance, and shall include rates of turnover for selected on- and off-street parking resources.
 - a. Perform parking space occupancy counts hourly in accordance with the "Borough of State College RFP Questions and Responses" dated August 29, 2013.



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5. Complete a parking supply/demand study analysis to evaluate existing parking conditions and adequacy, as well as five- and ten-year parking demand forecast. Provide the Borough an MS Excel spreadsheet that the Borough can update based on the firm's chosen demand generation formula.
 - a. Using the land use data provided by the Borough, compute parking demand based on industry-accepted parking generation rates and shared parking methodology.
 - b. On a block-by-block basis, calculate and compare parking demand with the current parking supply and identify areas with deficits and surpluses. This will also be done on a zone by zone basis.
 - c. Determine the future parking demand under two to three development scenarios prepared by the Borough. Typically, the scenarios include: 1) committed development that reflects projects either currently in construction or expected to begin within two to three years; 2) expected development that reflects projects likely occur within four to seven years; and 3) optimistic development that may come to fruition in the longer term.
 - d. Compare the parking supply with projected future demand to determine the impact each of the development scenarios will have on area parking conditions.
 - e. Identify areas with parking deficiencies that are likely to require expansion of the parking supply.
 - f. Provide Borough with Microsoft Excel spreadsheets.
6. Perform shared-use analysis for selected off-street parking facilities to maximize turnover.
7. Recommend strategies to decrease current and future parking demand, better distribute parking demand, and increase the utilization of existing parking facilities.
 - a. Identify and suggest opportunities for implementing transportation demand management strategies aimed at reducing the number of single occupancy vehicles. Such strategies could include the following:
 - i. A Fee-in-lieu Parking Program
 - ii. Unbundled Parking
 - iii. Smart Technology
 - iv. Employee Cash-Out Programs
 - v. Parking Benefit Districts
 - b. Evaluate parking pricing for publicly-owned on- and off-street parking spaces, considering the following:
 - i. Variable parking rates based on location
 - ii. Demand-based parking pricing
 - iii. On- versus off-street rates
 - iv. Public versus private parking rates
 - v. Parking rates versus cost of transportation modes that are alternatives to the single occupancy vehicle
 - vi. Parking pricing practices employed by other cities and lessons learned



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DEFINITION OF TERMS

Several terms or jargon in this report that have unique meanings when used in the parking industry. To help clarify these terms and enhance understanding by the reader, the following definitions are presented.

- **Adequacy** - The difference between the effective parking supply and parking space demand.
- **CAGR** – Compound Annual Growth Rate.
- **Design Day** - The day that represents the level of parking demand that the parking system is designed to accommodate. In most of the thousands of parking studies that we have conducted, this level of activity is typically equal to the 85th to 95th percentile of absolute peak activity. Although we will occasionally design to a higher-than-typical design standard, such as one exceeded less than one day per month or even the absolute peak level of demand, we do not typically design to these extreme conditions because the result is an abundance of spaces that remain unused most of the time.
- **Effective Supply** - The total supply of parking spaces, adjusted to reflect the cushion needed to provide for vehicles moving in and out of spaces, spaces unavailable due to maintenance, and to reduce the time necessary for parking patrons to find the last few available spaces. The effective supply varies as to the user group and type of parking, but typically the effective supply is 85 percent to 95 percent of the total number of spaces. The adjustment factor is known as the Effective Supply Factor.
- **Inventory** - The total number of marked parking spaces within the Study Area.
- **Parking Generation** - The peak accumulation of parked vehicles generated by the land uses present under any given set of conditions.
- **Patron or User** - Any individual parking in a study area.
- **Peak Hour** - The peak hour represents the busiest hour of the day for parking demand.
- **Survey Day** - The day that occupancy counts within a study area are recorded. This day should represent a typical busy day.



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STAKEHOLDER INPUT

An important element of our study was to engage key segments of the State College community in conversations regarding parking. These conversations allow us to compare opinions, perceptions, and ideas about parking to quantitative data collected during our site visits.

Walker conducted interviews with representatives from various community interests, businesses, civic organizations, municipal leaders, and staff in order to gather qualitative data related to current and future parking in the downtown area. These conversations took place in face to face group settings and in individual one-on-one conversations, both in person and via telephone calls.

The key issues and ideas from community members are as follows:

- Downtown business owners would like to see the "Fee in lieu of" program restored (The borough still has it).
- The existing zoning ordinance may require more parking spaces than are actually needed.
- The parking problem is a perception held by many residents.
- Improved way finding to available parking areas is needed.
- The addition of space availability signs would improve the parking experience for downtown patrons.
- Downtown business owners would like to see a program that would provide free parking to frequent patrons of their respective businesses.
- The bottom floors of garages should be reserved for short term parking.
- Valet parking could be added and facilitated by the borough.
- Improve the communication to residents and visitors on the benefits of parking in garages.
- Parking enforcement currently runs between 10 am and 10 pm in the downtown area.
- Include a well-lit bicycle parking area within garages.
- The borough needs more bicycle parking, especially covered parking.
- Seniors and disabled persons have difficulties with remembering license plate numbers.
- There is a perception of a reduction in meter feeding.
- 90 minute parking works, as it keeps Penn State students from parking in those spaces.
- Better education of available parking options is needed.
- A system to eliminate or validate a ticket is wanted.
- The borough web site needs more advertising downtown to increase awareness about its existence.
- A mobile website or application (app) for parking is wanted.
- Existing parking kiosks need to be more user-friendly.
- Covers over existing and future kiosks may be needed.



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SUPPLY AND DEMAND ANALYSIS**STUDY AREA**

Walker identified a 46-block Study Area as the focus of this study. The Study Area is generally bounded by College Avenue to the north, High Street to the east, Fairmount Avenue to the south, and Burrows Road to the west. Additionally, there are six blocks on the west side of Burrows Road between College Avenue and Beaver Avenue that are also included in the Study Area.

In order to understand demand characteristics of specific regions within the Study Area, Walker identified five zones. The figure on the following page depicts the Study Area.

Figure 1: Study Area



Source: Google, 2014

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The zones are loosely designated on similarity in the physical proximity and types of land uses found in and around that area. For example, Zone B is mainly commercial and consists of blocks 9 through 24. The blocks are located in the downtown core between College and Beaver Avenues, Garner Street, and Burrowes Road. East of Garner Street, there are more residential complexes mixed in with commercial. Similarly, west of Burrowes Road, the commercial density decreases and there is more residential development.

PARKING SUPPLY

Our inventory of parking supply in the Study Area found a total of 7,350± spaces. Table 1 shows the breakdown by parking zone and type. Please note that the designations “public” and “private” have nothing to do with ownership, but rather with how lots are used. A public lot is any lot available to the general public for free or for a rate. A private lot is any lot, even if owned by a public entity, that is restricted to particular user groups (“customer only” or “County employees only,” for example).

Table 1: Parking Supply

Zone	On-Street	Private Off-Street Surface	Private Off-Street Structured	Public Off-Street Surface	Public Off-Street Structured	Total
A	150	665	461	88	0	1,364
B	207	310	165	149	1,022	1,853
C	6	318	217	17	0	558
D	61	1,029	155	0	0	1,245
E	151	947	649	93	490	2,330
Total	575	3,269	1,647	347	1,512	7,350

Source: Walker Parking Consultants, 2014

Approximately two thirds of the available parking supply, or 4,916 spaces, within the Study Area is private parking, while the remaining 2,434 spaces are public. Additionally, on-street parking is available throughout the Study Area; however the majority of the available supply is located east of Burrowes Road. A more detailed breakdown of the available parking supply is available in the Appendix.

STRUCTURED PARKING

There are four public parking garages in the downtown area – the McAllister Street Garage on Block 15, the Pugh Street Garage on Block 19, the Fraser Street Garage on Block 22, and the Beaver Street Garage on Block 42. Please note that three of the four public garages are located within Zone B, the downtown core. Within these garages there are approximately 1,512 public spaces. The public parking supply for each garage in the table below was provided by the Borough.



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Walker also observed approximately 1,647 private structured spaces within the Study Area. Some of these facilities consist of small 30 space facilities beneath residential buildings, while others are 200 space structures for residential and commercial parkers.

Table 2: Structured Parking Supply by Block

Zone	Block	Private Off-Street Structured	Public Off-Street Structured
A	1	21	0
A	2	184	0
A	4	103	0
A	5	153	0
B	11	34	0
B	14	78	0
B	15	0	214
B	19	0	491
B	22	0	317
B	23	53	0
C	25	217	0
D	33	55	0
D	34	100	0
E	37	175	0
E	38	255	0
E	39	149	0
E	41	70	0
E	42	0	490
Total		1,647	1,512

Source: Walker Parking Consultants, 2014

EFFECTIVE PARKING SUPPLY

When we evaluate the ability of a parking system to accommodate demand, we do not assume that every last space in the inventory can be used efficiently. When occupancy rates are very high, people have a difficult time finding the last few spaces, and circulation problems ensue. Also, there are inevitably mis-parked vehicles, minor construction, or other obstructions that prevent every last space from being used. Therefore, we consider a parking system to be at its “effective” capacity before it reaches 100 percent occupancy.



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The analysis of the parking system uses a reduced, or "effective" supply adjustment to account for the circulation and operation cushions needed to make the system run smoothly. The reduction is 5 to 15 percent of the supply, depending on the following factors:

- **Capacity** – Large, scattered surface lots operate less efficiently than a more compact facility, such as a parking structure, which offers consolidated parking in which traffic generally passes more available parking spaces in a compact area. Moreover, it is more difficult to find the available spaces in a widespread parking area than a centralized parking facility.
- **Type of users** – Monthly or regular parking patrons can find the available spaces more efficiently than infrequent visitors because they are familiar with the layout of the parking facility and typically know where the spaces will be available when they are parking.
- **On-street vs. off-street** – On-street parking spaces are less efficient than off-street spaces due to the time it takes patrons to find the last few vacant spaces. In addition, patrons are typically limited to one side of the street at a time and often must parallel park in traffic to use the space. Many times on-street spaces are not striped or are signed in a confusing manner, thereby leading to lost spaces and frustrated parking patrons.

In the current analysis, on-street parking is adjusted by a 15 percent effective supply factor, because of the relative difficulty of finding an open space while negotiating traffic. Public off-street parking is adjusted by 10 percent to account for user unfamiliarity and the challenges of safely navigating the area while searching for a space. Private off-street parking is adjusted by a 5 percent factor because employees or repeat users are familiar with the area and generally park in the same location each day. The Study Area contains a total of 7,350± spaces before any adjustments are made to account for an effective supply. After the effective supply factor is applied to the overall supply numbers, the Study Area's effective supply is 6,834± spaces, as shown in Table 3. This equates to a 516-space cushion.

Table 3: Effective Parking Supply Summary

Zone	On-Street			Private Off-Street			Public Off-Street			Total		
	Supply	ESF	Effective Supply	Supply	ESF	Effective Supply	Supply	ESF	Effective Supply	Supply	ESF	Effective Supply
A	150	85%	128	1,126	95%	1070	88	90%	80	1,364	94%	1,278
B	207	85%	176	475	95%	450	1,171	90%	1055	1,853	91%	1,681
C	6	85%	5	535	95%	508	17	90%	15	558	95%	528
D	61	85%	52	1,184	95%	1126	0	90%	0	1,245	95%	1,178
E	151	85%	127	1,596	95%	1517	583	90%	525	2,330	93%	2,169
Total	575	85%	488	4,916	95%	4,671	1,859	90%	1,675	7,350	93%	6,834

Source: Walker Parking Consultants, 2014

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SURVEY DAY CONDITIONS WEEKDAY PARKING OCCUPANCY

To determine the parking patterns of patrons in the Study Area, the usage of the majority of parking facilities located in the Study Area was evaluated. An understanding of these parking patterns helps define both patron types and parking locations. Occupancy counts were taken for on- and off-street parking spaces on Wednesday, October 30th. Four counts were taken at 10:00 am, 2:00 pm, 5:00 pm, and 8:00 pm. The following tables summarize the observed occupancy rates for on-street and off-street parking by zone during peak conditions.

Table 4: Peak Weekday Parking Occupancy Summary

Zone	Total		
	Supply	Demand	% Occ
A	1,364	885	65%
B	1,249	780	62%
C	1,162	773	67%
D	1,245	875	70%
E	2,330	1,494	64%
Total	7,350	4,807	65%

Source: Walker Parking Consultants, 2014

Weekday occupancy rates as a whole do not indicate a shortage of parking. Overall, peak occupancy occurred with 4,807± vehicles parked or 65 percent occupancy around 10:00 am.

Table 5: Peak Weekday Parking Occupancy by Type

Zone	On-Street			Private Off-Street			Public Off-Street		
	Supply	Demand	% Occ	Supply	Demand	% Occ	Supply	Demand	% Occ
A	150	58	39%	1,126	800	71%	88	27	31%
B	129	72	56%	310	228	74%	810	480	59%
C	84	62	74%	700	436	62%	378	275	73%
D	61	45	74%	1,184	830	70%	0	0	0%
E	151	91	60%	1,596	1,046	66%	583	357	61%
Total	575	328	57%	4,916	3,340	68%	1,859	1,139	61%

Source: Walker Parking Consultants, 2014

Private off-street spaces were occupied at higher percentage (68%) than the overall rate. It is important to point out that parking occupancy varied significantly from block to block, with some blocks less than 50 percent occupied, while other blocks were more than 80 percent occupied. Additionally, parking occupancies varied on a facility by facility and street by street basis.

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The figure below shows the overall occupancy on a block by block basis during peak weekday conditions.

Figure 2: Weekday Survey Day Occupancy - Overall



Source: Walker Parking Consultants, 2014



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WEEKEND PARKING OCCUPANCY

Walker also recorded the parking demand on Saturday, November 16th, 2014, during the PSU v. Purdue Football Game, at 10:00 am, 2:00 pm, 5:00 pm, and 8:00 pm within the 46-block Study Area. Peak parking demand was recorded at 2:00 pm with 4,960 occupied spaces.

Table 6: Peak Weekend Parking Occupancy Summary

Zone	Total		
	Supply	Demand	% Occ
A	1,364	994	73%
B	1,249	990	79%
C	1,162	647	56%
D	1,245	1,058	85%
E	2,330	1,271	55%
Total	7,350	4,960	67%

Source: Walker Parking Consultants, 2014

Overall, adequate parking was available during weekend conditions to support parking demand. Approximately 67% of the total supply was occupied during the 2:00 pm peak hour. However, both on-street and public off-street parking experienced parking occupancy rates greater than the overall rate (74 and 69, respectively).

Table 7: Peak Weekend Parking Occupancy by Type

Zone	On-Street			Private Off-Street			Public Off-Street		
	Supply	Demand	% Occ	Supply	Demand	% Occ	Supply	Demand	% Occ
A	150	123	82%	1,126	824	73%	88	47	53%
B	129	101	78%	310	213	69%	810	676	83%
C	84	63	75%	700	359	51%	378	225	60%
D	61	52	85%	1,184	1,006	85%	0	0	0%
E	151	89	59%	1,596	853	53%	583	329	56%
Total	575	428	74%	4,916	3,255	66%	1,859	1,277	69%

Source: Walker Parking Consultants, 2014

In Zones A and D, the on-street parking occupancy rate was observed in the low to mid-eighty percent range. However, several blocks experienced occupancy rates at or above capacity. When parking occupancy demand reaches this level, the last remaining parking spaces become more difficult to find and the parking facility “appears” full.

A more detailed breakdown of the weekday and weekend survey day occupancy counts can be found in the appendix. Additionally, the overall occupancy on a block by block basis during peak weekend conditions is shown below.

Figure 3: Weekend Survey Day Occupancy - Overall



Source: Walker Parking Consultants, 2014



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DESIGN DAY CONDITIONS

Because parking levels vary from day to day, the Survey Day does not always represent the peak level of activity and may need to be adjusted accordingly. Walker frequently recommends designing the parking supply to satisfy at least the 85th percentile level of activity. This level is usually equivalent to a very busy day that may occur once or twice a month. Designing parking to meet the absolute peak level of parking would leave many unused spaces during the majority of the year. Conversely, designing for the average level would mean inadequate parking for about half the year.

WEEKDAY PARKING OCCUPANCY

In order to determine the design day level of demand, Walker compared 2013 weekday parking occupancy data from each of the four public garages to our observations from our weekday survey. Based on historic data, the public parking demand observed on October 30th, 2014 in the four municipal garages represents the 44th percentile level of weekday activity. When compared to the 85th percentile day, March 14th, 2013, the survey day parking demand was 23% lower. While there were 36 weekdays with parking demand greater than March 14th, 2013, we have determined the 85th percentile represents typical parking conditions within the Study Area.

We then adjusted the observed public and private occupancy by 23% to represent design conditions in the downtown area. During design conditions, we anticipate a peak weekday total parking demand of 5,915 spaces. This equates to an 80% occupancy rate.

Table 8: Peak Weekday Parking Occupancy

Zone	On-Street			Private Off-Street			Public Off-Street			Total		
	Supply	Demand	% Occupied	Supply	Demand	% Occupied	Supply	Demand	% Occupied	Supply	Demand	% Occupied
A	150	73	49%	1,126	983	87%	88	33	38%	1,364	1,089	80%
B	207	161	78%	475	420	88%	1,171	927	79%	1,853	1,508	81%
C	6	5	83%	535	398	74%	17	1	6%	558	404	72%
D	61	56	92%	1,184	1,020	86%	0	0	0%	1,245	1,076	86%
E	151	112	74%	1,596	1,286	81%	583	440	75%	2,330	1,838	79%
Total	575	407	71%	4,916	4,107	84%	1,859	1,401	75%	7,350	5,915	80%

Source: Walker Parking Consultants, 2014

While the overall design day parking occupancy rate for the entire Study Area is 80%, parking occupancy varied greatly from block to block and by type of facility. The table on the next page depicts a detailed analysis of weekday design day parking conditions. Those blocks with parking occupancies greater than 85% have been highlighted in red.

Table 9: Design Day Parking Occupancy by Block

Zone	Block	Supply				Design Day Day Occupancy				Design Day Day % Occupied			
		On-Street	Private Off-Street	Public Off-Street	Total	On-Street	Private Off-Street	Public Off-Street	Total	On-Street	Private Off-Street	Public Off-Street	Total
A	1	8	114	0	122	1	71	0	72	13%	62%	0%	59%
A	2	16	264	0	280	5	267	0	272	31%	101%	0%	97%
A	3	30	22	0	52	4	6	0	10	13%	27%	0%	19%
A	4	27	317	0	344	15	236	0	251	56%	74%	0%	73%
A	5	13	198	25	236	9	198	12	219	69%	100%	48%	93%
A	6	26	135	0	161	20	135	0	155	77%	100%	0%	96%
A	7	6	66	63	135	5	64	21	90	83%	97%	33%	67%
A	8	24	10	0	34	14	6	0	20	58%	60%	0%	59%
B	9	19	0	0	19	14	0	0	14	74%	0%	0%	74%
B	10	7	0	105	112	9	0	66	75	129%	0%	63%	67%
B	11	0	112	0	112	0	106	0	106	0%	95%	0%	95%
B	12	15	12	0	27	6	7	0	13	40%	58%	0%	48%
B	13	17	3	0	20	4	4	0	8	24%	133%	0%	40%
B	14	14	117	0	131	1	108	0	109	7%	92%	0%	83%
B	15	4	0	214	218	2	0	175	177	50%	0%	82%	81%
B	16	16	22	0	38	11	18	0	29	69%	82%	0%	76%
B	17	17	0	0	17	15	0	0	15	88%	0%	0%	88%
B	18	12	29	0	41	16	21	0	37	133%	72%	0%	90%
B	19	8	15	491	514	11	16	349	376	138%	107%	71%	73%
B	20	21	23	0	44	23	15	0	38	110%	65%	0%	86%
B	21	26	15	0	41	30	15	0	45	115%	100%	0%	110%
B	22	9	16	317	342	5	5	279	289	56%	31%	88%	85%
B	23	0	77	44	121	0	69	58	127	0%	90%	132%	105%
B	24	22	34	0	56	14	36	0	50	64%	106%	0%	89%
C	25	0	262	0	262	0	186	0	186	0%	71%	0%	71%
C	26	0	62	0	62	0	41	0	41	0%	66%	0%	66%
C	27	6	116	0	122	5	107	0	112	83%	92%	0%	92%
C	28	0	51	17	68	0	31	1	32	0%	61%	6%	47%
C	29	0	21	0	21	0	12	0	12	0%	57%	0%	57%
C	30	0	23	0	23	0	21	0	21	0%	91%	0%	91%
D	31	16	285	0	301	5	208	0	213	31%	73%	0%	71%
D	32	16	188	0	204	15	210	0	225	94%	112%	0%	110%
D	33	0	202	0	202	0	161	0	161	0%	80%	0%	80%
D	34	11	160	0	171	14	140	0	154	127%	88%	0%	90%
D	35	0	260	0	260	0	210	0	210	0%	81%	0%	81%
D	36	18	89	0	107	22	91	0	113	122%	102%	0%	106%
E	37	4	360	0	364	0	257	0	257	0%	71%	0%	71%
E	38	19	299	0	318	6	285	0	291	32%	95%	0%	92%
E	39	19	262	0	281	21	191	0	212	111%	73%	0%	75%
E	40	4	141	0	145	0	107	0	107	0%	76%	0%	74%
E	41	21	236	0	257	26	170	0	196	124%	72%	0%	76%
E	42	33	91	490	614	17	91	363	471	52%	100%	74%	77%
E	43	18	83	0	101	17	85	0	102	94%	102%	0%	101%
E	44	18	62	0	80	14	60	0	74	78%	97%	0%	93%
E	45	12	40	28	80	7	34	25	66	58%	85%	89%	83%
E	46	3	22	65	90	4	6	52	62	133%	27%	80%	69%
Total		575	4,916	1,859	7,350	407	4,107	1,401	5,915	71%	84%	75%	80%

Source: Walker Parking Consultants, 2014

Of the 46 blocks surveyed, 18 are expected to experience overall parking occupancy levels at or near capacity during design day conditions. Additionally, on five of the 18 blocks, parking demand is projected to exceed the total available parking supply, including Blocks 21, 23, 32, 36, and 43. With the exception of block 23, none of these five blocks contain structured parking, but rather on-street and small public and/or private surface lots. While classified as structured parking, the 53-space structure on block 23 is actually an on-grade facility below PSU’s Education Technology Services building.

Seventy-one percent of the available on-street spaces are expected to be occupied during design conditions. While the overall occupancy rate does not indicate a parking shortage, several blocks within the Study Area are expected to experience parking occupancy levels near or above capacity. These blocks can generally be separated into two categories, commercial parking, specifically, in the area between McAllister Alley and South Fraser Street (blocks 17-22, 36, 46), and residential parking (blocks 32, 34, 39, 41, and 43).

Additionally, when only the private parking demand is considered, Walker expects approximately half of the blocks in the Study area to experience occupancy levels greater than 85%.

The figures on the followings pages depict the public and private parking occupancy by block. Each block is color coded based on the level of occupancy expected during design day conditions.

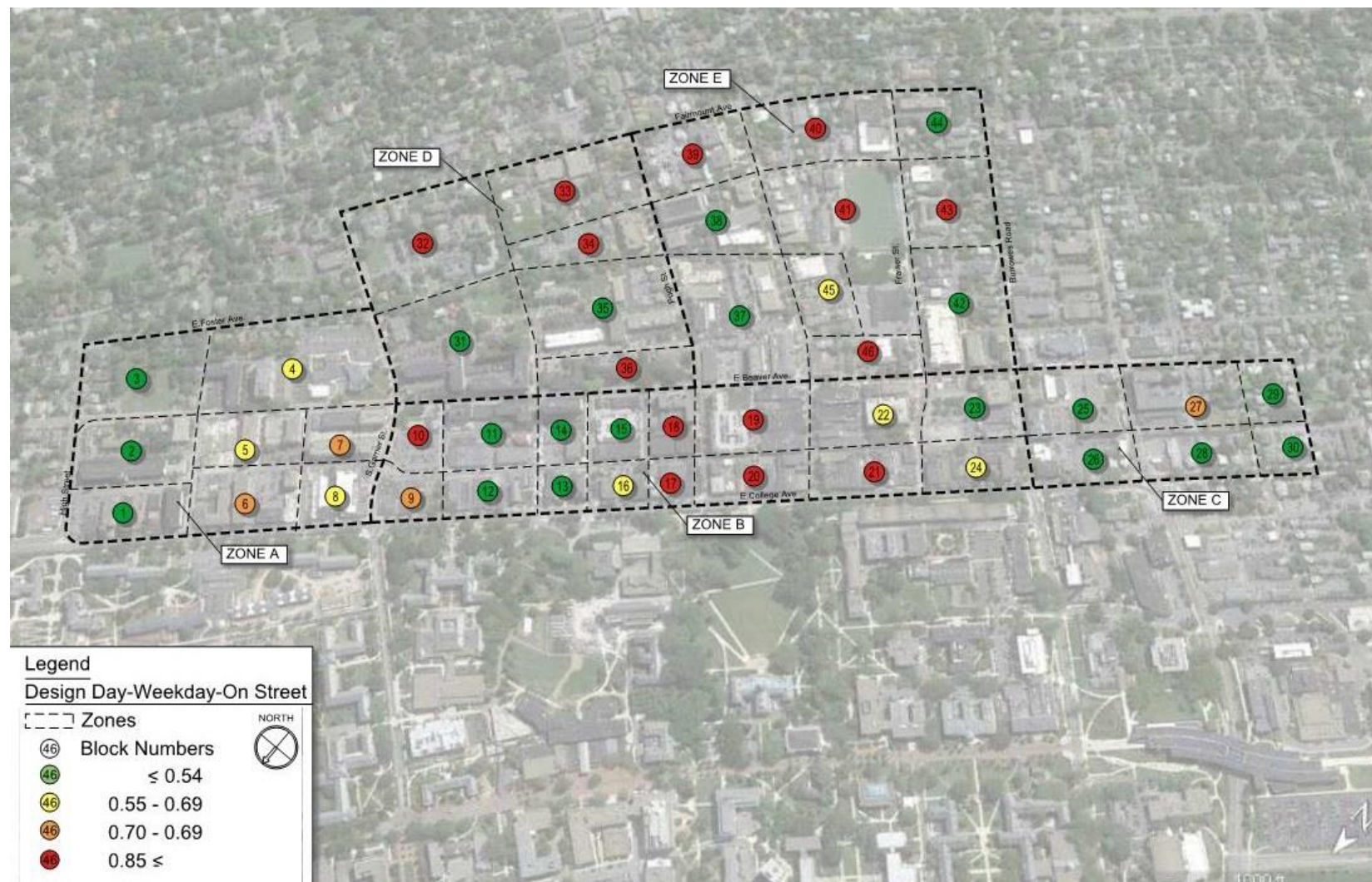
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Figure 4: Weekday Design Day Demand – On-Street



Source: Walker Parking Consultants, 2014

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Figure 5: Weekday Design Day Demand – Private Off-Street



Source: Walker Parking Consultants, 2014

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Figure 6: Weekday Design Day Demand – Public Off-Street



Source: Walker Parking Consultants, 2014



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WEEKDAY PARKING ADEQUACY

Parking adequacy is the ability of the parking supply to accommodate the parking demand. The design day occupancy was subtracted from the effective supply to determine the adequacy for the Study Area. The parking adequacy for the Study Area is summarized in the following table.

Table 10: Peak Weekday Parking Adequacy Summary

Zone	On-Street			Private Off-Street			Public Off-Street			Total		
	Effective Supply	Demand	Adequacy	Effective Supply	Demand	Adequacy	Effective Supply	Demand	Adequacy	Effective Supply	Demand	Adequacy
A	128	73	55	1,070	983	87	80	33	47	1,278	1,089	189
B	176	161	15	450	420	30	1,055	927	128	1,681	1,508	173
C	5	5	0	508	398	110	15	1	14	528	404	124
D	52	56	(4)	1,126	1,020	106	0	0	0	1,178	1,076	102
E	127	112	15	1,517	1,286	231	525	440	85	2,169	1,838	331
Total	488	407	81	4,671	4,107	564	1,675	1,401	274	6,834	5,915	919

Source: Walker Parking Consultants, 2014

Overall, adequate parking is available to support peak weekday parking demand. Peak weekday parking adequacy occurred with a surplus of 919 spaces during the 10 o'clock hour. Generally, sufficient parking was available to support the demand in each zone, although shortages were observed both on-street and in private off-street parking on several blocks.

Table 11 shows the blocks experiencing parking shortages. Approximately half of the blocks in the Study Area are expected to experience some type of shortage, either on-street or off-street. While a deficit may occur in one parking category, the overall block may have sufficient parking to support the overflow demand.



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Table 11: Design Day Parking Shortages – Weekday

Zone	Block	Private Off- Public Off-			Total
		On-Street	Street	Street	
A	2	9	(16)	0	(7)
A	5	2	(10)	11	3
A	6	2	(7)	0	(5)
A	7	0	(1)	36	35
B	10	(3)	0	29	26
B	13	10	(1)	0	9
B	17	(1)	0	0	(1)
B	18	(6)	7	0	1
B	19	(4)	(2)	93	87
B	20	(5)	7	0	2
B	21	(8)	(1)	0	(9)
B	23	0	4	(18)	(14)
B	24	5	(4)	0	1
D	32	(1)	(31)	0	(32)
D	34	(5)	12	0	7
D	36	(7)	(6)	0	(13)
E	38	10	(1)	0	9
E	39	(5)	58	0	53
E	41	(8)	55	0	47
E	42	11	(5)	78	84
E	43	(2)	(6)	0	(8)
E	44	1	(1)	0	0
E	46	(1)	15	7	21
Total		81	564	274	919

Source: Walker Parking Consultants, 2014

A more detailed breakdown of the weekday adequacy by block is available in the Appendix.

WEEKEND PARKING OCCUPANCY

Similar to the weekday process, Walker compared the occupancy recorded on the weekend survey day, November 16th, 2013, to historical weekend parking occupancy data from each of the four public garages. Based on the annual data, the public parking demand observed on our weekend survey day in the four municipal garages represents the 95th percentile level of weekday activity. There were only five weekend days that experienced parking occupancy

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levels greater than the survey day: three football games, including Homecoming, Moving On, and the Arts Festival³.

While Walker typically suggests designing parking to support the 85th percentile activity level, it is also important to understand what a worst case scenario would look like. State College often experiences event level parking demand associated with football games and other special events. Historical data indicates that public parking demand was highest on October 12th, 2013, with 1,357 spaces occupied in the four public garages. However there were about seven days last year (weekday and weekend) when parking volumes exceeded 1,300 spaces in the municipal garages. In order to understand parking conditions during the highest levels of activity, Walker adjusted the weekend survey day demand to reflect 100th percentile level of weekend activity. When compared to the 100th percentile day, the survey day parking demand was 40% lower.

We adjusted the observed public and private occupancy by 40% to represent design conditions in the downtown area on a Saturday. During design conditions, we anticipate a peak weekend parking demand of 6,941 spaces. This equates to a 94% occupancy rate.

Table 12: Peak Weekend Parking Occupancy

Zone	On-Street			Private Off-Street			Public Off-Street			Total		
	Supply	Demand	% Occupied	Supply	Demand	% Occupied	Supply	Demand	% Occupied	Supply	Demand	% Occupied
A	150	171	114%	1,126	1,153	102%	88	66	75%	1,364	1,390	102%
B	207	222	107%	475	391	82%	1,171	1,261	108%	1,853	1,874	101%
C	6	8	133%	535	408	76%	17	0	0%	558	416	75%
D	61	72	118%	1,184	1,409	119%	0	0	0%	1,245	1,481	119%
E	151	125	83%	1,596	1,194	75%	583	461	79%	2,330	1,780	76%
Total	575	598	104%	4,916	4,555	93%	1,859	1,788	96%	7,350	6,941	94%

Source: Walker Parking Consultants, 2014

During design conditions, several zones are expected to experience parking occupancies greater than 100%. However, the overall occupancy rates in Zones C and E are only in the mid-seventy percent. This is likely due to the distance between these zones and the core downtown. Both of these zones are also more residential oriented than Zones A, B, and D.

The table on the next page depicts a detailed analysis of weekend design day parking conditions. Those blocks with parking occupancies greater than 85% have been highlighted in red.

³ While November 16th represents the 95th percentile level of weekend activity, with only five weekend days experiencing higher occupancy levels, it only represents the 70th percentile level of activity when compared to the activity level for the year. There are 100 total days that experienced greater parking occupancy than November 16th.

Table 13: Design Day Parking Occupancy by Block - Weekend

Zone	Block	Supply				Design Day Day Occupancy				Design Day Day % Occupied			
		On-Street	Private Off-Street	Public Off-Street	Total	On-Street	Private Off-Street	Public Off-Street	Total	On-Street	Private Off-Street	Public Off-Street	Total
A	1	8	114	0	122	11	98	0	109	138%	86%	0%	89%
A	2	16	264	0	280	18	297	0	315	113%	113%	0%	113%
A	3	30	22	0	52	32	22	0	54	107%	100%	0%	104%
A	4	27	317	0	344	35	307	0	342	130%	97%	0%	99%
A	5	13	198	25	236	17	232	20	269	131%	117%	80%	114%
A	6	26	135	0	161	29	106	0	135	112%	79%	0%	84%
A	7	6	66	63	135	1	83	46	130	17%	126%	73%	96%
A	8	24	10	0	34	28	8	0	36	117%	80%	0%	106%
B	9	19	0	0	19	27	0	0	27	142%	0%	0%	142%
B	10	7	0	105	112	10	0	137	147	143%	0%	130%	131%
B	11	0	112	0	112	0	109	0	109	0%	97%	0%	97%
B	12	15	12	0	27	18	3	0	21	120%	25%	0%	78%
B	13	17	3	0	20	17	0	0	17	100%	0%	0%	85%
B	14	14	117	0	131	13	137	0	150	93%	117%	0%	115%
B	15	4	0	214	218	3	0	150	153	75%	0%	70%	70%
B	16	16	22	0	38	13	22	0	35	81%	100%	0%	92%
B	17	17	0	0	17	22	0	0	22	129%	0%	0%	129%
B	18	12	29	0	41	8	3	0	11	67%	10%	0%	27%
B	19	8	15	491	514	11	24	659	694	138%	160%	134%	135%
B	20	21	23	0	44	20	14	0	34	95%	61%	0%	77%
B	21	26	15	0	41	32	8	0	40	123%	53%	0%	98%
B	22	9	16	317	342	8	18	302	328	89%	113%	95%	96%
B	23	0	77	44	121	0	25	13	38	0%	32%	30%	31%
B	24	22	34	0	56	20	28	0	48	91%	82%	0%	86%
C	25	0	262	0	262	0	189	0	189	0%	72%	0%	72%
C	26	0	62	0	62	0	22	0	22	0%	35%	0%	35%
C	27	6	116	0	122	8	116	0	124	133%	100%	0%	102%
C	28	0	51	17	68	0	36	0	36	0%	71%	0%	53%
C	29	0	21	0	21	0	20	0	20	0%	95%	0%	95%
C	30	0	23	0	23	0	25	0	25	0%	109%	0%	109%
D	31	16	285	0	301	22	314	0	336	138%	110%	0%	112%
D	32	16	188	0	204	27	319	0	346	169%	170%	0%	170%
D	33	0	202	0	202	0	217	0	217	0%	107%	0%	107%
D	34	11	160	0	171	15	143	0	158	136%	89%	0%	92%
D	35	0	260	0	260	0	305	0	305	0%	117%	0%	117%
D	36	18	89	0	107	8	111	0	119	44%	125%	0%	111%
E	37	4	360	0	364	0	416	0	416	0%	116%	0%	114%
E	38	19	299	0	318	6	161	0	167	32%	54%	0%	53%
E	39	19	262	0	281	24	132	0	156	126%	50%	0%	56%
E	40	4	141	0	145	1	78	0	79	25%	55%	0%	54%
E	41	21	236	0	257	18	172	0	190	86%	73%	0%	74%
E	42	33	91	490	614	15	90	353	458	45%	99%	72%	75%
E	43	18	83	0	101	20	39	0	59	111%	47%	0%	58%
E	44	18	62	0	80	17	80	0	97	94%	129%	0%	121%
E	45	12	40	28	80	20	22	27	69	167%	55%	96%	86%
E	46	3	22	65	90	4	4	81	89	133%	18%	125%	99%
Total		575	4,916	1,859	7,350	598	4,555	1,788	6,941	104%	93%	96%	94%

Source: Walker Parking Consultants, 2014

Thirty one of the forty six blocks in the Study Area are expected to experience parking occupancy rates greater than 85% during weekend design conditions. Additionally, the parking demand on 17 of these blocks is projected to exceed capacity (100% or greater). The weekend design condition represents a worst case scenario. As previously stated, parking demand at this volume is expected to occur maybe five times a year, weekdays and weekends included.

Based on our design day projections, the majority of on-street parking is expected to experience demand above 85%, while only a handful of blocks with on-street parking are anticipated to have a surplus available. These blocks include Blocks 7, 15, 16, 18, 36, 38, 40, and 42. Please note that about half of the blocks with capacity still available during design conditions are located outside of the core commercial area; however, it is a little unexpected that on-street capacity is available on blocks 15, 16, and 18. Walker further analyzed the parking conditions on these blocks to understand why on-street demand would be lower on these three blocks. Our notes indicate several of the spaces on these blocks have five minute time restrictions, while the majority of spaces in the remaining area offer 90 minute parking. This area is also very congested, making the on-street spaces with longer time restriction more difficult to access during high volume. On block 7, the on-street spaces along Calder Way appear to be privately enforced, and display signage that differs from the municipally owned on-street spaces. The minor change in signage could be enough to discourage parkers that are less familiar with the area.

When the private off-street parking occupancy is analyzed, Zones C and E generally contain fewer blocks with demands that exceed supply. However, in Zone D, where fraternity row is located, the private off-street parking occupancy on every block is near or exceeds 100%.

It is also important to note that while the projected public off-street occupancy on block 19 (Pugh Street Garage) is 134%, this figure will be mitigated slightly during design conditions. Based on historical parking patterns, some overflow from this garage will likely be diverted to the other three garages in the Study Area, all of which have availability.

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The following figures depict the public and private parking occupancy by block. Each block is color coded based on the level of occupancy expected during design day conditions.

Figure 7: Weekend Design Day Demand – On-Street



Source: Walker Parking Consultants, 2014

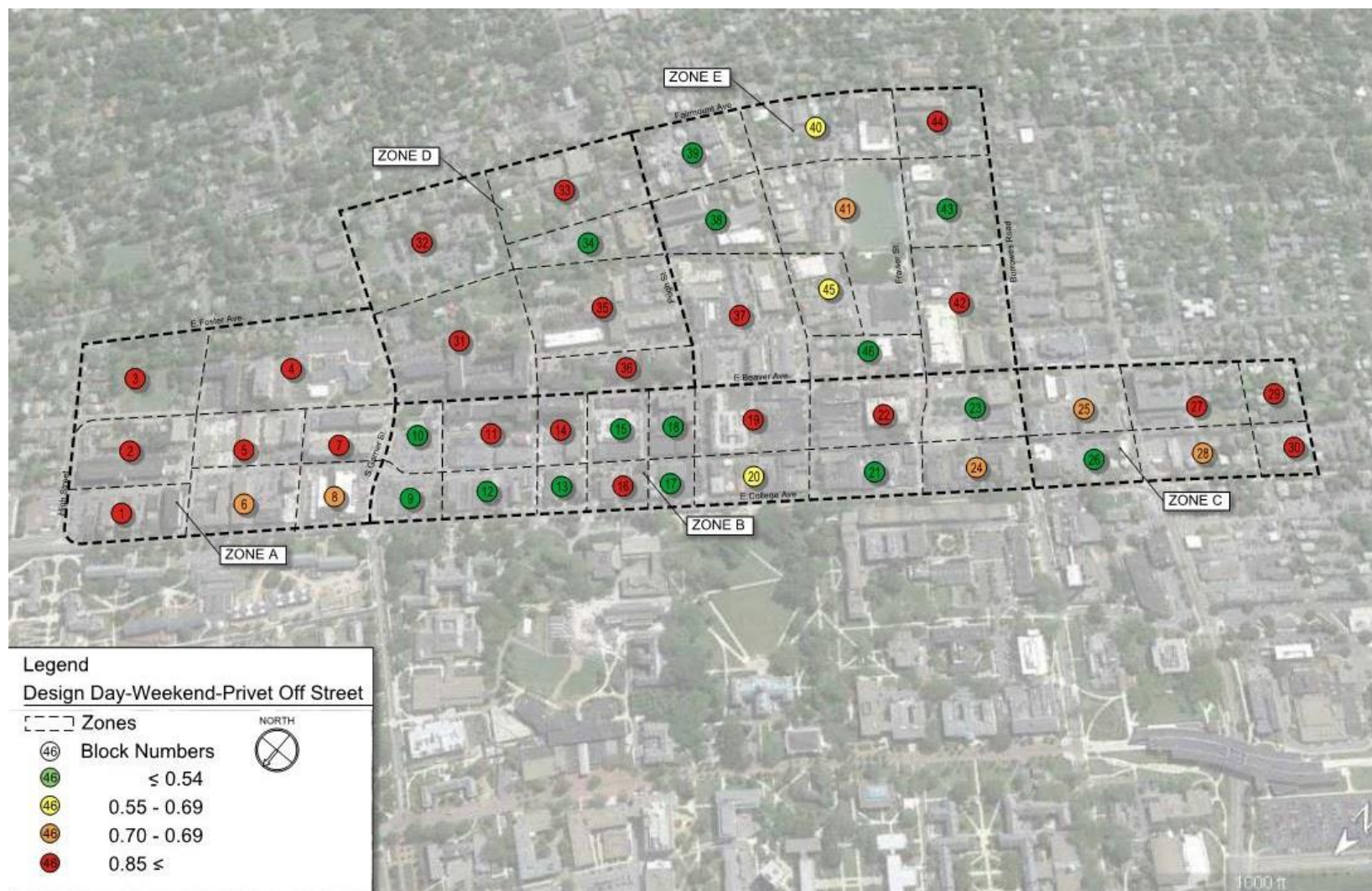
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Figure 8: Weekend Design Day Demand – Private Off-Street



Source: Walker Parking Consultants, 2014

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Figure 9: Weekend Design Day Demand – Public Off-Street



Source: Walker Parking Consultants, 2014

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WEEKEND PARKING ADEQUACY

The weekend design day adequacy was determined by subtracting the projected demand from the effective supply. The parking adequacy for the Study Area is summarized in Table 14.

Table 14: Peak Weekend Parking Adequacy Summary

Zone	On-Street			Private Off-Street			Public Off-Street			Total		
	Effective Supply	Demand	Adequacy	Effective Supply	Demand	Adequacy	Effective Supply	Demand	Adequacy	Effective Supply	Demand	Adequacy
A	128	171	(43)	1,070	1,153	(83)	80	66	14	1,278	1,390	(112)
B	176	222	(46)	450	391	59	1,055	1,261	(206)	1,681	1,874	(193)
C	5	8	(3)	508	408	100	15	0	15	528	416	112
D	52	72	(20)	1,126	1,409	(283)	0	0	0	1,178	1,481	(303)
E	127	125	2	1,517	1,194	323	525	461	64	2,169	1,780	389
Total	488	598	(110)	4,671	4,555	116	1,675	1,788	(113)	6,834	6,941	(107)

Source: Walker Parking Consultants, 2014

During design conditions, Walker anticipates a parking shortage of approximately 107 spaces. While overall shortages are expected in Zones A, B and D, parking surpluses are anticipated in Zones C and E. As stated earlier, these two zones are less dense and more residentially oriented. Areas in the core commercial district are projected to experience parking deficits.

Walker is projecting a design day demand of 598 on-street spaces, but only 488 effective spaces, resulting in a short fall of 110 spaces. It is important to remember that adequacy is based on effective supply, not total supply. When determining the adequacy of a system to support demand, we assume that not every space can be effectively used. Rather some spaces will be lost to snow, mis-parked cars, or will just be more difficult to find. For on-street spaces, this is especially true, as drivers must navigate roadways while searching for an open space. While in reality, there are 575 available on-street spaces, only 488 of these spaces are "effectively" available. This cushion allows for circulation and optimal operation, but is generally available to parkers.

A parking surplus of 116 spaces is expected when the private off-street demand is considered separately. Although deficits are shown in Zones A and D, sufficient private supply in other zones is available to counteract the shortages in these two zones.

The public off-street supply is also projected to experience a deficit during peak design day conditions. While small surpluses are shown in most zones, a 206-space deficit is expected in Zone B. Please note that Zone B includes three of the four municipal garages, and the Fraser Street Lot.

A detailed analysis of the parking adequacy by block is included in the Appendix.



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FUTURE CONDITIONS

There are basically two different methods for projecting future parking volumes. One method involves the use of historical and projected growth rates. The other method involves the collection of information regarding the proposed development that is likely to occur in terms of land use and square footage changes. This information regarding future developments allows the projecting of vehicular volumes and parking demands for these new uses. However, as the planning horizon goes further and further into the future, the ability to predict these changes becomes more and more difficult and less accurate. In the case of State College, we will utilize a blend of both methodologies.

PROJECTED PARKING DEMAND

Parking demand refers to the amount of parking that is estimated to be used at a particular time, place, and price. It is affected by vehicle ownership, trip rates, mode split, length of stay, geographic location, type of trip (work, shopping, special event), the quality of public transportation and factors such as fuel and parking costs. The methodology employed by Walker to project future demand combines the baseline demand which is equal to the design day occupancy levels, and any incremental change or growth in demand resulting from new land uses entering the Study Area. In addition to the projected demand associated with new development in the Study Area, we also assumed a small 1% annual increase in the baseline demand due to general growth⁴. The baseline and incremental increase in demand are added together and then compared to the effective parking supply to determine the overall parking adequacy.

There are several new downtown development projects that may directly impact parking in State College. Walker used land use data presented in the "Economic Research Associates" memo dated December 12, 2012, as well as data uncovered during our discussions with the Borough to project future parking demand for the Study Area. The land use data was categorized into two groups – existing vacancies, and projected and potential projects. Walker also focused on three planning horizons – 2017, 2019, and 2024.

The list of proposed developments may not represent all real estate projects or business expansions being considered in the Study Area, but it does represent a collection of the most significant projects being considered at this time. For the purpose of this study, the projects listed in Table 15 are reflected in the calculation of future parking demand. The projects are organized by block and planning horizon.

⁴ Forbes is projecting a 1.1% annual job growth rate for State College, as of August 2013. Additionally, historic student enrollment indicates a 1% annual growth rate.



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Table 15: New Development Assumptions

Phase	Zone	Block	Development	Size	Unit
Projected	B	23	Mixed-Use Development		
			Residential	20	Dwelling Unit
			Office	10,910	Square Feet
			Hotel	84	Keys
			Restaurant	10,918	Square Feet
			Retail	85,398	Square Feet
Projected	C	28	Mixed-Use Development		
			Residential	117	Dwelling Unit
			Office	16,640	Square Feet
			Fast/Casual	5,000	Square Feet
			Retail	28,081	Square Feet
Projected	D	36	Mixed-Use Development		
			Residential	24	Dwelling Unit
			Retail	6,758	Square Feet
			Office	9,487	Square Feet
Existing Vacancy	B	15	Vacant Downtown Store Front*		
			Retail	13,626	Square Feet
			Fast/Casual	13,626	Square Feet

Source: Borough of State College, 2014

There are two primary variables applied to the calculation of peak accumulation for new developments: 1) the total gross floor area (GFA), number of hotel rooms, seating capacity, etc. for each type of proposed land use (i.e. office, retail, restaurant, etc.), and 2) the appropriate parking demand ratio. The following section provides a discussion on the use of shared parking methodology when calculating the appropriate demand ratio to use for each type of land use in this analysis.

SHARED PARKING DEMAND

Shared parking is defined as parking spaces that can be used to serve two or more individual land uses without conflict or encroachment. One of the fundamental principles of downtown planning from the earliest days of the automobile has always been to share parking resources rather than each land use or building have its own parking. The resurgence of many central cities resulting from the addition of vibrant residential, retail, restaurant, and entertainment developments continues to rely heavily on shared parking for economic viability. In addition, mixed-use projects in many different settings have benefited from shared parking. There are numerous benefits of shared parking to a community at large, not the least of which is the environmental benefit of significantly reducing the square feet of parking provided to serve commercial development.

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The interplay of land uses in a mixed-use environment produces a reduction in overall parking demand. For example, a substantial percentage of patrons at one business (restaurant) may be employees of another downtown business (office). This is referred to as the "effects of the captive market". These patrons are already parking and contribute only once to the number of peak hour parkers. In other words, the parking demand ratio for individual land uses should be factored downward in proportion to the captive market support received from neighboring land uses.

The base parking demand ratio for each land use is adjusted to represent the project ratio. Project ratios are calculated by multiplying the base ratio by the non-captive ratio (one minus the percent captive), the drive ratio, and an hourly adjustment factor. The tables below show the project ratio for each land use during weekday and weekend conditions in the year 2024.

Table 16: Shared Parking Ratios - Weekday

Land Use	Base Demand Ratio ¹	Time of Day Adj ²	Drive Ratio ³	Captive Ratio Adj ⁴	Absorption Rate by 2024			Adjusted Demand Ratio by 2024		
					Existing Vacancy	In-Progress	Potential Projects	Existing Vacancy	In-Progress	Potential Projects
Residential	1.50	75%	100%	100%	-	100%	90%	-	1.13	1.01
Office	3.80	100%	70%	100%	-	90%	80%	-	2.39	2.13
Hotel	1.25	65%	70%	100%	-	90%	85%	-	0.51	0.48
Restaurant	18.00	15%	70%	50%	-	95%	85%	-	0.90	0.80
Fast/Casual Restaurant	15.00	55%	60%	50%	95%	95%	-	2.35	2.35	-
Retail	3.60	65%	70%	50%	95%	95%	85%	0.78	0.78	0.70

Note: ¹ULI recommended base parking ratios

²Walker assumed peak demand occurred around 10:00 a.m.

³Drive ratio refers to the percentage of people who arrive to a site via personal vehicle. Census data indicates that approximately 50% of employees drive to work in State College. Additionally, a large percentage of customers in the downtown area take transit or walk to their destination.

⁴Walker assumed the residential, office and hotel land uses would be the primary demand generators

Source: Walker Parking Consultants, 2014

While the absorption rate does not change when comparing weekday and weekend conditions, both the base demand ratio and time of day adjustment change; sometimes significantly affecting the project ratio. For example, during the weekday, the base demand ratio for the office land use is 3.8 spaces per 1,000 sf. However, during weekend conditions, the base demand ratio is only 0.38 spaces per 1,000 sf. Another example is the fast/casual restaurant land use. During the 10:00 am hour on a weekday, demand is only 55% of peak, but on the weekend at 2:00 p.m., demand is 90% of peak.

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Table 17: Shared Parking Ratios - Weekend

Land Use	Base Demand Ratio ¹	Time of Day Adj ²	Drive Ratio ³	Captive Ratio Adj ⁴	Absorption Rate by 2024			Adjusted Demand Ratio by 2024		
					Existing Vacancy	In-Progress	Potential Projects	Existing Vacancy	In-Progress	Potential Projects
Residential	1.50	70%	100%	100%	-	100%	90%	-	1.05	0.95
Office	0.38	60%	70%	100%	-	90%	80%	-	0.14	0.13
Hotel	1.25	70%	70%	100%	-	90%	85%	-	0.55	0.52
Restaurant	20.00	50%	70%	50%	-	95%	85%	-	3.33	2.98
Fast/Casual Restaurant	14.00	90%	60%	50%	95%	95%	-	3.59	3.59	-
Retail	4.00	100%	70%	50%	95%	95%	85%	1.33	1.33	1.19

Note: ¹ULI recommended base parking ratios

²Walker assumed peak demand occurred around 2:00 p.m.

³Drive ratio refers to the percentage of people who arrive to a site via personal vehicle. Census data indicates that approximately 50% of employees drive to work in State College. Additionally, a large percentage of customers in the downtown area take transit or walk to their destination.

⁴Walker assumed the residential, office and hotel land uses would be the primary demand generators

Source: Walker Parking Consultants, 2014

Walker also adjusted the base ratio by an "absorption rate" to account for the time it takes a project to become fully leased. For example, office space built in 2024 may not be fully leased when the project opens; however, the office space that is currently vacant will be absorbed into the market by 2024 and will have a higher lease rate.

A summary of the projected parking demand by block during typical weekday and weekend conditions for all the new development projects can be found in the Appendix.

FUTURE PARKING SUPPLY

Planned parking supplies associated with each of the projects identified in Table 15 were estimated at the time of our analysis based on zoning code requirements. Walker assumed all changes to the parking supply happen in the year 2017, including the demolition of the Pugh Street Garage⁵. Walker assumed the proposed development on block 19 would be operational by 2019, requiring the demolition of the existing garage prior to construction beginning.

The table below shows the change in parking supply on the blocks with future development. Overall, Walker anticipates 16% loss in parking supply within the Study Area. Our model currently assumes the Borough does not replace the parking lost when the Pugh Street Garage is demolished. However, we understand a replacement garage is being considered, potentially on block 37, at the southern corner of Pugh Street and Beaver Avenue (existing CVS site).

⁵ The demolition of the Pugh Street Garage is under further study at this time.

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Table 18: Proposed Changes to the Parking Supply by Block

Block	Development	Existing Supply	Parking Lost	Parking Gained	2017 Supply	% Change
15	Vacant Downtown Store Front*	218	0	0	218	0%
23	Mixed-Use Development	121	44	48	125	3%
28	Mixed-Use Development	68	17	240	291	328%
36	Mixed-Use Development	107	24	50	133	24%
Total		1,028	85	338	1,281	25%

Source: Walker Parking Consultants, 2014

Currently, there are 7,350 spaces available in the Study Area. After the above changes in parking supply occur, Walker estimates the total available parking supply will increase to 7,603 spaces.

2017 WEEKDAY PARKING CONDITIONS

Walker projected parking demand within the downtown Study Area for the 2017 planning horizon. The 2017 projections assume the projects categorized as "existing vacancies" and "Potential" begin to generate parking demand. New parking is provided with each of the planned developments.

PARKING OCCUPANCY

Walker is projecting an overall occupancy rate of 84% during weekend conditions by 2017. When parking occupancies reach 85% or greater, finding available parking can be difficult. Most of the zones within our Study Area are expected to experience parking rates near or above 85% with the exception of Zone C.

Table 19: 2017 Parking Occupancy – Weekday

Zone	% Occupied		
	Supply	Demand	
A	1,364	1,120	82%
B	1,857	1,694	91%
C	781	566	72%
D	1,271	1,136	89%
E	2,330	1,896	81%
Total	7,603	6,412	84%

Source: Walker Parking Consultants, 2014

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The table below shows the projected 2017 parking occupancy by user type. Generally, sufficient on-street parking is available to support future demand. However, a 93% occupancy rate is projected in Zone D. When private off-street parking conditions are analyzed, an 84% occupancy rate is projected. As stated earlier, at these levels, finding parking can be difficult. Lastly, Walker projected demand for public off-street conditions.

Public parking is only available in three of the five zones. In Zones A and E, adequate parking is available to support demand. However, in Zone B, a 97% occupancy rate is projected, primarily due to the shared parking arrangement associated with the private development on block 23. Approximately 105 spaces in the Fraser Street Garage will be occupied by patrons of the private development across the street. The redevelopment on block 23 will also reduce the number of available public parking spaces.

Table 20: 2017 Parking Occupancy by Type – Weekday

Zone	On-Street			Private Off-Street			Public Off-Street		
	Supply	Demand	% Occupied	Supply	Demand	% Occupied	Supply	Demand	% Occupied
A	150	74	49%	1,126	1,012	90%	88	34	39%
B	207	163	79%	523	441	84%	1,127	1,090	97%
C	6	5	83%	775	561	72%	0	0	0%
D	61	57	93%	1,210	1,079	89%	0	0	0%
E	151	116	77%	1,596	1,326	83%	583	454	78%
Total	575	415	72%	5,230	4,419	84%	1,798	1,578	88%

Source: Walker Parking Consultants, 2014

Parking occupancies vary greatly from block to block and by parking type. The figures below show the projected 2017 parking occupancy by block.

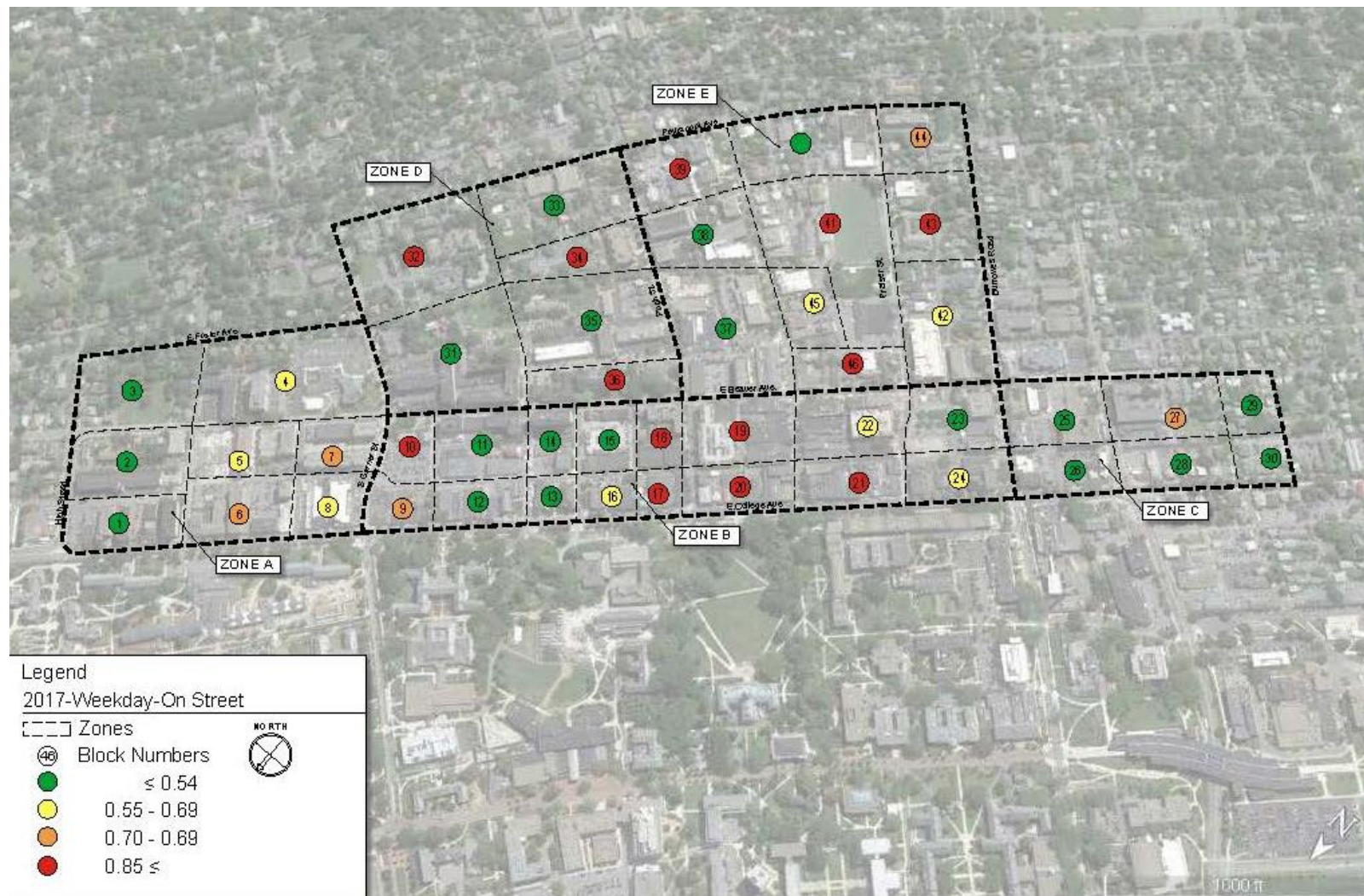
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Figure 10: Weekday 2017 Demand – On-Street



Source: Walker Parking Consultants, 2014

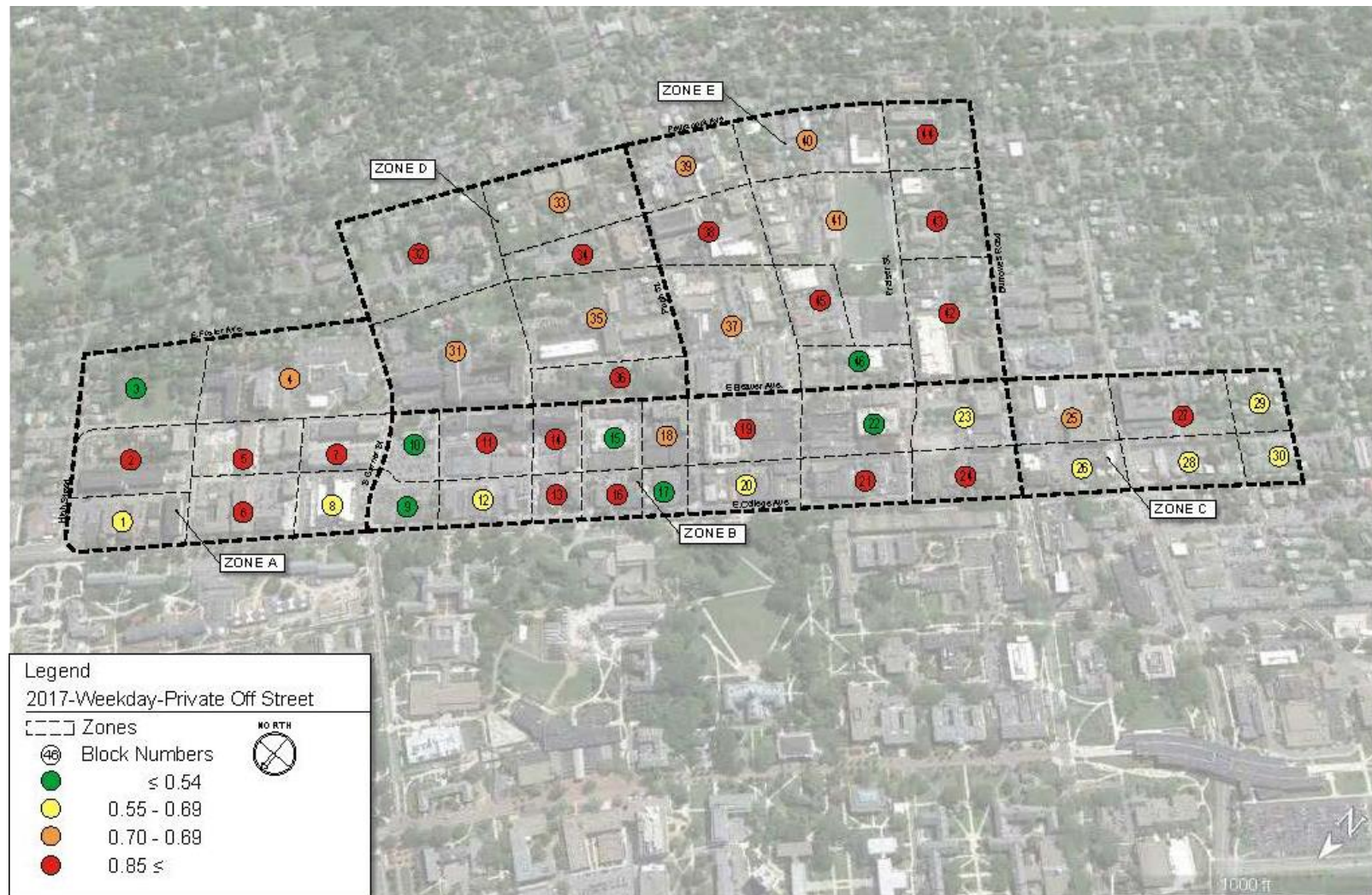
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Figure 11: Weekday 2017 Demand – Private Off-Street



Source: Walker Parking Consultants, 2014

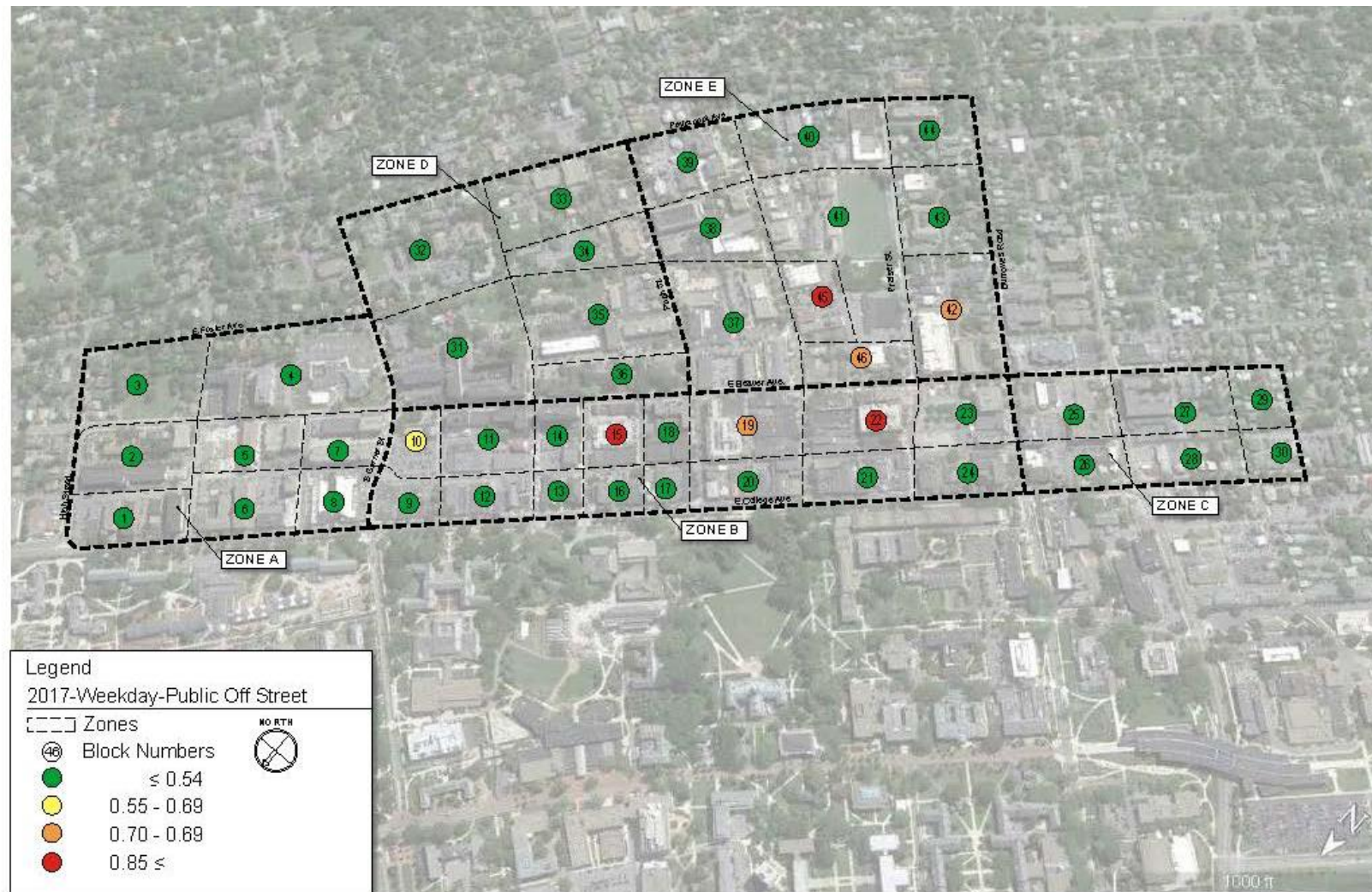
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Figure 12: Weekday 2017 Demand – Public Off-Street



Source: Walker Parking Consultants, 2014

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DETAILED PARKING OCCUPANCY

While the occupancy rates generally indicate adequate parking is available within the Study Area, parking hotspots do exist. A detailed breakdown of the parking occupancy by block and type is included in the appendix. However, the table below shows the total number of blocks by occupancy rate and parking type.

Table 21: 2017 Parking Occupancy Block Totals

Occupancy Rate	On-Street	Private Off-Street	Public Off-Street	Total
100% or greater	11	13	1	6
85% to 100%	2	8	2	15
70% to 85%	5	10	3	14
55% to 70%	7	8	1	8
55% or less	21	7	39	3
Total	46	46	46	46

Occupancy Rate	On-Street	Private Off-Street	Public Off-Street	Total
100% or greater	24%	28%	2%	13%
85% to 100%	4%	17%	4%	33%
70% to 85%	11%	22%	7%	30%
55% to 70%	15%	17%	2%	17%
55% or less	46%	15%	85%	7%
Total	100%	100%	100%	100%

Source: Walker Parking Consultants, 2014

Approximately half of the blocks are expected to experience parking occupancy rates above 85% during peak weekday conditions. Additionally, only 7%, or three blocks, are projected to experience parking occupancy rates lower than 55%.

Walker also considered each parking type separately. On-street, approximately 46% of blocks are projected to have occupancy rates less than 55% and 24% (11 blocks) are projected to experience occupancy levels greater than 100%. Private off-street occupancy rates are generally spread across the board, with 15 blocks experiences occupancy rates less than 70% and 13 blocks with occupancy levels above 100%. Lastly, the majority of blocks with public parking are expected to experience parking occupancy rates of 55% or less. There are a total of three blocks with projected occupancies of 85% or greater.

PARKING ADEQUACY

As discussed earlier, parking adequacy is the ability of the parking supply to accommodate the parking demand. In order to determine the 2017 adequacy, Walker compared the projected parking demand to the future effective parking supply. As shown in Table 22, adequate parking is available within the Study Area in most zones.

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Table 22: 2017 Parking Adequacy - Weekday

Zone	Effective Supply	Demand	Adequacy
A	1,278	1,120	158
B	1,687	1,694	(7)
C	741	566	175
D	1,202	1,136	66
E	2,168	1,896	272
Total	7,076	6,412	664

Source: Walker Parking Consultants, 2014

In addition to projecting the overall adequacy for each zone, Walker also considered the adequacy of each type of parking supply to support demand. Overall, no parking shortfalls are expected for either on-street or private off-street parking in 2017. A small on-street parking deficit of 5 spaces is projected in zone D, but sufficient supply is available in adjacent zones. When public off-street parking is considered, a 42-space surplus is projected. While an overall surplus is expected, zone B is expected to experience a 75 space parking shortage.

Table 23: 2017 Parking Adequacy by Type

Zone	On-Street			Private Off-Street			Public Off-Street		
	Effective Supply	Demand	Adequacy	Effective Supply	Demand	Adequacy	Effective Supply	Demand	Adequacy
A	128	74	54	1,070	1,012	58	80	34	46
B	176	163	13	496	441	55	1,015	1,090	(75)
C	5	5	0	736	561	175	0	0	0
D	52	57	(5)	1,150	1,079	71	0	0	0
E	127	116	11	1,516	1,326	190	525	454	71
Total	488	415	73	4,968	4,419	549	1,620	1,578	42

Source: Walker Parking Consultants, 2014

2019 WEEKDAY PARKING CONDITIONS

Walker projected parking demand within the downtown Study Area for the 2019 planning horizon. The 2019 projections assume the projects categorized as "existing vacancies" and "Projected" continue to generate parking demand and the proposed mixed use development on block 19 comes online. No new parking is planned for this phase.

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PARKING OCCUPANCY

In 2019, an 87% occupancy rate is anticipated for the Study Area as a whole. Similar to 2017, the majority of zones are expected to have sufficient parking to support demand. However, in Zone B, the projected occupancy rate is 95%, with fewer than 100 public spaces available for use.

Table 24: 2019 Parking Occupancy – Weekday

Zone	Supply	Demand	% Occupied
A	1,364	1,144	84%
B	1,857	1,765	95%
C	781	605	77%
D	1,271	1,169	92%
E	2,330	1,932	83%
Total	7,603	6,615	87%

Source: Walker Parking Consultants, 2014

In Table 25, summarizes the projected 2019 parking occupancy by user type. Our analysis indicates a 74% occupancy rate for on-street parking within the Study Area. However, a 97% occupancy rate is projected in Zone D. Overall, private off-street parking is projected to experience an 87% occupancy rate. With the exception of Zone C, where occupancy is only 77%, occupancy levels of 85% or higher are expected in each zone. As previously stated, at these levels, finding parking can be difficult. Lastly, Walker projected demand for public off-street conditions. Public parking is only available in three of the five zones. In Zones A and E, adequate parking is available to support demand. However, in zone B, the public off-street occupancy rate is 99%.

Table 25: 2019 Parking Occupancy by Type – Weekday

Zone	On-Street			Private Off-Street			Public Off-Street		
	Supply	Demand	% Occupied	Supply	Demand	% Occupied	Supply	Demand	% Occupied
A	150	76	51%	1,126	1,033	92%	88	35	40%
B	207	170	82%	523	479	92%	1,127	1,116	99%
C	6	5	83%	775	600	77%	0	0	0%
D	61	59	97%	1,210	1,110	92%	0	0	0%
E	151	117	77%	1,596	1,352	85%	583	463	79%
Total	575	427	74%	5,230	4,574	87%	1,798	1,614	90%

Source: Walker Parking Consultants, 2014

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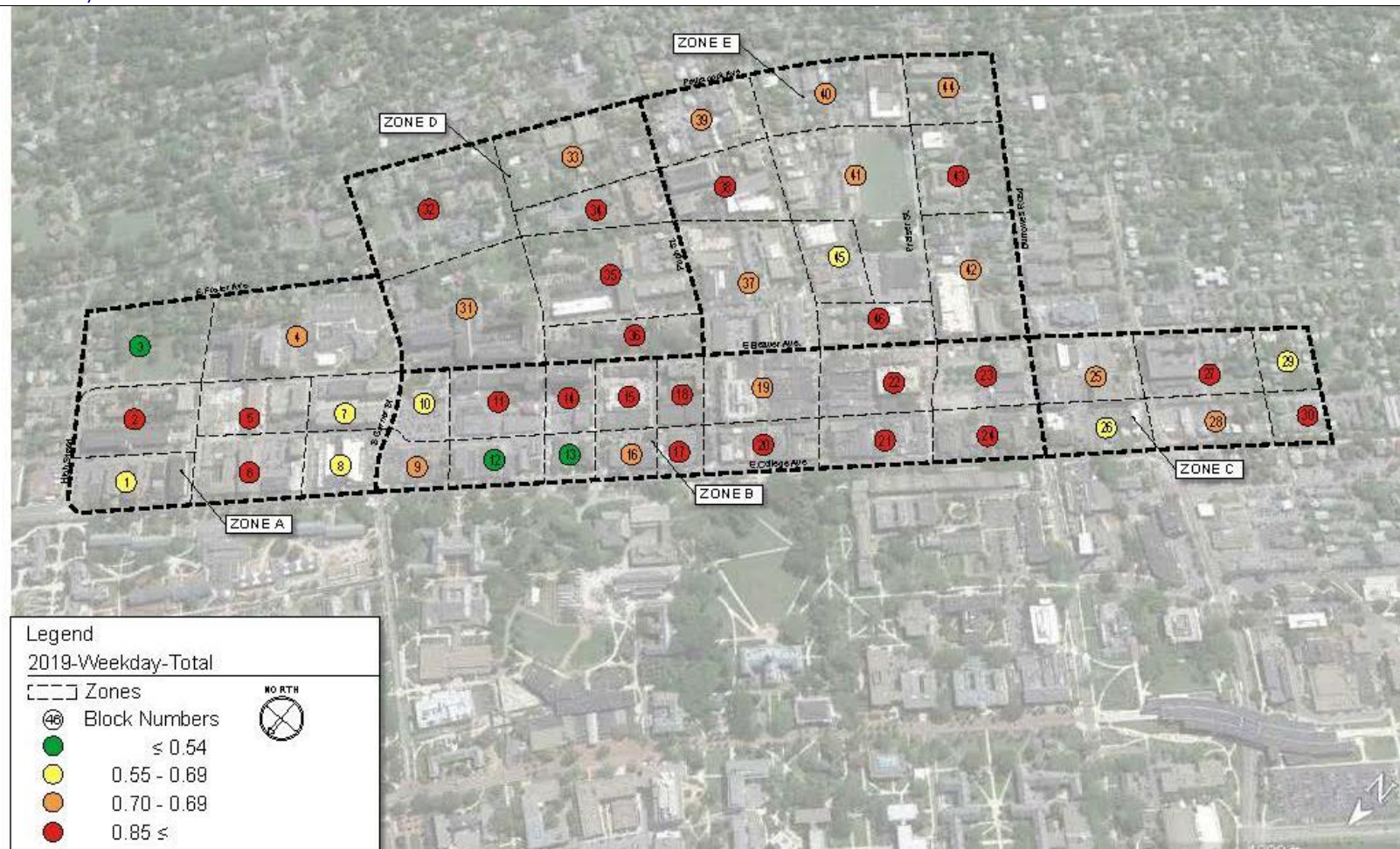
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Parking occupancies vary greatly from block to block and by parking type. The figure below shows the projected 2019 parking occupancy by block.

Figure 13: Weekday 2019 Demand – Overall



Source: Walker Parking Consultants, 2014



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DETAILED PARKING OCCUPANCY

With the exception of Zone B where parking is nearly at capacity, the overall occupancy rates indicate adequate parking is available within the Study Area. However, parking occupancy varies significantly from block to block and by type of parking. Walker has included a detailed breakdown of the parking occupancy by block and type in the appendix. Table 26 below summarizes the total number of blocks by occupancy rate and parking type.

Table 26: 2019 Parking Occupancy Block Totals

Occupancy Rate	On-Street	Private Off-Street	Public Off-Street	Total
100% or greater	12	14	2	8
85% to 100%	1	9	1	15
70% to 85%	6	10	3	14
55% to 70%	6	6	1	6
55% or less	21	7	39	3
Total	46	46	46	46

Occupancy Rate	On-Street	Private Off-Street	Public Off-Street	Total
100% or greater	26%	30%	4%	17%
85% to 100%	2%	20%	2%	33%
70% to 85%	13%	22%	7%	30%
55% to 70%	13%	13%	2%	13%
55% or less	46%	15%	85%	7%
Total	100%	100%	100%	100%

Source: Walker Parking Consultants, 2014

When the total parking supply by block is considered, approximately half (50%) of blocks are expected to experienced parking occupancy rates above 85%. Walker anticipates only 7% of blocks will experience parking occupancies less the 55%.

Walker also studied on-street and public and private off-street parking individually. On-street, approximately 46% of blocks are projected to have occupancy rates of 55% or less, and 26% (12 blocks) are projected to experience occupancy levels greater than 100%. Private off-street occupancy rates are more evenly distributed, with 13 blocks experiencing occupancy rates less than 70% and 14 blocks with occupancy levels above 100%. Lastly, Walker analyzed public off-street parking. Because there are only a handful of blocks with public off-street parking, the majority of blocks in the Study Area are expected to experience parking occupancy rates of 55% or less. As in 2017, there are a total of three blocks with projected occupancies of 85% or greater.



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PARKING ADEQUACY

Walker compared the 2019 projected parking demand to the future effective parking supply in order to determine parking adequacy. As shown in Table 27, a parking surplus of 461 spaces is anticipated. On a zone by zone basis, a deficit is projected in Zone B.

Table 27: 2019 Parking Adequacy - Weekday

Zone	Effective Supply	Demand	Adequacy
A	1,278	1,144	134
B	1,687	1,765	(78)
C	741	605	136
D	1,202	1,169	33
E	2,168	1,932	236
Total	7,076	6,615	461

Source: Walker Parking Consultants, 2014

Walker also analyzed the adequacy of each type of parking supply to support demand. By 2019, parking deficits are expected in each parking category. A small seven space deficit in Zone D is expected for on-street parking. There is sufficient private off-street parking available overall within the Study Area. Lastly, a 6-space surplus is projected for public off-street parking. While a small overall surplus is available, a deficit of 101 spaces is anticipated in Zone B.

Table 28: 2019 Parking Adequacy by Type

Zone	On-Street			Private Off-Street			Public Off-Street		
	Effective Supply	Demand	Adequacy	Effective Supply	Demand	Adequacy	Effective Supply	Demand	Adequacy
A	128	76	52	1,070	1,033	37	80	35	45
B	176	170	6	496	479	17	1,015	1,116	(101)
C	5	5	0	736	600	136	0	0	0
D	52	59	(7)	1,150	1,110	40	0	0	0
E	127	117	10	1,516	1,352	164	525	463	62
Total	488	427	61	4,968	4,574	394	1,620	1,614	6

Source: Walker Parking Consultants, 2014

2024 WEEKDAY PARKING CONDITIONS

Between 2019 and 2024, no new developments are currently planned in the downtown area. Walker assumed the projects developed in 2017 and 2019 would be nearly fully leased and generating demand at appropriate levels. Additionally, we assumed no new parking supply

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would be added in 2024. Please note that we did assume a 1% annual compound growth rate on 2014 occupancy levels.

PARKING OCCUPANCY

A 92% occupancy rate is projected for the Study Area in 2024. Zone B is expected to experience parking rates above 100%. The parking occupancy levels shown below are based on 85th percentile design day conditions. During the majority of the year, parking occupancy levels will be at or below those shown in Table 29. However, we anticipate 30 to 40 days per year when demand will exceed those levels shown below.

Table 29: 2024 Parking Occupancy – Weekday

Zone	Supply	Demand	% Occupied
A	1,364	1,204	88%
B	1,857	1,867	101%
C	781	647	83%
D	1,271	1,232	97%
E	2,330	2,032	87%
Total	7,603	6,982	92%

Source: Walker Parking Consultants, 2014

Projected 2024 parking occupancy by user type is summarized in Table 30. Although a 78% occupancy rate is anticipated for on-street parking within the Study Area, Zones C and D are expected to experience occupancy rates greater than 100%. Overall, private off-street parking is projected to experience a 93% occupancy rate. Occupancy levels of 83% or higher are expected in each zone, with occupancy in Zone B nearly at capacity. Lastly, Walker projected demand for public off-street conditions. Public parking is only available in three of the five zones. In Zones A and E, adequate parking is available to support demand. However, the loss of the Pugh Street Garage results in an overall public off-street occupancy rate of 94%.

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Table 30: 2024 Parking Occupancy by Type – Weekday

Zone	On-Street			Private Off-Street			Public Off-Street		
	Supply	Demand	% Occupied	Supply	Demand	% Occupied	Supply	Demand	% Occupied
A	150	81	54%	1,126	1,087	97%	88	36	41%
B	207	177	86%	523	520	99%	1,127	1,170	104%
C	6	6	100%	775	641	83%	0	0	0%
D	61	62	102%	1,210	1,170	97%	0	0	0%
E	151	124	82%	1,596	1,422	89%	583	486	83%
Total	575	450	78%	5,230	4,840	93%	1,798	1,692	94%

Source: Walker Parking Consultants, 2014

Parking occupancies vary greatly from block to block and by parking type. The following figure shows the projected 2024 parking occupancy by block.

Figure 14: Weekday 2024 Demand – Overall



Source: Walker Parking Consultants, 2014



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DETAILED PARKING OCCUPANCY

By 2024, parking occupancy levels in the Study Area are expected to be near or at capacity. However, parking occupancy varies significantly from block to block and by type of parking. Walker has included a detailed breakdown of the parking occupancy by block and type in the appendix. Table 31 below summarizes the total number of blocks by occupancy rate and parking type.

Table 31: 2024 Parking Occupancy Block Totals

Occupancy Rate	On-Street	Private Off-Street	Public Off-Street	Total
100% or greater	15	19	3	17
85% to 100%	0	5	1	7
70% to 85%	5	12	2	16
55% to 70%	6	3	1	4
55% or less	20	7	39	2
Total	46	46	46	46

Occupancy Rate	On-Street	Private Off-Street	Public Off-Street	Total
100% or greater	33%	41%	7%	37%
85% to 100%	0%	11%	2%	15%
70% to 85%	11%	26%	4%	35%
55% to 70%	13%	7%	2%	9%
55% or less	43%	15%	85%	4%
Total	100%	100%	100%	100%

Source: Walker Parking Consultants, 2014

When the total parking supply by block is considered, approximately 24 blocks (52%) are expected to experience parking occupancy rates above 85%. Walker anticipates only 4% of blocks will experience parking occupancies less the 55%.

Walker also studied on-street and public and private off-street parking individually. On-street, approximately 43% of blocks are projected to have occupancy rates less than 55% and 33% (15 blocks) are projected to experience occupancy levels greater than 100%. With the passage of time, more blocks with private off-street parking are anticipated to experience parking occupancy above 85% (24 blocks or 52%). Lastly, Walker analyzed public off-street parking. As stated previously, there are only a handful of blocks with public off-street parking, thus the majority of blocks in the Study Area are expected to experience parking occupancy rates of 55% or less. By 2024, we anticipate a total of four blocks with projected occupancies of 85% or greater.

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PARKING ADEQUACY

Walker determined the adequacy of the State College parking system by comparing the 2024 projected parking demand to the future effective parking supply. As shown in the table below, a parking surplus of 94 spaces is anticipated. As in 2019, parking deficits continue to be expected in Zone B, as well as Zone D.

Table 32: 2024 Parking Adequacy - Weekday

Zone	Effective Supply	Demand	Adequacy
A	1,278	1,204	74
B	1,687	1,867	(180)
C	741	647	94
D	1,202	1,232	(30)
E	2,168	2,032	136
Total	7,076	6,982	94

Source: Walker Parking Consultants, 2014

In the table below, parking adequacy by type is summarized. By 2024, parking deficits are expected in each parking category. Overall, there is adequate on-street parking available within the Study Area. However, small deficits exist in Zones B, C, and D (1, 1, and 10 spaces, respectively). Additionally, while Walker anticipates a 128-space surplus in private off-street parking within the next ten years, there are shortages projected for Zones A, B and D. Lastly, a 72-space deficit is projected for public off-street parking. The remaining zones with public parking available have sufficient supply to support demand during peak weekday conditions in 2024.

Table 33: 2024 Parking Adequacy by Type

Zone	On-Street			Private Off-Street			Public Off-Street		
	Effective Supply	Demand	Adequacy	Effective Supply	Demand	Adequacy	Effective Supply	Demand	Adequacy
A	128	81	47	1,070	1,087	(17)	80	36	44
B	176	177	(1)	496	520	(24)	1,015	1,170	(155)
C	5	6	(1)	736	641	95	0	0	0
D	52	62	(10)	1,150	1,170	(20)	0	0	0
E	127	124	3	1,516	1,422	94	525	486	39
Total	488	450	38	4,968	4,840	128	1,620	1,692	(72)

Source: Walker Parking Consultants, 2014



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2017 WEEKEND PARKING CONDITIONS

Walker projected parking demand within the downtown Study Area for the 2017 planning horizon. The weekend 2017 projections assume the projects categorized as "existing vacancies" and "Projected" begin to generate parking demand. The parking associated with the developments on blocks 23, 28, and 36 is also developed during this planning horizon. While Walker observed peak weekday conditions around 10:00 am, demand peaked later in the day during our Saturday observations. Our model is based on a weekend peak time of 2:00 pm. Additionally, the weekend demand projections have been adjusted to account for the 100th percentile level of demand. Based on historical data, State College only experiences parking demand at this level 5 to 10 times per year.

PARKING OCCUPANCY

By 2017, Walker is projecting an overall occupancy rate of 98% during weekend conditions. Zones A, B and D are expected to experience occupancy rates greater than 100%, especially Zone D, where a 120% occupancy rate is projected.

Table 34: 2017 Parking Occupancy – Weekend

Zone	Supply	Demand	% Occupied
A	1,364	1,433	105%
B	1,857	2,084	112%
C	781	561	72%
D	1,271	1,521	120%
E	2,330	1,824	78%
Total	7,603	7,423	98%

Source: Walker Parking Consultants, 2014

Table 35 shows the projected 2017 parking occupancy by user type. Generally, on-street parking demand exceeds the available supply in all but Zone E. When private off-street parking conditions are analyzed, a 93% occupancy rate is projected. Additionally, in several zones, the occupancy rate is greater than 100%. Lastly, Walker projected demand for public off-street conditions. Public parking is only available in three of the five zones. In Zones A and E, moderately high levels of occupancy are projected. However, in Zone B, a 125% occupancy rate is projected.

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Table 35: 2017 Parking Occupancy by Type – Weekend

Zone	On-Street			Private Off-Street			Public Off-Street		
	Supply	Demand	% Occupied	Supply	Demand	% Occupied	Supply	Demand	% Occupied
A	150	177	118%	1,126	1,188	106%	88	68	77%
B	207	229	111%	523	441	84%	1,127	1,414	125%
C	6	8	133%	775	553	71%	0	0	0%
D	61	74	121%	1,210	1,447	120%	0	0	0%
E	151	130	86%	1,596	1,230	77%	583	464	80%
Total	575	618	107%	5,230	4,859	93%	1,798	1,946	108%

Source: Walker Parking Consultants, 2014

Parking occupancies vary greatly from block to block and by parking type. The following figures show the projected 2017 parking occupancy by block during weekend conditions.

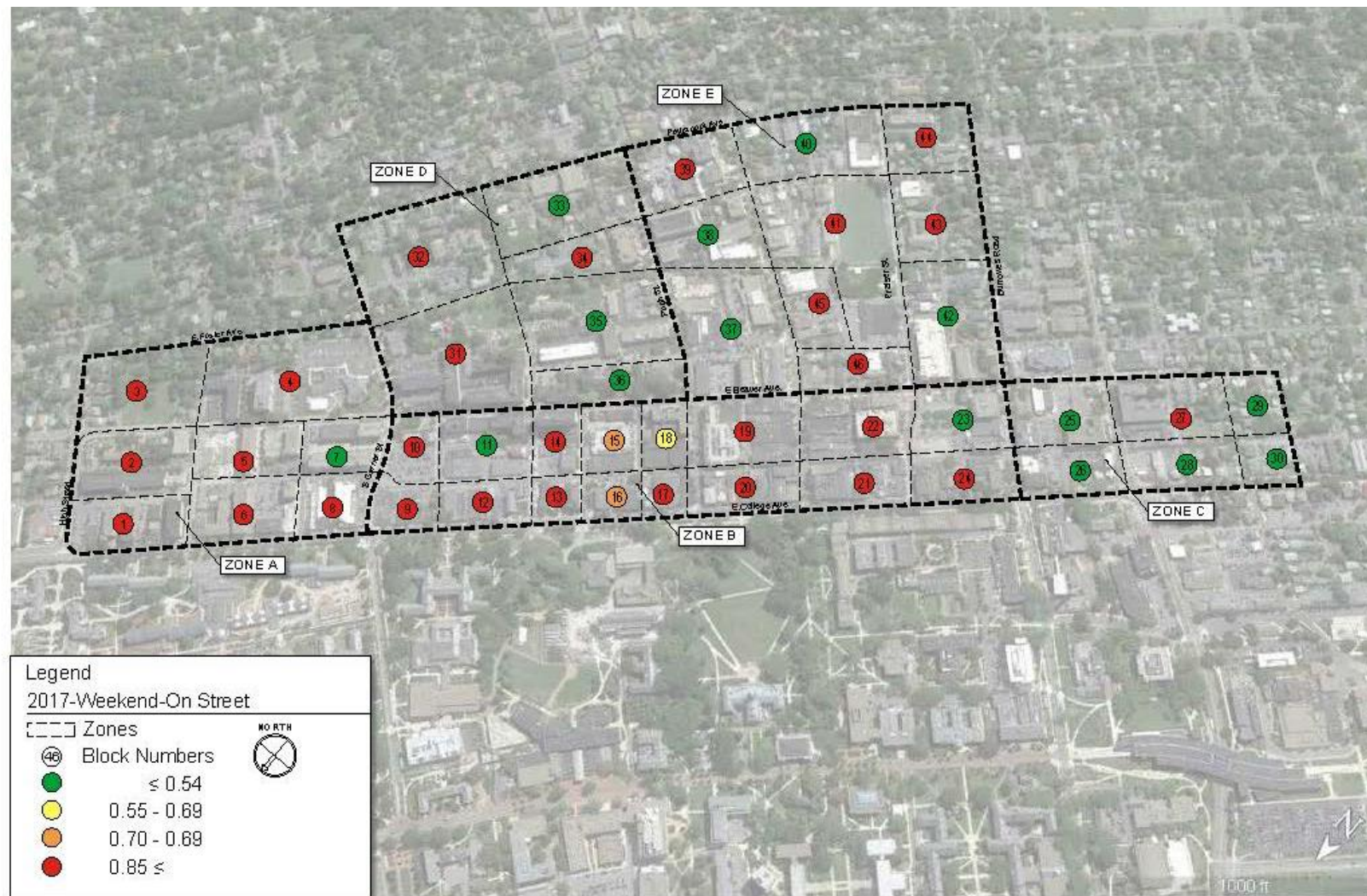
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Figure 15: Weekend 2017 Demand – On-Street

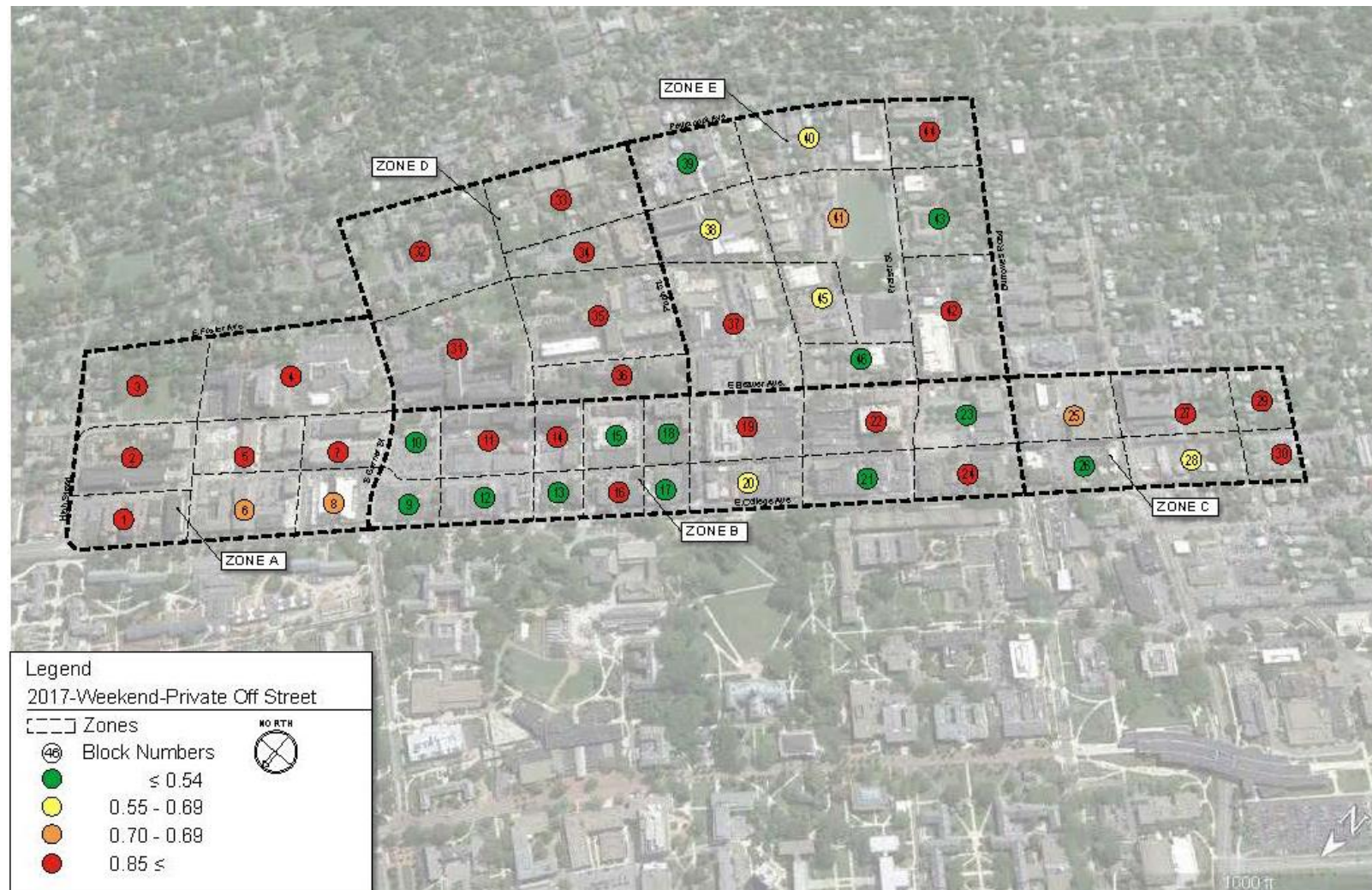


Source: Walker Parking Consultants, 2014

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Figure 16: Weekend 2017 Demand – Private Off-Street



Source: Walker Parking Consultants, 2014

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Figure 17: Weekend 2017 Demand – Public Off-Street



Source: Walker Parking Consultants, 2014



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DETAILED PARKING OCCUPANCY

Occupancy rates generally indicate inadequate parking is available within the Study Area, particularly in Zone B. A detailed breakdown of the parking occupancy by block and type is included in the appendix. The table below shows the total number of blocks by occupancy rate and parking type.

Table 36: 2017 Parking Occupancy Block Totals

Occupancy Rate	On-Street	Private Off-Street	Public Off-Street	Total
100% or greater	24	19	5	23
85% to 100%	4	5	1	10
70% to 85%	2	4	3	5
55% to 70%	1	5	0	4
55% or less	15	13	37	4
Total	46	46	46	46

Occupancy Rate	On-Street	Private Off-Street	Public Off-Street	Total
100% or greater	52%	41%	11%	50%
85% to 100%	9%	11%	2%	22%
70% to 85%	4%	9%	7%	11%
55% to 70%	2%	11%	0%	9%
55% or less	33%	28%	80%	9%
Total	100%	100%	100%	100%

Source: Walker Parking Consultants, 2014

Over the next three year planning horizon, Walker anticipates approximately 33 blocks within the Study Area will experience a parking occupancy rate of 85% or more during weekend conditions. Additionally, we expect only 18% of the blocks will experience parking occupancy levels less than 70%.

Walker also considered each parking type separately. On-street, approximately 52% of blocks are projected to have occupancy rates greater than 100% and 33% (15 blocks) are projected to experience occupancy levels less than 55%. When private off-street parking is analyzed, approximately 28% of blocks are projected to experience parking occupancy levels below 55%. Additionally, 19 blocks are expected to experience parking occupancy greater than 100%. Lastly, the majority of blocks with off-street public parking are expected to experience parking occupancy rates of 55% or less. This is primarily a function of so few blocks with public parking. Of the nine blocks with public parking available, we anticipate a total of six blocks will have occupancies of 85% or greater.



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PARKING ADEQUACY

As discussed earlier, parking adequacy is the ability of the parking supply to accommodate the parking demand. In order to determine the 2017 weekend adequacy, Walker compared the projected parking demand to the future effective parking supply. As shown in Table 37, insufficient parking is available within the Study Area in most zones. A 347-space deficit is expected during weekend conditions.

Table 37: 2017 Parking Adequacy - Weekend

Zone	Effective Supply	Demand	Adequacy
A	1,278	1,433	(155)
B	1,687	2,084	(397)
C	741	561	180
D	1,202	1,521	(319)
E	2,168	1,824	344
Total	7,076	7,423	(347)

Source: Walker Parking Consultants, 2014

In addition to projecting the overall adequacy for each zone, Walker also considered the adequacy of each type of parking supply to support demand. Deficits are projected in most zones for most categories of parking over the three year planning horizon. We anticipate a 130-space deficit for on-street parking and a 326-space deficit for public off-street parking. Lastly, when the private off-street parking condition is analyzed, a 109-space surplus is projected.

Table 38: 2017 Parking Adequacy by Type

Zone	On-Street			Private Off-Street			Public Off-Street		
	Effective Supply	Demand	Adequacy	Effective Supply	Demand	Adequacy	Effective Supply	Demand	Adequacy
A	128	177	(49)	1,070	1,188	(118)	80	68	12
B	176	229	(53)	496	441	55	1,015	1,414	(399)
C	5	8	(3)	736	553	183	0	0	0
D	52	74	(22)	1,150	1,447	(297)	0	0	0
E	127	130	(3)	1,516	1,230	286	525	464	61
Total	488	618	(130)	4,968	4,859	109	1,620	1,946	(326)

Source: Walker Parking Consultants, 2014



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2019 WEEKEND PARKING CONDITIONS

Walker also projected weekend parking demand within the downtown Study Area for the five year planning horizon. Similar to the weekday projections, the weekend projections assume the projects categorized as "existing vacancies" and "Projected" continue to generate parking demand and the proposed mixed use development on block 19 comes online. Additionally, no new parking is planned for this phase.

PARKING OCCUPANCY

In 2019, a 107% occupancy rate is anticipated for the Study Area as a whole. Similar to 2017, Zones A, B and D are projected to experience parking occupancy above 100%. Parking occupancy in Zones C and E is expected to be moderately high, as well.

Table 39: 2019 Parking Occupancy – Weekend

Zone	Supply	Demand	% Occupied
A	1,364	1,460	107%
B	1,857	2,142	115%
C	781	595	76%
D	1,271	1,555	122%
E	2,330	1,852	79%
Total	7,603	7,604	100%

Source: Walker Parking Consultants, 2014

In Table 40, the projected 2019 parking occupancy by user type is summarized. Our analysis indicates a 109% occupancy rate for on-street parking within the Study Area, with only Zone E showing an occupancy level below 100%. Overall, private off-street parking is projected to experience a 96% occupancy rate. With the exception of Zones B, C and E, where occupancy is only 92, 76% and 79%, respectively, occupancy levels of 100% or higher are expected. As stated earlier, at these levels, finding the last few parking spaces can be difficult. Lastly, Walker projected demand for public off-street conditions. Public parking is only available in three of the five zones. In Zones A and E, adequate parking is available to support demand. However, the loss of the Pugh Street Garage results in an overall public off-street occupancy rate of 127%.



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Table 40: 2019 Parking Occupancy by Type – Weekend

Zone	On-Street			Private Off-Street			Public Off-Street		
	Supply	Demand	% Occupied	Supply	Demand	% Occupied	Supply	Demand	% Occupied
A	150	180	120%	1,126	1,211	108%	88	69	78%
B	207	234	113%	523	481	92%	1,127	1,427	127%
C	6	8	133%	775	587	76%	0	0	0%
D	61	75	123%	1,210	1,480	122%	0	0	0%
E	151	131	87%	1,596	1,255	79%	583	466	80%
Total	575	628	109%	5,230	5,014	96%	1,798	1,962	109%

Source: Walker Parking Consultants, 2014

Parking occupancies vary greatly from block to block and by parking type. The following figure shows the projected 2019 parking occupancy by block.

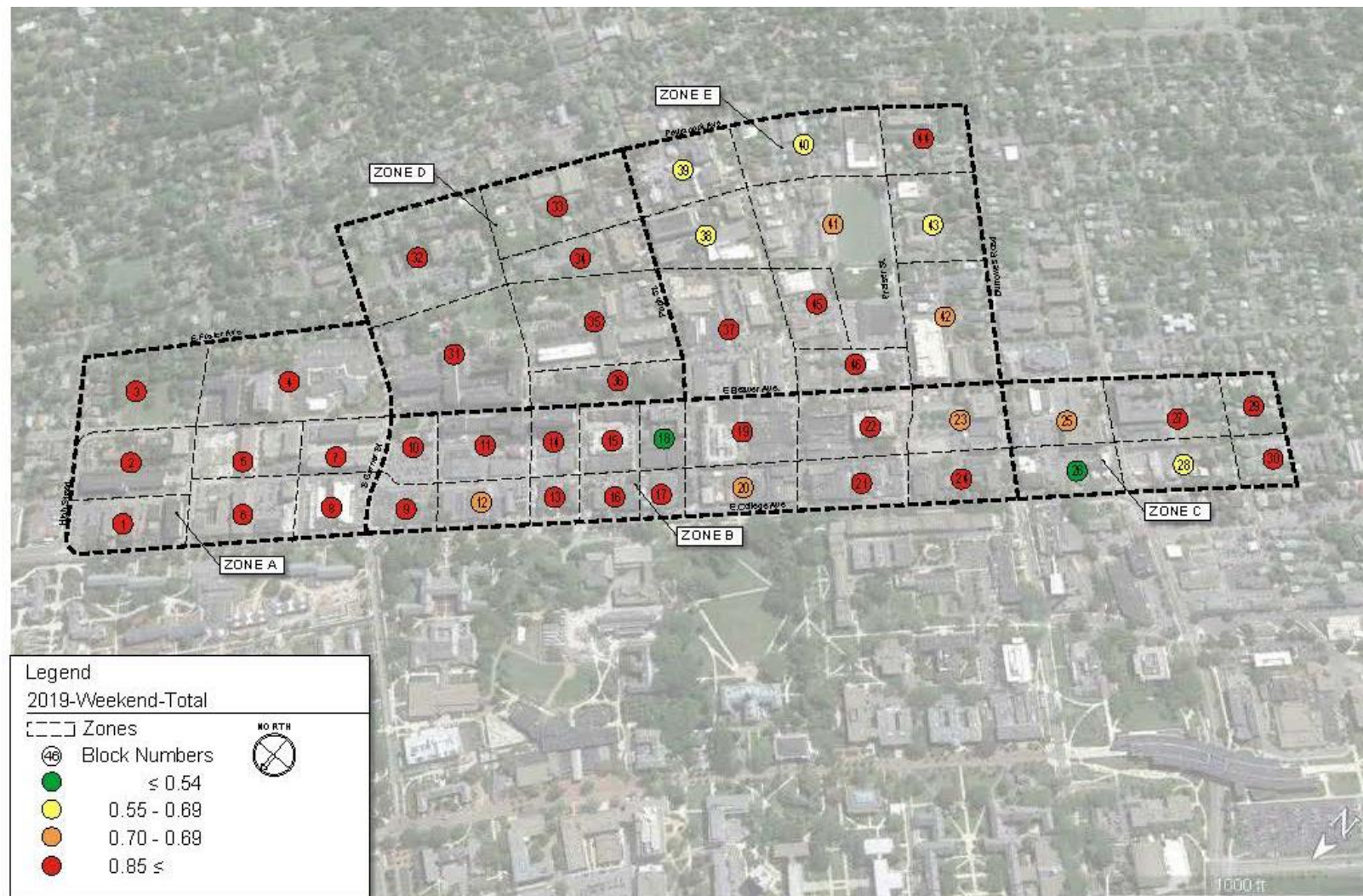
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Figure 18: Weekend 2019 Demand – Overall



Source: Walker Parking Consultants, 2014

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DETAILED PARKING OCCUPANCY

Generally, the overall occupancy rates indicate an inadequate parking supply within the Study Area in 2019 during weekend conditions. However, parking occupancy varies significantly from block to block and by type of parking. Walker has included a detailed breakdown of the parking occupancy by block and type in the appendix. Table 41 below summarizes the total number of blocks by occupancy rate and parking type.

Table 41: 2019 Parking Occupancy Block Totals

Occupancy Rate	On-Street	Private Off-Street	Public Off-Street	Total
100% or greater	25	21	5	24
85% to 100%	4	3	1	9
70% to 85%	1	5	3	6
55% to 70%	1	5	0	5
55% or less	15	12	37	2
Total	46	46	46	46

Occupancy Rate	On-Street	Private Off-Street	Public Off-Street	Total
100% or greater	54%	46%	11%	52%
85% to 100%	9%	7%	2%	20%
70% to 85%	2%	11%	7%	13%
55% to 70%	2%	11%	0%	11%
55% or less	33%	26%	80%	4%
Total	100%	100%	100%	100%

Source: Walker Parking Consultants, 2014

When the total parking supply by block is considered, approximately three quarters (72%) of blocks are expected to experience parking occupancy rates above 85%. Walker anticipates only 4% of blocks will experience parking occupancies less than 55%.

Walker also studied on-street and public and private off-street parking individually. On-street, approximately 33% of blocks are projected to have occupancy rates less than 55% and 54% (25 blocks) are projected to experience occupancy levels greater than 100%. When private off-street conditions are considered separately, 12 blocks are expected to experience occupancy rates less than 55%, while 21 blocks with occupancy levels above 100%. Lastly, Walker analyzed public off-street parking. Because there are only a handful of blocks with public off-street parking, the majority of blocks in the Study Area are expected to experience parking occupancy rates of 55% or less. As in 2017, there are a total of six blocks with projected occupancies of 85% or greater.

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PARKING ADEQUACY

Walker compared the 2019 projected parking demand to the future effective parking supply in order to determine parking adequacy. As shown in Table 42, a parking deficit of more than 528 spaces is anticipated. On a zone by zone basis, deficits are projected in Zones A, B, and D, with the largest deficit in Zone B.

Table 42: 2019 Parking Adequacy - Weekend

Zone	Effective Supply	Demand	Adequacy
A	1,278	1,460	(182)
B	1,687	2,142	(455)
C	741	595	146
D	1,202	1,555	(353)
E	2,168	1,852	316
Total	7,076	7,604	(528)

Source: Walker Parking Consultants, 2014

Walker also analyzed the adequacy of each type of parking supply to support demand. By 2019, parking deficits are expected in each parking category. A 140-space shortage is expected for on-street parking; however only small deficits are expected in Zones C and E. When Walker compared the private off-street demand to the available supply, a 46-space deficit was projected. While an overall private parking deficit is expected, parking surpluses are anticipated in Zones B, C and E. Lastly, a 342-space deficit is projected for public off-street parking. The entire public parking shortage is anticipated to occur in Zone B. The remaining zones with public parking available have sufficient supply to support demand during peak weekend conditions in 2019.

Table 43: 2019 Parking Adequacy by Type

Zone	On-Street			Private Off-Street			Public Off-Street		
	Effective Supply	Demand	Adequacy	Effective Supply	Demand	Adequacy	Effective Supply	Demand	Adequacy
A	128	180	(52)	1,070	1,211	(141)	80	69	11
B	176	234	(58)	496	481	15	1,015	1,427	(412)
C	5	8	(3)	736	587	149	0	0	0
D	52	75	(23)	1,150	1,480	(330)	0	0	0
E	127	131	(4)	1,516	1,255	261	525	466	59
Total	488	628	(140)	4,968	5,014	(46)	1,620	1,962	(342)

Source: Walker Parking Consultants, 2014



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2024 WEEKEND PARKING CONDITIONS

No new developments are currently planned in the downtown area between 2019 and 2024. Walker assumed the projects developed in 2017 and 2019 would be nearly fully leased and generating demand at appropriate levels. Additionally, we assumed no new parking supply would be added in 2024. As previously stated, a 1% annual compound growth rate on 2014 occupancy levels was assumed. However, the growth rate was not applied to the parking demand in the four public parking garages.

PARKING OCCUPANCY

A 104% occupancy rate is projected for the Study Area in 2024. Parking occupancy rates exceed 100% in Zones A, B and D. As stated earlier, the introduction of a new public parking garage in or near Zone B (specifically block 37) would increase the available supply in the area and reduce the Zone B and overall occupancy levels to more manageable levels.

The parking occupancy levels shown below are based on 100th percentile design day conditions. During the majority of the year, parking occupancy levels will be below those shown in Table 44. However, we anticipate five to ten days per year when demand will meet or exceed those levels shown below.

Table 44: 2024 Parking Occupancy – Weekend

Zone	Supply	Demand	% Occupied
A	1,364	1,535	113%
B	1,857	2,208	119%
C	781	635	81%
D	1,271	1,637	129%
E	2,330	1,929	83%
Total	7,603	7,944	104%

Source: Walker Parking Consultants, 2014

Projected 2024 parking occupancy by user type is summarized in Table 45. A 115% occupancy rate is anticipated for on-street parking within the Study Area. Only Zone E is expected to experience occupancy rates less than 100%. Overall, private off-street parking is projected to experience a 101% occupancy rate during peak weekend conditions. Occupancy levels of 81% or higher are expected in each zone, with occupancy in Zones A, and D exceeding 100%. As stated earlier, at these levels, finding parking can be difficult.

Lastly, Walker projected demand for public off-street conditions. Public parking is only available in three of the five zones. In Zones A and E, adequate parking is available to support demand, but may be difficult to locate. However, in Zone B, a 128% occupancy rate is anticipated.

BOROUGH OF STATE COLLEGE

TASK 1: COMPREHENSIVE SUPPLY & DEMAND STUDY



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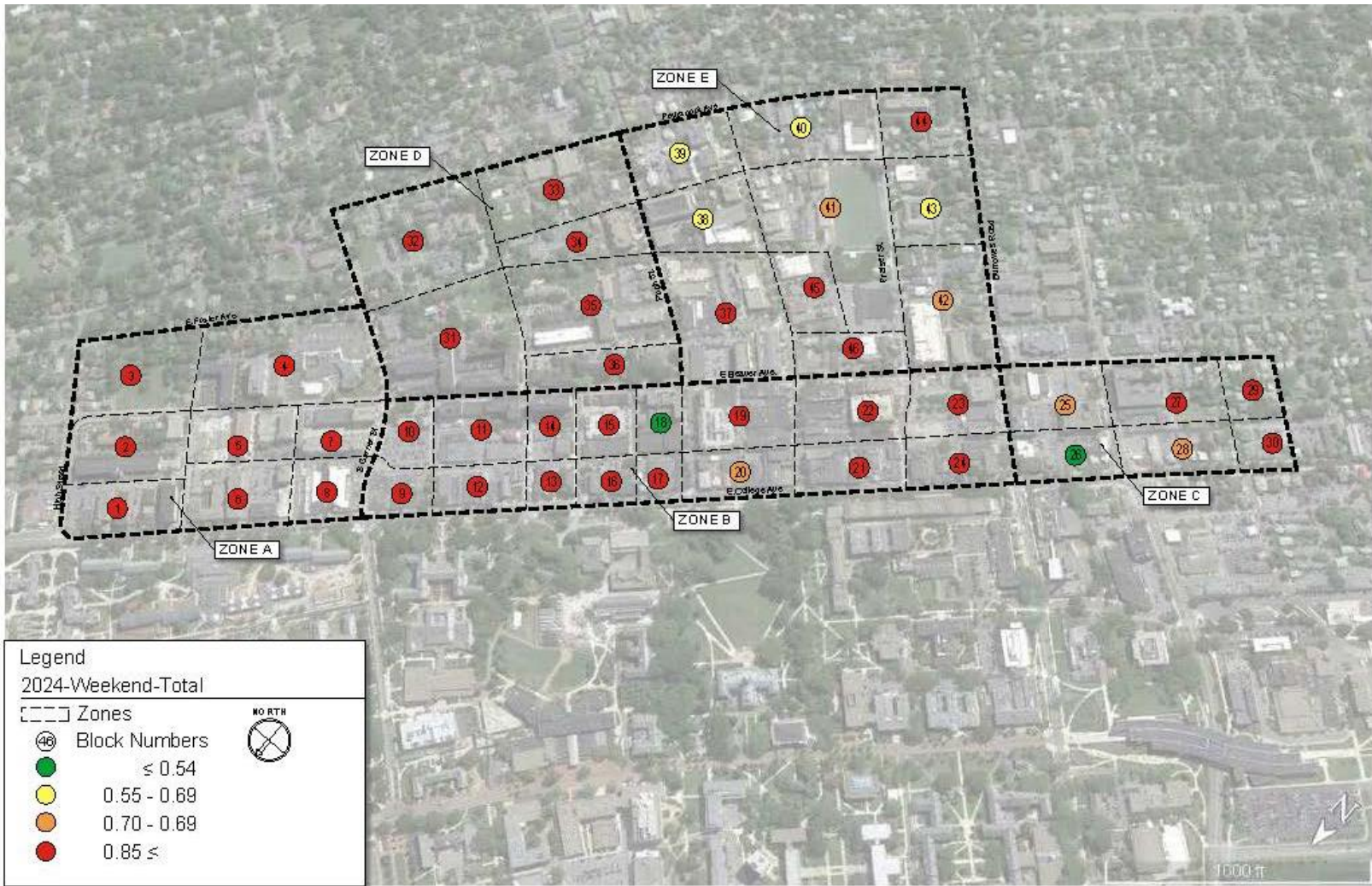
Table 45: 2024 Parking Occupancy by Type – Weekend

Zone	On-Street			Private Off-Street			Public Off-Street		
	Supply	Demand	% Occupied	Supply	Demand	% Occupied	Supply	Demand	% Occupied
A	150	189	126%	1,126	1,273	113%	88	73	83%
B	207	244	118%	523	522	100%	1,127	1,442	128%
C	6	9	150%	775	626	81%	0	0	0%
D	61	80	131%	1,210	1,557	129%	0	0	0%
E	151	139	92%	1,596	1,318	83%	583	472	81%
Total	575	661	115%	5,230	5,296	101%	1,798	1,987	111%

Source: Walker Parking Consultants, 2014

Parking occupancies vary greatly from block to block and by parking type. The following figure shows the projected 2024 parking occupancy by block.

Figure 19: Weekend 2024 Demand – Overall



Source: Walker Parking Consultants, 2014



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DETAILED PARKING OCCUPANCY

By 2024, parking occupancy levels in the Study Area are expected to be near or at capacity. However, parking occupancy varies significantly from block to block and by type of parking. Walker has included a detailed breakdown of the parking occupancy by block and type in the appendix. Table 46 below summarizes the total number of blocks by occupancy rate and parking type.

Table 46: 2024 Parking Occupancy Block Totals

Occupancy Rate	On-Street	Private Off-Street	Public Off-Street	Total
100% or greater	27	21	6	27
85% to 100%	2	6	1	8
70% to 85%	2	3	2	5
55% to 70%	0	6	0	4
55% or less	15	10	37	2
Total	46	46	46	46

Occupancy Rate	On-Street	Private Off-Street	Public Off-Street	Total
100% or greater	59%	46%	13%	59%
85% to 100%	4%	13%	2%	17%
70% to 85%	4%	7%	4%	11%
55% to 70%	0%	13%	0%	9%
55% or less	33%	22%	80%	4%
Total	100%	100%	100%	100%

Source: Walker Parking Consultants, 2014

When the total parking supply by block is considered, approximately 35 blocks (76%) are expected to experience parking occupancy rates above 85%. Walker anticipates only 4% of blocks will experience parking occupancies less than 55%.

Walker also studied on-street and public and private off-street parking individually. For on-street, approximately 33% of blocks are projected to have occupancy rates less than 55%, while 59% (27 blocks) are projected to experience occupancy levels greater than 100%. At ten years, the number of blocks with private off-street parking anticipated to experience parking occupancy above 85% increases to 27.

Lastly, Walker analyzed public off-street parking. As previously stated, there are only a handful of blocks with public off-street parking, thus the majority of blocks in the Study Area are expected to experience parking occupancy rates of 55% or less. By 2024, we anticipate a total of seven blocks with projected occupancies of 85% or greater.



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PARKING ADEQUACY

Walker determined the adequacy of the State College parking system by comparing the 2024 projected parking demand to the future effective parking supply. As shown in the table below, a parking deficit of nearly 868 spaces is anticipated. Parking deficits are expected in Zones A, B, and D. Again, it is important to remember that the table below shows the adequacy during 100th percentile design day conditions. Demand at this level is only expected to occur a handful of times per year.

Table 47: 2024 Parking Adequacy - Weekend

Zone	Effective Supply	Demand	Adequacy
A	1,278	1,535	(257)
B	1,687	2,208	(521)
C	741	635	106
D	1,202	1,637	(435)
E	2,168	1,929	239
Total	7,076	7,944	(868)

Source: Walker Parking Consultants, 2014

In the table below, parking adequacy by type is summarized. By 2024, parking deficits are expected in each parking category. Overall, there is inadequate on-street parking available within the Study Area and a 173-space deficit is projected. Walker also anticipates a 328-space deficit in private off-street parking within the next ten years. These shortages are projected for Zones A, B and D. Lastly, a 367-space deficit is projected for public off-street parking. This projected deficit is located in Zone B. The remaining zones with public parking available have sufficient supply to support demand during peak weekend conditions in 2024.

Table 48: 2024 Parking Adequacy by Type

On-Street			Private Off-Street			Public Off-Street		
Effective Supply	Demand	Adequacy	Effective Supply	Demand	Adequacy	Effective Supply	Demand	Adequacy
128	189	(61)	1,070	1,273	(203)	80	73	7
176	244	(68)	496	522	(26)	1,015	1,442	(427)
5	9	(4)	736	626	110	0	0	0
52	80	(28)	1,150	1,557	(407)	0	0	0
127	139	(12)	1,516	1,318	198	525	472	53
488	661	(173)	4,968	5,296	(328)	1,620	1,987	(367)

Source: Walker Parking Consultants, 2014



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SUPPLY AND DEMAND SUMMARY

Walker's supply and demand analysis is based on observations taken during one weekday and one Saturday in the fall of 2013. During the weekday survey, approximately 65% of the available parking supply (7,350 spaces) in the 46-block Study Area was occupied during the peak hour. Similarly, a 67% occupancy rate was observed during the weekend survey day (the PSU v. Purdue game on November 16, 2013). While the overall survey day occupancy rates did not indicate a parking shortage, it should be noted that parking occupancies varied on a facility by facility and street by street basis, with demand on some blocks exceeding capacity.

Hourly public parking data for the Fraser Street Garage, Pugh Street Garage, and Beaver Avenue Garage for the majority of 2013 was provided by the Borough. Walker compared the observed parking occupancy levels during our survey day to the total parking demand recorded for the year in order to determine a design day. The weekday survey day parking demand was adjusted to account for the 85th percentile level of weekday activity, as this level is usually equivalent to a very busy day that may occur once or twice a month. Based on historical data, there are about 40 days during the year when demand exceeds the 85th percentile of weekday activity.

While Walker usually recommends designing the parking system to support the 85th percentile level of demand, it is also important to understand what a worst case scenario would look like, as State College often experiences event level parking demand associated with football games and other special events. In order to understand parking conditions during the highest levels of activity, Walker adjusted the weekend survey day demand to reflect 100th percentile level of weekend activity. Based on historical data, this level of activity can be expected five to ten times per year, including both weekday and weekend conditions.

During design day conditions, Walker anticipates a weekday occupancy rate of 80% and a weekend occupancy rate of 94%. When weekend occupancy rates reach this level, a 107-space parking deficit is projected.

Walker also projected future parking demand for the Study Area for three different planning horizons – three years, five years, and ten years. The Borough provided Walker with program data associated with several proposed developments, as well as information about existing vacant commercial space. Using the shared parking methodology published by the Urban Land Institute, Walker projected demand for each of the proposed developments. In addition to the known developments planned for the Borough, Walker assumed all parking demand in the Study Area would grow 1% annually. Several of the developments will displace existing parking facilities, such as the Fraser Street Lot.

By 2017, Walker anticipates the downtown will generate a peak parking demand of 6,412 spaces during weekday conditions, which equates to an 84% occupancy rate. During weekend conditions, the anticipated parking demand is 7,423 spaces, compared the effective supply of 7,076. Walker is projecting a 347 space deficit. It is important to remember that a parking shortage of this magnitude is not typical; rather parking levels of this magnitude are only expected five to ten times per year.

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Walker also projected parking demand for the five year planning horizon. By 2019, we anticipate all four of the proposed developments to be operational, but not fully leased. A peak weekday demand of 6,615 spaces is projected, resulting in a 461 space surplus. During weekend conditions in 2019, the projected parking deficit in the Study Area is 528 spaces, with the largest deficits occurring in the public off-street sector.

In 2024, we assumed the developments would be nearly fully leased. Without the introduction of additional parking supply, Walker anticipates a 92% occupancy rate. When the demand is compared to the effective supply, a 94-space surplus is projected. During weekend conditions, a peak parking demand of 7,944 spaces is anticipated, resulting in an approximately 868 space deficit. As previously stated, demand of this level is only expected to occur five to ten times per year during major events.

The following tables summarize the parking supply and demand during weekday and weekend conditions during our survey and design days, as well as the three planning horizons.



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Table 49: Weekday Parking Summary

		Weekday				
		Survey	Design	2017	2019	2024
On-Street	Supply	575	575	575	575	575
	Effective Supply	488	488	488	488	488
	Demand	328	407	415	427	450
	Occupancy	57%	71%	72%	74%	78%
	Adequacy	160	81	73	61	38
Private Off-Street	Supply	4,916	4,916	5,230	5,230	5,230
	Effective Supply	4,671	4,671	4,968	4,968	4,968
	Demand	3,340	4,107	4,419	4,574	4,840
	Occupancy	68%	84%	84%	87%	93%
	Adequacy	1,331	564	549	394	128
Public Off-Street	Supply	1,859	1,859	1,798	1,798	1,798
	Effective Supply	1,675	1,675	1,620	1,620	1,620
	Demand	1,139	1,401	1,578	1,614	1,692
	Occupancy	61%	75%	88%	90%	94%
	Adequacy	536	274	42	6	(72)
Total	Supply	7,350	7,350	7,603	7,603	7,603
	Effective Supply	6,834	6,834	7,076	7,076	7,076
	Demand	4,807	5,915	6,412	6,615	6,982
	Occupancy	65%	80%	84%	87%	92%
	Adequacy	2,027	919	664	461	94

Source: Walker Parking Consultants, 2014



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Table 50: Weekend Parking Summary

		Weekend				
		Survey	Design	2017	2019	2024
On-Street	Supply	575	575	575	575	575
	Effective Supply	488	488	488	488	488
	Demand	428	598	618	628	661
	Occupancy	74%	104%	107%	109%	115%
	Adequacy	60	(110)	(130)	(140)	(173)
Private Off-Street	Supply	4,916	4,916	5,230	5,230	5,230
	Effective Supply	4,671	4,671	4,968	4,968	4,968
	Demand	3,255	4,555	4,859	5,014	5,296
	Occupancy	66%	93%	93%	96%	101%
	Adequacy	1,416	116	109	(46)	(328)
Public Off-Street	Supply	1,859	1,859	1,798	1,798	1,798
	Effective Supply	1,675	1,675	1,620	1,620	1,620
	Demand	1,277	1,788	1,946	1,962	1,987
	Occupancy	69%	96%	108%	109%	111%
	Adequacy	398	(113)	(326)	(342)	(367)
Total	Supply	7,350	7,350	7,603	7,603	7,603
	Effective Supply	6,834	6,834	7,076	7,076	7,076
	Demand	4,960	6,941	7,423	7,604	7,944
	Occupancy	67%	94%	98%	100%	104%
	Adequacy	1,874	(107)	(347)	(528)	(868)

Source: Walker Parking Consultants, 2014

STRATEGIES FOR CURRENT AND FUTURE PARKING

TRANSPORTATION DEMAND MANAGEMENT STRATEGIES

FEE-IN-LIEU PROGRAM

State College currently has a fee-in-lieu program that is currently being underutilized. A fee-in-lieu program is one in which developers forego the construction of private parking lots for their development and pay the borough a fee per parking space needed. The fees paid by developers in the program are collected into a designated fund and used to construct and/or maintain centralized public parking. The fund can also be set up in such a way as to allow for use in traffic mitigation efforts, such as transit, bicycle, and pedestrian improvements.

To make the fee-in-lieu program attractive to developers, it must be less expensive for them than constructing their own lot, yet still be high enough to support the construction or maintenance of the public lot(s) being utilized by the program. To accomplish this task, the



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borough should review and update the program regularly to adjust for changes in construction costs, as well as inflation.

UNBUNDLED PARKING

Unbundled parking is paying for parking separately from office or housing space, rather than the currently prevalent bundling of parking with the rented or purchased. There are several ways to accomplish the unbundling of parking. The first is simply to sell or rent parking spaces separately from the residential/office space that is being bought or rented. Another option is giving a discount to renters not utilizing parking. And a third option would be to include parking as a separate cost in the rental/lease agreement, enabling tenants to negotiate a lower rent by excluding parking privileges.

To encourage developers to unbundle parking, the borough can institute flexible parking requirements that lower the required amount of parking for developments with unbundled parking, as the parking demand for such developments would likely be lower. To combat the potential of spillover from tenants looking for parking alternatives, the borough could limit the amount of overnight on street parking or require residential overnight on street parking permits that are not available to residents in developments containing off street parking.

SMART PARKING TECHNOLOGIES

There are various types of smart parking technologies that the borough can incorporate to help downtown patrons quickly and efficiently locate and utilize public parking amenities. These include multi-space meters and automated parking guidance systems.

MULTI-SPACE METERS

Multi-space meters have three basic operating modes: pay-by-space, pay-by-plate, and pay-and-display system. In all cases, a parking fee collection device is placed near the parking spaces, typically used for on-street parking. Patrons stop at the machine after parking but before going to their destination. Payment amount is based on estimated length of stay.

With pay-by-space, the parking spaces would be individually numbered and the patron enters the space number before paying the fee. Enforcement for pay-by-space is typically done via printing out a list of occupied spaces from the meter and matching it with the actual situation in the assigned parking area. Using the pay-and-display system, the patron receives a printout that must be displayed in the windshield. To enforce this option, an enforcement officer must observe the printed ticket on the dash of each car in the lot. If the pay-by-plate system is utilized, the patron enters his/her vehicle's license plate number into the meter. This option is enforced by a camera mounted to a patrol car that scans the license plates of vehicles parked into the metered area and determines which vehicles have paid or not paid based on a software linkage to the area meter(s).

The fee charged by electronic meters can be either a flat fee per use or based on the patron's estimate of length of stay, or both; a relatively complex fee schedule can be programmed into the machine. Credit, debit cards, cash, and coins can be accepted. Smart



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cards can also be used for regular parkers. The cards have a balance that is depleted as it is used.

AUTOMATED PARKING GUIDANCE SYSTEMS

An Automated parking guidance system (APGS) is an automated information network that provides parking availability and directional guidance to motorists at key decision points throughout a parking facility (or facilities). APGS utilizes dynamic signage to display parking availability information and/or directional arrows at the key decision points so that drivers know what to how much and where to find available parking. APGS operates at three levels including facility availability, level/area availability, and single space monitoring.

Facility availability is used to communicate parking availability to motorists before they enter a facility. Count modules, (loops, magnetic sensors, or ultrasonic sensors) monitor the number of vehicles that enter and exit the facility to maintain an overall count of vehicles in the facility. The count modules track the number of vehicles traveling in and out of the facility and communicate the facility status to a dynamic sign via a zone controller, communication points, a gateway and a server. For example, if a car park has 1,000 parking spaces, when the facility is empty the counter is set at 1,000. Each time a vehicle enters the facility the count is reduced by one and each time a car exits the facility the count is increased by one, thereby keeping a count of the number available stalls.

Dynamic signage (typically LED) can display the number of available spaces, and/or color-coded messages such as "Full" in red, or "Open" in green. Directional arrows may also be displayed if multiple parking areas are being monitored. The dynamic signs can be located on the roadway, well before the driver arrives at the facility. This way, the driver can decide in advance if they want to enter that particular parking area.

Facility availability systems range in price between \$20,000 and \$50,000 per facility depending on the number of entry/exit locations (count points), quality and quantity of dynamic signs. Level space availability is similar to facility status but it provides the parking availability on a per-level or per parking bay basis. Count modules (loops, magnetic sensors, or ultrasonic sensors) are strategically located at the entrance and exit point(s) of each level or row to count the number of vehicles on each level or in each area. Dynamic signage is strategically located so drivers can see the availability and/or arrows prior to entering the level or parking bay, enabling them to proceed to the next level or row rather than needlessly circulating a full level or row.

Accessible stalls (or other reserved stalls) can pose a challenge for Facility Status and/or Level Space Availability as these systems are unable to identify/segregate/communicate the status of accessible stalls vs. stalls that are open to the general public. It is not uncommon for a facility to be full except for accessible stalls, which could result in the system indicating that spaces are available to the general public when the only available spaces are ADA. To avoid this scenario, we recommend excluding accessible stalls (or other reserved stalls) from the overall inventory. This will still result in an inaccurate count when vehicles park in accessible stalls, as they will still trigger a click on the overall inventory, but this will not result in the exasperating consequence of a visitor searching for a non-existent space. In this scenario the



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count will actually reach zero when there are still spaces remaining (equal to the number of cars parked in accessible stalls).

Level/area space availability guidance systems typically range in price between \$5,000 and \$10,000 per level/area depending on the number of count points and the quality and quantity of dynamic signs.

Single space monitoring utilizes individual count modules in every parking stall. Real-time vehicle occupancy data is sent and displayed as vehicles pull in and out of parking stalls. In covered facilities, ultrasonic sensors with multi-colored colored LEDs are installed above each stall. The standard colors are red (to indicate a full space) and green (to indicate an open space). When a motorist approaches a row they can easily identify available parking stalls by looking for a green light. Other color options include blue (to indicate an open accessible stall) and yellow (to indicate a reserved stall). This is particularly helpful in facilities with long drive aisles that motorists are not required to drive through to get to the next section.

Parking lots can utilize wireless in-ground magnetic field sensors in place of ultrasonic sensors and multi-colored colored LEDs. The occupancy data is still sent and displayed at key decision points, but there is no light above the parking stall to signal the motorist. At least one manufacturer (Park Assist) utilizes cameras and imaging algorithms rather than ultrasonic sensors, thereby providing license plate recognition (LPR) that adds security features such as license plate identification (LPI) and also lost car assistance. Loop detectors can also be used but will require additional equipment to communicate with separate LED devices.

Single space monitoring provides the highest level of accuracy, as there is minimal opportunity for a car to drive out of the range of the sensors (or cameras), and the type of stall (accessible, reserved, carpool, etc.) may also be monitored.

As one would expect, single space monitoring is the most expensive level of parking guidance and is often cost-prohibitive in a free parking scenario. Individual space guidance systems typically range in price between \$400 and \$1,000 per space depending on the complexity, size of the installation, and the quality and quantity of the dynamic signs.

There are various ways the systems components can communicate between each other. The most reliable is hard wiring the data communications between the dynamic signs and the various controllers. Two additional communication methods include wireless and radio frequency communication. These methods are less reliable than hard wiring; however, they provide a more cost effective alternative. Powering the sensors requires low voltage power, while the dynamic signs generally require line voltage.

The parking guidance system can also communicate with fixed or movable dynamic signs planed along the highway. The signs can communicate via hard wire fiber optic, cellular or radio wave. The signs can be changed to direct parker to a particular area such as Al Midra. The messages can also be changed to give drivers information about the Center, its hours of operation or that they may expect traffic backups upon entering.



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EMPLOYEE CASH-OUT PROGRAMS

Employee cash-out programs are programs that employers can initiate to reduce the amount of parking that they need to procure, thus reducing the overall demand for parking in an area. Cash-out programs offer compensation to employees who willingly give up their right to park. While this compensation is typically in the form of a weekly or daily amount of money to be used on carpooling or alternative transportation methods for employees. Alternately, some cash-out programs give employees a public transit pass.

According to a study of Minneapolis cash-out programs published by the Downtown Minneapolis Transportation Management Organization in 2000, businesses and organizations implementing cash-out programs saw their employees shift modes an average of 11% and increase their bus ridership an average of 47%.

The borough can encourage employers to initiate cash-out programs by creating an ordinance that would require employers of a certain size that provide subsidized parking.

PARKING BENEFIT DISTRICTS

A parking benefit district (PBD) is designed to improve availability of on-street parking and promote greater walking, cycling and transit use. PBDs increase parking turnover by charging for parking within a defined district. The income generated by the parking fees within the PBD is dedicated, minus installation and operating expenses, for pedestrian, bicycle, and transit infrastructure improvements within the PBD's defined area.

By charging for parking and helping to fund transportation alternatives to driving, PBDs reduce single occupancy vehicle miles traveled.



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PARKING PRICING STRATEGIES

PERFORMANCE BASED PARKING PRICING

Performance based curb parking pricing strategies allow for the true market rate of an individual space to be realized. The market rate of a parking space is determined by the space's location and/or the time of day in relation to high demand areas and times. Because the rates for high demand spaces will increase, the amount of turnover will also increase allowing for a reduction in patrons cruising for spaces, which will reduce traffic and time spent looking for parking.

The market rate for parking is considered to be the pricing amounts that result in an 85% occupancy rate in an area. Typically, the market rate of an area changes the less convenient it becomes or as demand throughout the day changes. Rates charged for different areas or periods of the day would be adjusted if the average occupancy varies greatly from the 85% average, either raising rates if the occupancy average is greater than 85% or lowering rates if occupancy average is lower than 85%. Performance based parking would allow for the variations in market rate by giving the borough the tools necessary to charge different rates for different on-street spaces based on the level of demand. Once an initial pricing plan is initiated, regular monitoring and slight pricing adjustments are necessary to ensure the 85% optimal occupancy rate.

Some challenges with implementing performance pricing include obtaining the technology needed and overcoming resistance from affected merchants and employers. Performance pricing requires the use of modern multi-space or smart meters that can either be programmed for performance pricing based on location by having an individual price for each spot based on location or programmed for performance pricing based on time of day with several different prices for each spot that automatically change throughout the day. The borough can overcome merchant or employer opposition by highlighting the increased turnover of parking in the affected area, which would increase the potential customer/client base.

ON-STREET PARKING RATES VERSUS OFF-STREET PARKING RATES

Another strategy that can be utilized is the adjustment of rates of on-street parking to rates higher than those of public and private off-street parking. Typically, on-street parking is the more desired form of parking because of the convenience it provides patrons by being located in front of or next to their destination. Off-street parking, on the other hand, is typically a block or more away, which makes it a significantly less convenient option to patrons. Because of this desire for on street parking by patrons, on-street parking is often at occupancies greater than 85%, while lots can be far less occupied. In addition to the occupation variance, many patrons will cruise around the area of their destination until they can locate an available on-street parking space, which increases traffic congestion.

The borough currently utilizes this strategy. However, it is important to continue this strategy in the future to help mitigate future traffic congestion and parking utilization concerns.



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PARKING RATES VERSUS COST OF ALTERNATIVE TRANSPORTATION

To decrease traffic congestion and encourage the utilization of the CATA system, the borough could raise the rates for parking in the downtown area to levels higher than the rate of the CATA transit system. By increasing the cost of parking to levels greater than the cost of taking public transportation, some patrons would be inclined to shift from driving to taking the bus.

The current fare for CATA is \$1.50, which is \$0.50 higher than the per hour rate of on-street parking and \$0.75 higher than the per hour rate of off-street parking. Increasing the off-street parking rate to \$1.50 per hour and the on-street parking rate to \$1.75 per hour would encourage downtown patrons to utilize the public transportation services for any trip to the downtown area, especially those lasting more than an hour.

PARKING PRICING STRATEGIES UTILIZED BY OTHER CITIES

Other cities utilize different pricing strategies, examining those strategies and comparing them to the strategies in use in State College showcases the overlap and difference between the different approaches and provides insight on ways the borough can potentially improve its own parking operations.

REDWOOD CITY, CALIFORNIA

Redwood City, CA utilizes an augment location based performance pricing model in its downtown. Both on-street and off-street parking spaces located in the center of downtown are charged at \$0.50 per hour, while on-street and off-street parking spaces along the periphery of downtown are charged at \$0.25 per hour. There are some exceptions to this general pricing model with some free parking areas around the train station and courthouse, as well as some short-term (1.5 hour) free parking in several lots around a local theater. The system implemented by Redwood City utilizes multi-space smart meters that are capable of keeping records of parking occupancy, which help city administrators maintain an 85% occupancy rate. To ensure that occupancy rates of all downtown parking are maintained at a level of 85%, the city passed an ordinance that allows rates to vary as needed in order to maintain the 85% occupancy rate based on a quarterly survey of occupancy without direct approval from elected officials.

MADISON, WISCONSIN

Madison, WI also utilizes a location based performance pricing model. There are two different rates for on-street parking and three different rate groups for off-street parking. The on-street parking rate in the downtown area is \$1.75 per hour, and the rate for peripheral "park & walk" spaces is \$1.00 per hour. The three rate groups for downtown off-street parking include downtown garages, downtown lots, and peripheral lots. Rates for downtown garages range from \$0.75 to \$1.50, with an average of \$1.16 per hour. Rates for downtown lots range from \$1.00 to \$1.50, with an average of \$1.37. Rates for peripheral lots are \$1.20 per hour. By charging more for higher demand spaces both by type and by location, the city is maximizing its potential parking revenue, while also maintaining a high turnover rate to help reduce traffic congestion caused by patrons cruising for an ideal parking spot.



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BLOOMINGTON, INDIANA

Bloomington, IN does not incorporate performance parking in its downtown area. However, it does maintain the per hour rate for on-street parking at a higher level than off-street parking. The rate for on-street parking is \$0.25 per 15 minutes or \$1.00 an hour. Additionally, if the patron is paying with a card, a service charge of \$0.30 is accrued. The rate for downtown garages is \$0.50 per hour, and the rate for public lots is generally \$0.50 per hour, though there is one lot with the rate of \$1.00 per hour. The city also maintains some time-limited free parking, both on-street and off-street. However, the majority free parking within downtown Bloomington is confined to off-street parking options during limited hours and peripheral on-street parking areas. One area of innovation that Bloomington is engaged in is the utilization of smart meters, which enable credit card payments, as well as participation in the ParkMobile App service, which allows patrons to pay their parking rate on their smartphone or tablet.

APPENDIX A

PARKING SUPPLY & EFFECTIVE PARKING SUPPLY



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APPENDIX A



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PARKING SUPPLY

Zone	Block	On-Street	Private Off-Street Surface	Private Off-Street Structured	Public Off-Street Surface	Public Off-Street Structured	Total
A	1	8	93	21	0	0	122
A	2	16	80	184	0	0	280
A	3	30	22	0	0	0	52
A	4	27	214	103	0	0	344
A	5	13	45	153	25	0	236
A	6	26	135	0	0	0	161
A	7	6	66	0	63	0	135
A	8	24	10	0	0	0	34
B	9	19	0	0	0	0	19
B	10	7	0	0	105	0	112
B	11	0	78	34	0	0	112
B	12	15	12	0	0	0	27
B	13	17	3	0	0	0	20
B	14	14	39	78	0	0	131
B	15	4	0	0	0	214	218
B	16	16	22	0	0	0	38
B	17	17	0	0	0	0	17
B	18	12	29	0	0	0	41
B	19	8	15	0	0	491	514
B	20	21	23	0	0	0	44
B	21	26	15	0	0	0	41
B	22	9	16	0	0	317	342
B	23	0	24	53	44	0	121
B	24	22	34	0	0	0	56
C	25	0	45	217	0	0	262
C	26	0	62	0	0	0	62
C	27	6	116	0	0	0	122
C	28	0	51	0	17	0	68
C	29	0	21	0	0	0	21
C	30	0	23	0	0	0	23
D	31	16	285	0	0	0	301
D	32	16	188	0	0	0	204
D	33	0	147	55	0	0	202
D	34	11	60	100	0	0	171
D	35	0	260	0	0	0	260
D	36	18	89	0	0	0	107
E	37	4	185	175	0	0	364
E	38	19	44	255	0	0	318
E	39	19	113	149	0	0	281
E	40	4	141	0	0	0	145
E	41	21	166	70	0	0	257
E	42	33	91	0	0	490	614
E	43	18	83	0	0	0	101
E	44	18	62	0	0	0	80
E	45	12	40	0	28	0	80
E	46	3	22	0	65	0	90
Total		575	3,269	1,647	347	1,512	7,350



JUNE, 2015

14-3923.00

EFFECTIVE PARKING SUPPLY

Zone	Block	On-Street			Private Off-Street			Public Off-Street			Total		
		Supply	ESF	Effective Supply	Supply	ESF	Effective Supply	Supply	ESF	Effective Supply	Supply	ESF	Effective Supply
A	1	8	85%	7	114	95%	108	0	90%	0	122	94%	115
A	2	16	85%	14	264	95%	251	0	90%	0	280	95%	265
A	3	30	85%	26	22	95%	21	0	90%	0	52	90%	47
A	4	27	85%	23	317	95%	301	0	90%	0	344	94%	324
A	5	13	85%	11	198	95%	188	25	90%	23	236	94%	222
A	6	26	85%	22	135	95%	128	0	90%	0	161	93%	150
A	7	6	85%	5	66	95%	63	63	90%	57	135	93%	125
A	8	24	85%	20	10	95%	10	0	90%	0	34	88%	30
B	9	19	85%	16	0	95%	0	0	90%	0	19	84%	16
B	10	7	85%	6	0	95%	0	105	90%	95	112	90%	101
B	11	0	85%	0	112	95%	106	0	90%	0	112	95%	106
B	12	15	85%	13	12	95%	11	0	90%	0	27	89%	24
B	13	17	85%	14	3	95%	3	0	90%	0	20	85%	17
B	14	14	85%	12	117	95%	111	0	90%	0	131	94%	123
B	15	4	85%	3	0	95%	0	214	90%	193	218	90%	196
B	16	16	85%	14	22	95%	21	0	90%	0	38	92%	35
B	17	17	85%	14	0	95%	0	0	90%	0	17	82%	14
B	18	12	85%	10	29	95%	28	0	90%	0	41	93%	38
B	19	8	85%	7	15	95%	14	491	90%	442	514	90%	463
B	20	21	85%	18	23	95%	22	0	90%	0	44	91%	40
B	21	26	85%	22	15	95%	14	0	90%	0	41	88%	36
B	22	9	85%	8	16	95%	15	317	90%	285	342	90%	308
B	23	0	85%	0	77	95%	73	44	90%	40	121	93%	113
B	24	22	85%	19	34	95%	32	0	90%	0	56	91%	51
C	25	0	85%	0	262	95%	249	0	90%	0	262	95%	249
C	26	0	85%	0	62	95%	59	0	90%	0	62	95%	59
C	27	6	85%	5	116	95%	110	0	90%	0	122	94%	115
C	28	0	85%	0	51	95%	48	17	90%	15	68	93%	63
C	29	0	85%	0	21	95%	20	0	90%	0	21	95%	20
C	30	0	85%	0	23	95%	22	0	90%	0	23	96%	22
D	31	16	85%	14	285	95%	271	0	90%	0	301	95%	285
D	32	16	85%	14	188	95%	179	0	90%	0	204	95%	193
D	33	0	85%	0	202	95%	192	0	90%	0	202	95%	192
D	34	11	85%	9	160	95%	152	0	90%	0	171	94%	161
D	35	0	85%	0	260	95%	247	0	90%	0	260	95%	247
D	36	18	85%	15	89	95%	85	0	90%	0	107	93%	100
E	37	4	85%	3	360	95%	342	0	90%	0	364	95%	345
E	38	19	85%	16	299	95%	284	0	90%	0	318	94%	300
E	39	19	85%	16	262	95%	249	0	90%	0	281	94%	265
E	40	4	85%	3	141	95%	134	0	90%	0	145	94%	137
E	41	21	85%	18	236	95%	225	0	90%	0	257	95%	243
E	42	33	85%	28	91	95%	86	490	90%	441	614	90%	555
E	43	18	85%	15	83	95%	79	0	90%	0	101	93%	94
E	44	18	85%	15	62	95%	59	0	90%	0	80	93%	74
E	45	12	85%	10	40	95%	38	28	90%	25	80	91%	73
E	46	3	85%	3	22	95%	21	65	90%	59	90	92%	83
Total		575	85%	488	4,916	95%	4,671	1,859	90%	1,675	7,350	93%	6,834

APPENDIX B SURVEY DAY OCCUPANCY



WALKER
PARKING CONSULTANTS

BOROUGH OF STATE COLLEGE

APPENDIX B



WALKER
PARKING CONSULTANTS

JUNE, 2015

14-3923.00

WEEKDAY OCCUPANCY – SURVEY DAY

Zone	Block	On-Street			Private Off-Street			Public Off-Street			Total		
		Supply	Demand	% Occupied	Supply	Demand	% Occupied	Supply	Demand	% Occupied	Supply	Demand	% Occupied
A	1	8	1	13%	114	58	51%	0	0	0%	122	59	48%
A	2	16	4	25%	264	217	82%	0	0	0%	280	221	79%
A	3	30	3	10%	22	5	23%	0	0	0%	52	8	15%
A	4	27	12	44%	317	192	61%	0	0	0%	344	204	59%
A	5	13	7	54%	198	161	81%	25	10	40%	236	178	75%
A	6	26	16	62%	135	110	81%	0	0	0%	161	126	78%
A	7	6	4	67%	66	52	79%	63	17	27%	135	73	54%
A	8	24	11	46%	10	5	50%	0	0	0%	34	16	47%
B	9	19	11	58%	0	0	0%	0	0	0%	19	11	58%
B	10	7	7	100%	0	0	0%	105	54	51%	112	61	54%
B	11	0	0	0%	112	86	77%	0	0	0%	112	86	77%
B	12	15	5	33%	12	6	50%	0	0	0%	27	11	41%
B	13	17	3	18%	3	3	100%	0	0	0%	20	6	30%
B	14	14	1	7%	117	88	75%	0	0	0%	131	89	68%
B	15	4	2	50%	0	0	0%	214	142	66%	218	144	66%
B	16	16	9	56%	22	15	68%	0	0	0%	38	24	63%
B	17	17	12	71%	0	0	0%	0	0	0%	17	12	71%
B	18	12	13	108%	29	17	59%	0	0	0%	41	30	73%
B	19	8	9	113%	15	13	87%	491	284	58%	514	306	60%
C	20	21	19	90%	23	12	52%	0	0	0%	44	31	70%
C	21	26	24	92%	15	12	80%	0	0	0%	41	36	88%
C	22	9	4	44%	16	4	25%	317	227	72%	342	235	69%
C	23	0	0	0%	77	56	73%	44	47	107%	121	103	85%
C	24	22	11	50%	34	29	85%	0	0	0%	56	40	71%
C	25	0	0	0%	262	151	58%	0	0	0%	262	151	58%
C	26	0	0	0%	62	33	53%	0	0	0%	62	33	53%
C	27	6	4	67%	116	87	75%	0	0	0%	122	91	75%
C	28	0	0	0%	51	25	49%	17	1	6%	68	26	38%
C	29	0	0	0%	21	10	48%	0	0	0%	21	10	48%
C	30	0	0	0%	23	17	74%	0	0	0%	23	17	74%
D	31	16	4	25%	285	169	59%	0	0	0%	301	173	57%
D	32	16	12	75%	188	171	91%	0	0	0%	204	183	90%
D	33	0	0	0%	202	131	65%	0	0	0%	202	131	65%
D	34	11	11	100%	160	114	71%	0	0	0%	171	125	73%
D	35	0	0	0%	260	171	66%	0	0	0%	260	171	66%
D	36	18	18	100%	89	74	83%	0	0	0%	107	92	86%
E	37	4	0	0%	360	209	58%	0	0	0%	364	209	57%
E	38	19	5	26%	299	232	78%	0	0	0%	318	237	75%
E	39	19	17	89%	262	155	59%	0	0	0%	281	172	61%
E	40	4	0	0%	141	87	62%	0	0	0%	145	87	60%
E	41	21	21	100%	236	138	58%	0	0	0%	257	159	62%
E	42	33	14	42%	91	74	81%	490	295	60%	614	383	62%
E	43	18	14	78%	83	69	83%	0	0	0%	101	83	82%
E	44	18	11	61%	62	49	79%	0	0	0%	80	60	75%
E	45	12	6	50%	40	28	70%	28	20	71%	80	54	68%
E	46	3	3	100%	22	5	23%	65	42	65%	90	50	56%
Total		575	328	57%	4,916	3,340	68%	1,859	1,139	61%	7,350	4,807	65%

BOROUGH OF STATE COLLEGE

APPENDIX B



WALKER
PARKING CONSULTANTS

JUNE, 2015

14-3923.00

WEEKEND OCCUPANCY – SURVEY DAY

Zone	Block	On-Street			Private Off-Street			Public Off-Street			Total		
		Supply	Demand	% Occupied	Supply	Demand	% Occupied	Supply	Demand	% Occupied	Supply	Demand	% Occupied
A	1	8	8	100%	114	70	61%	0	0	0%	122	78	64%
A	2	16	13	81%	264	212	80%	0	0	0%	280	225	80%
A	3	30	23	77%	22	16	73%	0	0	0%	52	39	75%
A	4	27	25	93%	317	219	69%	0	0	0%	344	244	71%
A	5	13	12	92%	198	166	84%	25	14	56%	236	192	81%
A	6	26	21	81%	135	76	56%	0	0	0%	161	97	60%
A	7	6	1	17%	66	59	89%	63	33	52%	135	93	69%
A	8	24	20	83%	10	6	60%	0	0	0%	34	26	76%
B	9	19	19	100%	0	0	0%	0	0	0%	19	19	100%
B	10	7	7	100%	0	0	0%	105	98	93%	112	105	94%
B	11	0	0	0%	112	78	70%	0	0	0%	112	78	70%
B	12	15	13	87%	12	2	17%	0	0	0%	27	15	56%
B	13	17	12	71%	3	0	0%	0	0	0%	20	12	60%
B	14	14	9	64%	117	98	84%	0	0	0%	131	107	82%
B	15	4	2	50%	0	0	0%	214	107	50%	218	109	50%
B	16	16	9	56%	22	16	73%	0	0	0%	38	25	66%
B	17	17	16	94%	0	0	0%	0	0	0%	17	16	94%
B	18	12	6	50%	29	2	7%	0	0	0%	41	8	20%
B	19	8	8	100%	15	17	113%	491	471	96%	514	496	96%
C	20	21	14	67%	23	10	43%	0	0	0%	44	24	55%
C	21	26	23	88%	15	6	40%	0	0	0%	41	29	71%
C	22	9	6	67%	16	13	81%	317	216	68%	342	235	69%
C	23	0	0	0%	77	18	23%	44	9	20%	121	27	22%
C	24	22	14	64%	34	20	59%	0	0	0%	56	34	61%
C	25	0	0	0%	262	135	52%	0	0	0%	262	135	52%
C	26	0	0	0%	62	16	26%	0	0	0%	62	16	26%
C	27	6	6	100%	116	83	72%	0	0	0%	122	89	73%
C	28	0	0	0%	51	26	51%	17	0	0%	68	26	38%
C	29	0	0	0%	21	14	67%	0	0	0%	21	14	67%
C	30	0	0	0%	23	18	78%	0	0	0%	23	18	78%
D	31	16	16	100%	285	224	79%	0	0	0%	301	240	80%
D	32	16	19	119%	188	228	121%	0	0	0%	204	247	121%
D	33	0	0	0%	202	155	77%	0	0	0%	202	155	77%
D	34	11	11	100%	160	102	64%	0	0	0%	171	113	66%
D	35	0	0	0%	260	218	84%	0	0	0%	260	218	84%
D	36	18	6	33%	89	79	89%	0	0	0%	107	85	79%
E	37	4	0	0%	360	297	83%	0	0	0%	364	297	82%
E	38	19	4	21%	299	115	38%	0	0	0%	318	119	37%
E	39	19	17	89%	262	94	36%	0	0	0%	281	111	40%
E	40	4	1	25%	141	56	40%	0	0	0%	145	57	39%
E	41	21	13	62%	236	123	52%	0	0	0%	257	136	53%
E	42	33	11	33%	91	64	70%	490	252	51%	614	327	53%
E	43	18	14	78%	83	28	34%	0	0	0%	101	42	42%
E	44	18	12	67%	62	57	92%	0	0	0%	80	69	86%
E	45	12	14	117%	40	16	40%	28	19	68%	80	49	61%
E	46	3	3	100%	22	3	14%	65	58	89%	90	64	71%
Total		575	428	74%	4,916	3,255	66%	1,859	1,277	69%	7,350	4,960	67%

APPENDIX C DESIGN DAY CONDITIONS



WALKER
PARKING CONSULTANTS

BOROUGH OF STATE COLLEGE

APPENDIX C



WALKER
PARKING CONSULTANTS

JUNE, 2015

14-3923.00

WEEKDAY

Zone	Block	Supply				Design Day Day Occupancy				Design Day Day % Occupied				Design Day Day Adequacy			
		On-Street	Private Off-Street	Public Off-Street	Total	On-Street	Private Off-Street	Public Off-Street	Total	On-Street	Private Off-Street	Public Off-Street	Total	On-Street	Private Off-Street	Public Off-Street	Total
A	1	8	114	0	122	1	71	0	72	13%	62%	0%	59%	6	37	0	43
A	2	16	264	0	280	5	267	0	272	31%	101%	0%	97%	9	(16)	0	(7)
A	3	30	22	0	52	4	6	0	10	13%	27%	0%	19%	22	15	0	37
A	4	27	317	0	344	15	236	0	251	56%	74%	0%	73%	8	65	0	73
A	5	13	198	25	236	9	198	12	219	69%	100%	48%	93%	2	(10)	11	3
A	6	26	135	0	161	20	135	0	155	77%	100%	0%	96%	2	(7)	0	(5)
A	7	6	66	63	135	5	64	21	90	83%	97%	33%	67%	0	(1)	36	35
A	8	24	10	0	34	14	6	0	20	58%	60%	0%	59%	6	4	0	10
B	9	19	0	0	19	14	0	0	14	74%	0%	0%	74%	2	0	0	2
B	10	7	0	105	112	9	0	66	75	129%	0%	63%	67%	(3)	0	29	26
B	11	0	112	0	112	0	106	0	106	0%	95%	0%	95%	0	0	0	0
B	12	15	12	0	27	6	7	0	13	40%	58%	0%	48%	7	4	0	11
B	13	17	3	0	20	4	4	0	8	24%	133%	0%	40%	10	(1)	0	9
B	14	14	117	0	131	1	108	0	109	7%	92%	0%	83%	11	3	0	14
B	15	4	0	214	218	2	0	175	177	50%	0%	82%	81%	1	0	18	19
B	16	16	22	0	38	11	18	0	29	69%	82%	0%	76%	3	3	0	6
B	17	17	0	0	17	15	0	0	15	88%	0%	0%	88%	(1)	0	0	(1)
B	18	12	29	0	41	16	21	0	37	133%	72%	0%	90%	(6)	7	0	1
B	19	8	15	491	514	11	16	349	376	138%	107%	71%	73%	(4)	(2)	93	87
B	20	21	23	0	44	23	15	0	38	110%	65%	0%	86%	(5)	7	0	2
B	21	26	15	0	41	30	15	0	45	115%	100%	0%	110%	(8)	(1)	0	(9)
B	22	9	16	317	342	5	5	279	289	56%	31%	88%	85%	3	10	6	19
B	23	0	77	44	121	0	69	58	127	0%	90%	132%	105%	0	4	(18)	(14)
B	24	22	34	0	56	14	36	0	50	64%	106%	0%	89%	5	(4)	0	1
C	25	0	262	0	262	0	186	0	186	0%	71%	0%	71%	0	63	0	63
C	26	0	62	0	62	0	41	0	41	0%	66%	0%	66%	0	18	0	18
C	27	6	116	0	122	5	107	0	112	83%	92%	0%	92%	0	3	0	3
C	28	0	51	17	68	0	31	1	32	0%	61%	6%	47%	0	17	14	31
C	29	0	21	0	21	0	12	0	12	0%	57%	0%	57%	0	8	0	8
C	30	0	23	0	23	0	21	0	21	0%	91%	0%	91%	0	1	0	1
D	31	16	285	0	301	5	208	0	213	31%	73%	0%	71%	9	63	0	72
D	32	16	188	0	204	15	210	0	225	94%	112%	0%	110%	(1)	(31)	0	(32)
D	33	0	202	0	202	0	161	0	161	0%	80%	0%	80%	0	31	0	31
D	34	11	160	0	171	14	140	0	154	127%	88%	0%	90%	(5)	12	0	7
D	35	0	260	0	260	0	210	0	210	0%	81%	0%	81%	0	37	0	37
D	36	18	89	0	107	22	91	0	113	122%	102%	0%	106%	(7)	(6)	0	(13)
E	37	4	360	0	364	0	257	0	257	0%	71%	0%	71%	3	85	0	88
E	38	19	299	0	318	6	285	0	291	32%	95%	0%	92%	10	(1)	0	9
E	39	19	262	0	281	21	191	0	212	111%	73%	0%	75%	(5)	58	0	53
E	40	4	141	0	145	0	107	0	107	0%	76%	0%	74%	3	27	0	30
E	41	21	236	0	257	26	170	0	196	124%	72%	0%	76%	(8)	55	0	47
E	42	33	91	490	614	17	91	363	471	52%	100%	74%	77%	11	(5)	78	84
E	43	18	83	0	101	17	85	0	102	94%	102%	0%	101%	(2)	(6)	0	(8)
E	44	18	62	0	80	14	60	0	74	78%	97%	0%	93%	1	(1)	0	0
E	45	12	40	28	80	7	34	25	66	58%	85%	89%	83%	3	4	0	7
E	46	3	22	65	90	4	6	52	62	133%	27%	80%	69%	(1)	15	7	21
Total		575	4,916	1,859	7,350	407	4,107	1,401	5,915	71%	84%	75%	80%	81	564	274	919

BOROUGH OF STATE COLLEGE

APPENDIX C



WALKER
PARKING CONSULTANTS

JUNE, 2015

14-3923.00

WEEKEND

Zone	Block	Supply				Design Day Day Occupancy				Design Day Day % Occupied				Design Day Day Adequacy			
		On-Street	Private Off-Street	Public Off-Street	Total	On-Street	Private Off-Street	Public Off-Street	Total	On-Street	Private Off-Street	Public Off-Street	Total	On-Street	Private Off-Street	Public Off-Street	Total
A	1	8	114	0	122	11	98	0	109	138%	86%	0%	59%	(4)	10	0	6
A	2	16	264	0	280	18	297	0	315	113%	113%	0%	97%	(4)	(46)	0	(50)
A	3	30	22	0	52	32	22	0	54	107%	100%	0%	19%	(6)	(1)	0	(7)
A	4	27	317	0	344	35	307	0	342	130%	97%	0%	73%	(12)	(6)	0	(18)
A	5	13	198	25	236	17	232	20	269	131%	117%	80%	93%	(6)	(44)	3	(47)
A	6	26	135	0	161	29	106	0	135	112%	79%	0%	96%	(7)	22	0	15
A	7	6	66	63	135	1	83	46	130	17%	126%	73%	67%	4	(20)	11	(5)
A	8	24	10	0	34	28	8	0	36	117%	80%	0%	59%	(8)	2	0	(6)
B	9	19	0	0	19	27	0	0	27	142%	0%	0%	74%	(11)	0	0	(11)
B	10	7	0	105	112	10	0	137	147	143%	0%	130%	67%	(4)	0	(42)	(46)
B	11	0	112	0	112	0	109	0	109	0%	97%	0%	95%	0	(3)	0	(3)
B	12	15	12	0	27	18	3	0	21	120%	25%	0%	48%	(5)	8	0	3
B	13	17	3	0	20	17	0	0	17	100%	0%	0%	40%	(3)	3	0	0
B	14	14	117	0	131	13	137	0	150	93%	117%	0%	83%	(1)	(26)	0	(27)
B	15	4	0	214	218	3	0	150	153	75%	0%	70%	81%	0	0	43	43
B	16	16	22	0	38	13	22	0	35	81%	100%	0%	76%	1	(1)	0	0
B	17	17	0	0	17	22	0	0	22	129%	0%	0%	88%	(8)	0	0	(8)
B	18	12	29	0	41	8	3	0	11	67%	10%	0%	90%	2	25	0	27
B	19	8	15	491	514	11	24	659	694	138%	160%	134%	73%	(4)	(10)	(217)	(231)
B	20	21	23	0	44	20	14	0	34	95%	61%	0%	86%	(2)	8	0	6
B	21	26	15	0	41	32	8	0	40	123%	53%	0%	110%	(10)	6	0	(4)
B	22	9	16	317	342	8	18	302	328	89%	113%	95%	85%	0	(3)	(17)	(20)
B	23	0	77	44	121	0	25	13	38	0%	32%	30%	105%	0	48	27	75
B	24	22	34	0	56	20	28	0	48	91%	82%	0%	89%	(1)	4	0	3
C	25	0	262	0	262	0	189	0	189	0%	72%	0%	71%	0	60	0	60
C	26	0	62	0	62	0	22	0	22	0%	35%	0%	66%	0	37	0	37
C	27	6	116	0	122	8	116	0	124	133%	100%	0%	92%	(3)	(6)	0	(9)
C	28	0	51	17	68	0	36	0	36	0%	71%	0%	47%	0	12	15	27
C	29	0	21	0	21	0	20	0	20	0%	95%	0%	57%	0	0	0	0
C	30	0	23	0	23	0	25	0	25	0%	109%	0%	91%	0	(3)	0	(3)
D	31	16	285	0	301	22	314	0	336	138%	110%	0%	71%	(8)	(43)	0	(51)
D	32	16	188	0	204	27	319	0	346	169%	170%	0%	110%	(13)	(140)	0	(153)
D	33	0	202	0	202	0	217	0	217	0%	107%	0%	80%	0	(25)	0	(25)
D	34	11	160	0	171	15	143	0	158	136%	89%	0%	90%	(6)	9	0	3
D	35	0	260	0	260	0	305	0	305	0%	117%	0%	81%	0	(58)	0	(58)
D	36	18	89	0	107	8	111	0	119	44%	125%	0%	106%	7	(26)	0	(19)
E	37	4	360	0	364	0	416	0	416	0%	116%	0%	71%	3	(74)	0	(71)
E	38	19	299	0	318	6	161	0	167	32%	54%	0%	92%	10	123	0	133
E	39	19	262	0	281	24	132	0	156	126%	50%	0%	75%	(8)	117	0	109
E	40	4	141	0	145	1	78	0	79	25%	55%	0%	74%	2	56	0	58
E	41	21	236	0	257	18	172	0	190	86%	73%	0%	76%	0	53	0	53
E	42	33	91	490	614	15	90	353	458	45%	99%	72%	77%	13	(4)	88	97
E	43	18	83	0	101	20	39	0	59	111%	47%	0%	101%	(5)	40	0	35
E	44	18	62	0	80	17	80	0	97	94%	129%	0%	93%	(2)	(21)	0	(23)
E	45	12	40	28	80	20	22	27	69	167%	55%	96%	83%	(10)	16	(2)	4
E	46	3	22	65	90	4	4	81	89	133%	18%	125%	69%	(1)	17	(22)	(6)
Total		575	4,916	1,859	7,350	598	4,555	1,788	6,941	104%	93%	96%	94%	(110)	116	(113)	(107)

APPENDIX D SHARED PARKING DEMAND



WALKER
PARKING CONSULTANTS

BOROUGH OF STATE COLLEGE

APPENDIX D



JUNE, 2015

14-3923.00

WEEKDAY

						Base Demand	Gross Parking Demand	Time of Day Adj ²	Drive Ratio ³	Captive Ratio Adj ⁴	2017 Parking Demand	2019 Parking Demand	2024 Parking Demand	Parking Lost	Parking Gained
Phase	Zone	Block	Development	Size	Unit	Ratio ¹									
Mixed-Use Development															
Projected	B	23	Residential	20	Dwelling Unit	1.5	30	75%	100%	100%	17	20	23	44	48
			Office	10,910	Square Feet	3.8	41	100%	70%	100%	19	23	26		
			Hotel	84	Keys	1.25	105	65%	70%	100%	31	41	45		
			Restaurant	10,918	Square Feet	18	197	15%	60%	50%	6	8	8		
			Retail	85,398	Square Feet	3.6	307	65%	60%	50%	42	51	57		
Mixed-Use Development															
Projected	C	28	Residential	117	Dwelling Unit	1.5	176	75%	100%	100%	99	119	132	17	240
			Office	16,640	Square Feet	3.8	63	100%	70%	100%	29	35	40		
			Fast/Casual	5,000	Square Feet	15	75	55%	60%	50%	9	11	12		
			Retail	28,081	Square Feet	3.6	101	65%	60%	50%	14	17	19		
Mixed-Use Development															
Projected	D	36	Residential	24	Dwelling Unit	1.5	36	75%	100%	100%	20	24	27	24	50
			Retail	6,758	Square Feet	3.6	24	65%	60%	50%	3	4	4		
			Office	9,487	Square Feet	3.8	36	100%	70%	100%	16	20	23		
Existing Vacancy	B	15	Vacant Downtown Store Front*												
			Retail	13,626	Square Feet	3.6	49	65%	60%	50%	7	8	9	0	0
			Fast/Casual	13,626	Square Feet	15	204	55%	60%	50%	24	29	32		
Total							2,124				335	409	456	85	338

*From pg 67-72 from ERA State College Final 11 17 05

BOROUGH OF STATE COLLEGE

APPENDIX D



JUNE, 2015

14-3923.00

WEEKEND

Zone	Block	Development	Size ¹	Demand Ratio ²	Gross Parking Demand	Time of Day Adj ³	Drive Ratio	Captive Ratio Adj	2017 Parking Demand	2019 Parking Demand	2024 Parking Demand	Parking Lost	Parking Gained	
B	23	Mixed-Use Development												
		Residential	20	1.5	30	70%	100%	100%	16	19	21	44	48	
		Office	10,910	0.38	4	60%	70%	100%	1	1	2			
		Hotel	84	1.25	105	65%	70%	100%	31	41	45			
		Restaurant	10,918	20	218	50%	60%	50%	23	28	31			
		Retail	85,398	4	342	100%	60%	50%	72	87	97			
C	28	Residential	117	1.5	176	70%	100%	100%	92	111	123	17	240	
		Office	16,640	0.38	6	60%	70%	100%	2	2	2			
		Fast/Casual	5,000	14	70	90%	60%	50%	13	16	18			
		Retail	28,081	4	112	100%	60%	50%	24	29	32			
D	36	Mixed-Use Development												
		Residential	24	1.5	36	70%	100%	100%	19	23	25	24	50	
		Retail	6,758	4	27	100%	60%	50%	6	7	8			
B	15	Office	9,487	0.38	4	60%	70%	100%	1	1	2			
		Vacant Downtown Store Front*												
		Retail	13,626	4	55	100%	60%	50%	12	14	16			
		Fast/Casual	13,626	14	191	90%	60%	50%	36	44	49			
Total					2,075				347	422	471	85	338	

*From pg 67-72 from ERA State College Final 11 17 05

APPENDIX E

FUTURE WEEKDAY OCCUPANCY AND ADEQUACY



WALKER
PARKING CONSULTANTS

JUNE, 2015

14-3923.00

Zone	Block	Future Supply				Future Effective Supply				Design Day				2017				2019				2024			
		Private		Public	Total	Private		Public	Total	Private		Public	Total	Private		Public	Total	Private		Public	Total	Private		Public	Total
		On-Street	Off-Street	Off-Street		On-Street	Off-Street	Off-Street		On-Street	Off-Street	Off-Street		On-Street	Off-Street	Off-Street		On-Street	Off-Street	Off-Street		On-Street	Off-Street	Off-Street	
A	1	8	114	0	122	7	108	0	115	1	71	0	72	1	73	0	74	1	75	0	76	1	78	0	79
A	2	16	264	0	280	14	251	0	265	5	267	0	272	5	275	0	280	5	281	0	286	6	295	0	301
A	3	30	22	0	52	26	21	0	47	4	6	0	10	4	6	0	10	4	6	0	10	4	7	0	11
A	4	27	317	0	344	23	301	0	324	15	236	0	251	15	243	0	258	16	248	0	264	17	261	0	278
A	5	13	198	25	236	11	188	23	222	9	198	12	219	9	204	12	225	9	208	13	230	10	219	13	242
A	6	26	135	0	161	22	128	0	150	20	135	0	155	21	139	0	160	21	142	0	163	22	149	0	171
A	7	6	66	63	135	5	63	57	125	5	64	21	90	5	66	22	93	5	67	22	94	6	71	23	100
A	8	24	10	0	34	20	10	0	30	14	6	0	20	14	6	0	20	15	6	0	21	15	7	0	22
B	9	19	0	0	19	16	0	0	16	14	0	0	14	14	0	0	14	15	0	0	15	15	0	0	15
B	10	7	0	105	112	6	0	95	101	9	0	66	75	9	0	68	77	9	0	69	78	10	0	73	83
B	11	0	112	0	112	0	106	0	106	0	106	0	106	0	109	0	109	0	111	0	111	0	117	0	117
B	12	15	12	0	27	13	11	0	24	6	7	0	13	6	7	0	13	6	7	0	13	7	8	0	15
B	13	17	3	0	20	14	3	0	17	4	4	0	8	4	4	0	8	4	4	0	8	4	4	0	8
B	14	14	117	0	131	12	111	0	123	1	108	0	109	1	111	0	112	1	114	0	115	1	119	0	120
B	15	4	0	214	218	3	0	193	196	2	0	175	177	2	0	210	212	2	0	221	223	2	0	234	236
B	16	16	22	0	38	14	21	0	35	11	18	0	29	11	19	0	30	12	19	0	31	12	20	0	32
B	17	17	0	0	17	14	0	0	14	15	0	0	15	15	0	0	15	16	0	0	16	17	0	0	17
B	18	12	29	0	41	10	28	0	38	16	21	0	37	16	22	0	38	17	22	0	39	18	23	0	41
B	19	8	15	491	514	7	14	442	463	11	16	349	376	11	16	360	387	12	17	367	396	12	18	386	416
B	20	21	23	0	44	18	22	0	40	23	15	0	38	24	15	0	39	24	16	0	40	25	17	0	42
B	21	26	15	0	41	22	14	0	36	30	15	0	45	31	15	0	46	32	16	0	48	33	17	0	50
B	22	9	16	317	342	8	15	285	308	5	5	279	289	5	5	452	462	5	5	459	469	6	6	477	489
B	23	0	125	0	125	0	119	0	119	0	69	58	127	0	81	0	81	0	110	0	110	0	131	0	131
B	24	22	34	0	56	19	32	0	51	14	36	0	50	14	37	0	51	15	38	0	53	15	40	0	55
C	25	0	262	0	262	0	249	0	249	0	186	0	186	0	192	0	192	0	195	0	195	0	205	0	205
C	26	0	62	0	62	0	59	0	59	0	41	0	41	0	42	0	42	0	43	0	43	0	45	0	45
C	27	6	116	0	122	5	110	0	115	5	107	0	112	5	110	0	115	5	112	0	117	6	118	0	124
C	28	0	291	0	291	0	276	0	276	0	31	1	32	0	183	0	183	0	215	0	215	0	237	0	237
C	29	0	21	0	21	0	20	0	20	0	12	0	12	0	12	0	12	0	13	0	13	0	13	0	13
C	30	0	23	0	23	0	22	0	22	0	21	0	21	0	22	0	22	0	22	0	22	0	23	0	23
D	31	16	285	0	301	14	271	0	285	5	208	0	213	5	214	0	219	5	219	0	224	6	230	0	236
D	32	16	188	0	204	14	179	0	193	15	210	0	225	15	216	0	231	16	221	0	237	17	232	0	249
D	33	0	202	0	202	0	192	0	192	0	161	0	161	0	166	0	166	0	169	0	169	0	178	0	178
D	34	11	160	0	171	9	152	0	161	14	140	0	154	14	144	0	158	15	147	0	162	15	155	0	170
D	35	0	260	0	260	0	247	0	247	0	210	0	210	0	216	0	216	0	221	0	221	0	232	0	232
D	36	18	115	0	133	15	109	0	124	22	91	0	113	23	123	0	146	23	133	0	156	24	143	0	167
E	37	4	360	0	364	3	342	0	345	0	257	0	257	0	265	0	265	0	270	0	270	0	284	0	284
E	38	19	299	0	318	16	284	0	300	6	285	0	291	6	294	0	300	6	300	0	306	7	315	0	322
E	39	19	262	0	281	16	249	0	265	21	191	0	212	22	197	0	219	22	201	0	223	23	211	0	234
E	40	4	141	0	145	3	134	0	137	0	107	0	107	0	110	0	110	0	112	0	112	0	118	0	118
E	41	21	236	0	257	18	224	0	242	26	170	0	196	27	175	0	202	27	179	0	206	29	188	0	217
E	42	33	91	490	614	28	86	441	555	17	91	363	471	18	94	374	486	18	96	382	496	19	101	401	521
E	43	18	83	0	101	15	79	0	94	17	85	0	102	18	88	0	106	18	89	0	107	19	94	0	113
E	44	18	62	0	80	15	59	0	74	14	60	0	74	14	62	0	76	15	63	0	78	15	66	0	81
E	45	12	40	28	80	10	38	25	73	7	34	25	66	7	35	26	68	7	36	26	69	8	38	28	74
E	46	3	22	65	90	3	21	59	83	4	6	52	62	4	6	54	64	4	6	55	65	4	7	57	68
Total		575	5,230	1,798	7,603	488	4,968	1,620	7,076	407	4,107	1,401	5,915	415	4,419	1,578	6,412	427	4,574	1,614	6,615	450	4,840	1,692	6,982

JUNE, 2015

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Zone Block		2017 Occupancy %				2019 Occupancy %				2024 Occupancy %				2017 Adequacy				2019 Adequacy				2024 Adequacy			
		Private		Public	Total	Private		Public	Total	Private		Public	Total	Private		Public	Total	Private		Public	Total	Private		Public	Total
		On-Street	Off-Street	Off-Street		On-Street	Off-Street	Off-Street		On-Street	Off-Street	Off-Street		On-Street	Off-Street	Off-Street		On-Street	Off-Street	Off-Street		On-Street	Off-Street	Off-Street	
A	1	13%	64%	0%	61%	13%	66%	0%	62%	13%	68%	0%	65%	6	35	0	41	6	33	0	39	6	30	0	36
A	2	31%	104%	0%	100%	31%	106%	0%	102%	38%	112%	0%	108%	9	(24)	0	(15)	9	(30)	0	(21)	8	(44)	0	(36)
A	3	13%	27%	0%	19%	13%	27%	0%	19%	13%	32%	0%	21%	22	15	0	37	22	15	0	37	22	14	0	36
A	4	56%	77%	0%	75%	59%	78%	0%	77%	63%	82%	0%	81%	8	58	0	66	7	53	0	60	6	40	0	46
A	5	69%	103%	48%	95%	69%	105%	52%	97%	77%	111%	52%	103%	2	(16)	11	(3)	2	(20)	10	(8)	1	(31)	10	(20)
A	6	81%	103%	0%	99%	81%	105%	0%	101%	85%	110%	0%	106%	1	(11)	0	(10)	1	(14)	0	(13)	0	(21)	0	(21)
A	7	83%	100%	35%	69%	83%	102%	35%	70%	100%	108%	37%	74%	0	(3)	35	32	0	(4)	35	31	(1)	(8)	34	25
A	8	58%	60%	0%	59%	63%	60%	0%	62%	63%	70%	0%	65%	6	4	0	10	5	4	0	9	5	3	0	8
B	9	74%	0%	0%	74%	79%	0%	0%	79%	79%	0%	0%	79%	2	0	0	2	1	0	0	1	1	0	0	1
B	10	129%	0%	65%	69%	129%	0%	66%	70%	143%	0%	70%	74%	(3)	0	27	24	(3)	0	26	23	(4)	0	22	18
B	11	0%	97%	0%	97%	0%	99%	0%	99%	0%	104%	0%	104%	0	(3)	0	(3)	0	(5)	0	(5)	0	(11)	0	(11)
B	12	40%	58%	0%	48%	40%	58%	0%	48%	47%	67%	0%	56%	7	4	0	11	7	4	0	11	6	3	0	9
B	13	24%	133%	0%	40%	24%	133%	0%	40%	24%	133%	0%	40%	10	(1)	0	9	10	(1)	0	9	10	(1)	0	9
B	14	7%	95%	0%	85%	7%	97%	0%	88%	7%	102%	0%	92%	11	0	0	11	11	(3)	0	8	11	(8)	0	3
B	15	50%	0%	98%	97%	50%	0%	103%	102%	50%	0%	109%	108%	1	0	(17)	(16)	1	0	(28)	(27)	1	0	(41)	(40)
B	16	69%	86%	0%	79%	75%	86%	0%	82%	75%	91%	0%	84%	3	2	0	5	2	2	0	4	2	1	0	3
B	17	88%	0%	0%	88%	94%	0%	0%	94%	100%	0%	0%	100%	(1)	0	0	(1)	(2)	0	0	(2)	(3)	0	0	(3)
B	18	133%	76%	0%	93%	142%	76%	0%	95%	150%	79%	0%	100%	(6)	6	0	0	(7)	6	0	(1)	(8)	5	0	(3)
B	19	138%	107%	73%	75%	150%	113%	75%	77%	150%	120%	79%	81%	(4)	(2)	82	76	(5)	(3)	75	67	(5)	(4)	56	47
B	20	114%	65%	0%	89%	114%	70%	0%	91%	119%	74%	0%	95%	(6)	7	0	1	(6)	6	0	0	(7)	5	0	(2)
B	21	119%	100%	0%	112%	123%	107%	0%	117%	127%	113%	0%	122%	(9)	(1)	0	(10)	(10)	(2)	0	(12)	(11)	(3)	0	(14)
B	22	56%	31%	143%	135%	56%	31%	145%	137%	67%	38%	150%	143%	3	10	(167)	(154)	3	10	(174)	(161)	2	9	(192)	(181)
B	23	0%	65%	0%	65%	0%	88%	0%	88%	0%	105%	0%	105%	0	38	0	38	0	9	0	9	0	(12)	0	(12)
B	24	64%	109%	0%	91%	68%	112%	0%	95%	68%	118%	0%	98%	5	(5)	0	0	4	(6)	0	(2)	4	(8)	0	(4)
C	25	0%	73%	0%	73%	0%	74%	0%	74%	0%	78%	0%	78%	0	57	0	57	0	54	0	54	0	44	0	44
C	26	0%	68%	0%	68%	0%	69%	0%	69%	0%	73%	0%	73%	0	17	0	17	0	16	0	16	0	14	0	14
C	27	83%	95%	0%	94%	83%	97%	0%	96%	100%	102%	0%	102%	0	0	0	0	0	(2)	0	(2)	(1)	(8)	0	(9)
C	28	0%	63%	0%	63%	0%	74%	0%	74%	0%	81%	0%	81%	0	93	0	93	0	61	0	61	0	39	0	39
C	29	0%	57%	0%	57%	0%	62%	0%	62%	0%	62%	0%	62%	0	8	0	8	0	7	0	7	0	7	0	7
C	30	0%	96%	0%	96%	0%	96%	0%	96%	0%	100%	0%	100%	0	0	0	0	0	0	0	0	0	(1)	0	(1)
D	31	31%	75%	0%	73%	31%	77%	0%	74%	38%	81%	0%	78%	9	57	0	66	9	52	0	61	8	41	0	49
D	32	94%	115%	0%	113%	100%	118%	0%	116%	106%	123%	0%	122%	(1)	(37)	0	(38)	(2)	(42)	0	(44)	(3)	(53)	0	(56)
D	33	0%	82%	0%	82%	0%	84%	0%	84%	0%	88%	0%	88%	0	26	0	26	0	23	0	23	0	14	0	14
D	34	127%	90%	0%	92%	136%	92%	0%	95%	136%	97%	0%	99%	(5)	8	0	3	(6)	5	0	(1)	(6)	(3)	0	(9)
D	35	0%	83%	0%	83%	0%	85%	0%	85%	0%	89%	0%	89%	0	31	0	31	0	26	0	26	0	15	0	15
D	36	128%	107%	0%	110%	128%	116%	0%	117%	133%	124%	0%	126%	(8)	(14)	0	(22)	(8)	(24)	0	(32)	(9)	(34)	0	(43)
E	37	0%	74%	0%	73%	0%	75%	0%	74%	0%	79%	0%	78%	3	77	0	80	3	72	0	75	3	58	0	61
E	38	32%	98%	0%	94%	32%	100%	0%	96%	37%	105%	0%	101%	10	(10)	0	0	10	(16)	0	(6)	9	(31)	0	(22)
E	39	116%	75%	0%	78%	116%	77%	0%	79%	121%	81%	0%	83%	(6)	52	0	46	(6)	48	0	42	(7)	38	0	31
E	40	0%	78%	0%	76%	0%	79%	0%	77%	0%	84%	0%	81%	3	24	0	27	3	22	0	25	3	16	0	19
E	41	129%	74%	0%	79%	129%	76%	0%	80%	138%	80%	0%	84%	(9)	49	0	40	(9)	45	0	36	(11)	36	0	25
E	42	55%	103%	76%	79%	55%	105%	78%	81%	58%	111%	82%	85%	10	(8)	67	69	10	(10)	59	59	9	(15)	40	34
E	43	100%	106%	0%	105%	100%	107%	0%	106%	106%	113%	0%	112%	(3)	(9)	0	(12)	(3)	(10)	0	(13)	(4)	(15)	0	(19)
E	44	78%	100%	0%	95%	83%	102%	0%	98%	83%	106%	0%	101%	1	(3)	0	(2)	0	(4)	0	(4)	0	(7)	0	(7)
E	45	58%	88%	93%	85%	58%	90%	93%	86%	67%	95%	100%	93%	3	3	(1)	5	3	2	(1)	4	2	0	(3)	(1)
E	46	133%	27%	83%	71%	133%	27%	85%	72%	133%	32%	88%	76%	(1)	15	5	19	(1)	15	4	18	(1)	14	2	15
Total		72%	84%	88%	84%	74%	87%	90%	87%	78%	93%	94%	92%	73	549	42	664	61	394	6	461	38	128	(72)	94

APPENDIX F

FUTURE WEEKEND OCCUPANCY AND ADEQUACY



WALKER
PARKING CONSULTANTS

JUNE, 2015

14-3923.00

Zone	Block	Future Supply				Future Effective Supply				Design Day				2017				2019				2024			
		Private		Public	Total	Private		Public	Total	Private		Public	Total	Private Off-Street		Public	Total	Private		Public	Total	Private		Public	Total
		On-Street	Off-Street	Off-Street		On-Street	Off-Street	Off-Street		On-Street	Off-Street	Off-Street		On-Street	Street	Off-Street		On-Street	Off-Street	Off-Street		On-Street	Off-Street	Off-Street	
A	1	8	114	0	122	7	108	0	115	11	98	0	109	11	101	0	112	12	103	0	115	12	108	0	120
A	2	16	264	0	280	14	251	0	265	18	297	0	315	19	306	0	325	19	312	0	331	20	328	0	348
A	3	30	22	0	52	26	21	0	47	32	22	0	54	33	23	0	56	34	23	0	57	35	24	0	59
A	4	27	317	0	344	23	301	0	324	35	307	0	342	36	316	0	352	37	323	0	360	39	339	0	378
A	5	13	198	25	236	11	188	23	222	17	232	20	269	18	239	21	278	18	244	21	283	19	256	22	297
A	6	26	135	0	161	22	128	0	150	29	106	0	135	30	109	0	139	30	111	0	141	32	117	0	149
A	7	6	66	63	135	5	63	57	125	1	83	46	130	1	86	47	134	1	87	48	136	1	92	51	144
A	8	24	10	0	34	20	10	0	30	28	8	0	36	29	8	0	37	29	8	0	37	31	9	0	40
B	9	19	0	0	19	16	0	0	16	27	0	0	27	28	0	0	28	28	0	0	28	30	0	0	30
B	10	7	0	105	112	6	0	95	101	10	0	137	147	10	0	141	151	11	0	144	155	11	0	151	162
B	11	0	112	0	112	0	106	0	106	0	109	0	109	0	112	0	112	0	115	0	115	0	120	0	120
B	12	15	12	0	27	13	11	0	24	18	3	0	21	19	3	0	22	19	3	0	22	20	3	0	23
B	13	17	3	0	20	14	3	0	17	17	0	0	17	18	0	0	18	18	0	0	18	19	0	0	19
B	14	14	117	0	131	12	111	0	123	13	137	0	150	13	141	0	154	14	144	0	158	14	151	0	165
B	15	4	0	214	218	3	0	193	196	3	0	150	153	3	0	198	201	3	0	208	211	3	0	215	218
B	16	16	22	0	38	14	21	0	35	13	22	0	35	13	23	0	36	14	23	0	37	14	24	0	38
B	17	17	0	0	17	14	0	0	14	22	0	0	22	23	0	0	23	23	0	0	23	24	0	0	24
B	18	12	29	0	41	10	28	0	38	8	3	0	11	8	3	0	11	8	3	0	11	9	3	0	12
B	19	8	15	491	514	7	14	442	463	11	24	659	694	11	25	659	695	12	25	659	696	12	27	659	698
B	20	21	23	0	44	18	22	0	40	20	14	0	34	21	14	0	35	21	15	0	36	22	15	0	37
B	21	26	15	0	41	22	14	0	36	32	8	0	40	33	8	0	41	34	8	0	42	35	9	0	44
B	22	9	16	317	342	8	15	285	308	8	18	302	328	8	19	416	443	8	19	416	443	9	20	417	446
B	23	0	125	0	125	0	119	0	119	0	25	13	38	0	64	0	64	0	97	0	97	0	119	0	119
B	24	22	34	0	56	19	32	0	51	20	28	0	48	21	29	0	50	21	29	0	50	22	31	0	53
C	25	0	262	0	262	0	249	0	249	0	189	0	189	0	195	0	195	0	199	0	199	0	209	0	209
C	26	0	62	0	62	0	59	0	59	0	22	0	22	0	23	0	23	0	23	0	23	0	24	0	24
C	27	6	116	0	122	5	110	0	115	8	116	0	124	8	120	0	128	8	122	0	130	9	128	0	137
C	28	0	291	0	291	0	276	0	276	0	36	0	36	0	168	0	168	0	196	0	196	0	215	0	215
C	29	0	21	0	21	0	20	0	20	0	20	0	20	0	21	0	21	0	21	0	21	0	22	0	22
C	30	0	23	0	23	0	22	0	22	0	25	0	25	0	26	0	26	0	26	0	26	0	28	0	28
D	31	16	285	0	301	14	271	0	285	22	314	0	336	23	324	0	347	23	330	0	353	24	347	0	371
D	32	16	188	0	204	14	179	0	193	27	319	0	346	28	329	0	357	28	335	0	363	30	352	0	382
D	33	0	202	0	202	0	192	0	192	0	217	0	217	0	224	0	224	0	228	0	228	0	240	0	240
D	34	11	160	0	171	9	152	0	161	15	143	0	158	15	147	0	162	16	150	0	166	17	158	0	175
D	35	0	260	0	260	0	247	0	247	0	305	0	305	0	314	0	314	0	321	0	321	0	337	0	337
D	36	18	115	0	133	15	109	0	124	8	111	0	119	8	109	0	117	8	116	0	124	9	123	0	132
E	37	4	360	0	364	3	342	0	345	0	416	0	416	0	429	0	429	0	437	0	437	0	460	0	460
E	38	19	299	0	318	16	284	0	300	6	161	0	167	6	166	0	172	6	169	0	175	7	178	0	185
E	39	19	262	0	281	16	249	0	265	24	132	0	156	25	136	0	161	25	139	0	164	27	146	0	173
E	40	4	141	0	145	3	134	0	137	1	78	0	79	1	80	0	81	1	82	0	83	1	86	0	87
E	41	21	236	0	257	18	224	0	242	18	172	0	190	19	177	0	196	19	181	0	200	20	190	0	210
E	42	33	91	490	614	28	86	441	555	15	90	353	458	15	93	353	461	16	95	353	464	17	99	353	469
E	43	18	83	0	101	15	79	0	94	20	39	0	59	21	40	0	61	21	41	0	62	22	43	0	65
E	44	18	62	0	80	15	59	0	74	17	80	0	97	18	82	0	100	18	84	0	102	19	88	0	107
E	45	12	40	28	80	10	38	25	73	20	22	27	69	21	23	28	72	21	23	28	72	22	24	30	76
E	46	3	22	65	90	3	21	59	83	4	4	81	89	4	4	83	91	4	4	85	93	4	4	89	97
Total		575	5,230	1,798	7,603	488	4,968	1,620	7,076	598	4,555	1,788	6,941	618	4,859	1,946	7,423	628	5,014	1,962	7,604	661	5,296	1,987	7,944

JUNE, 2015

14-3923.00

Zone	Block	2017 Occupancy %				2019 Occupancy %				2024 Occupancy %				2017 Adequacy				2019 Adequacy				2024 Adequacy			
		Private		Public	Total	Private		Public	Total	Private		Public	Total	Private Off-		Public	Total	Private		Public	Total	Private		Public	Total
		On-Street	Off-Street	Off-Street		On-Street	Off-Street	Off-Street		On-Street	Off-Street	Off-Street		On-Street	Street	Off-Street		On-Street	Off-Street	Off-Street		On-Street	Off-Street	Off-Street	
A	1	138%	89%	0%	92%	150%	90%	0%	94%	150%	95%	0%	98%	(4)	7	0	3	(5)	5	0	0	(5)	0	0	(5)
A	2	119%	116%	0%	116%	119%	118%	0%	118%	125%	124%	0%	124%	(5)	(55)	0	(60)	(5)	(61)	0	(66)	(6)	(77)	0	(83)
A	3	110%	105%	0%	108%	113%	105%	0%	110%	117%	109%	0%	113%	(7)	(2)	0	(9)	(8)	(2)	0	(10)	(9)	(3)	0	(12)
A	4	133%	100%	0%	102%	137%	102%	0%	105%	144%	107%	0%	110%	(13)	(15)	0	(28)	(14)	(22)	0	(36)	(16)	(38)	0	(54)
A	5	138%	121%	84%	118%	138%	123%	84%	120%	146%	129%	88%	126%	(7)	(51)	2	(56)	(7)	(56)	2	(61)	(8)	(68)	1	(75)
A	6	115%	81%	0%	86%	115%	82%	0%	88%	123%	87%	0%	93%	(8)	19	0	11	(8)	17	0	9	(10)	11	0	1
A	7	17%	130%	75%	99%	17%	132%	76%	101%	17%	139%	81%	107%	4	(23)	10	(9)	4	(24)	9	(11)	4	(29)	6	(19)
A	8	121%	80%	0%	109%	121%	80%	0%	109%	129%	90%	0%	118%	(9)	2	0	(7)	(9)	2	0	(7)	(11)	1	0	(10)
B	9	147%	0%	0%	147%	147%	0%	0%	147%	158%	0%	0%	158%	(12)	0	0	(12)	(12)	0	0	(12)	(14)	0	0	(14)
B	10	143%	0%	134%	135%	157%	0%	137%	138%	157%	0%	144%	145%	(4)	0	(46)	(50)	(5)	0	(49)	(54)	(5)	0	(56)	(61)
B	11	0%	100%	0%	100%	0%	103%	0%	103%	0%	107%	0%	107%	0	(6)	0	(6)	0	(9)	0	(9)	0	(14)	0	(14)
B	12	127%	25%	0%	81%	127%	25%	0%	81%	133%	25%	0%	85%	(6)	8	0	2	(6)	8	0	2	(7)	8	0	1
B	13	106%	0%	0%	90%	106%	0%	0%	90%	112%	0%	0%	95%	(4)	3	0	(1)	(4)	3	0	(1)	(5)	3	0	(2)
B	14	93%	121%	0%	118%	100%	123%	0%	121%	100%	129%	0%	126%	(1)	(30)	0	(31)	(2)	(33)	0	(35)	(2)	(40)	0	(42)
B	15	75%	0%	93%	92%	75%	0%	97%	97%	75%	0%	100%	100%	0	0	(5)	(5)	0	0	(15)	(15)	0	0	(22)	(22)
B	16	81%	105%	0%	95%	88%	105%	0%	97%	88%	109%	0%	100%	1	(2)	0	(1)	0	(2)	0	(2)	0	(3)	0	(3)
B	17	135%	0%	0%	135%	135%	0%	0%	135%	141%	0%	0%	141%	(9)	0	0	(9)	(9)	0	0	(9)	(10)	0	0	(10)
B	18	67%	10%	0%	27%	67%	10%	0%	27%	75%	10%	0%	29%	2	25	0	27	2	25	0	27	1	25	0	26
B	19	138%	167%	134%	135%	150%	167%	134%	135%	150%	180%	134%	136%	(4)	(11)	(217)	(232)	(5)	(11)	(217)	(233)	(5)	(13)	(217)	(235)
B	20	100%	61%	0%	80%	100%	65%	0%	82%	105%	65%	0%	84%	(3)	8	0	5	(3)	7	0	4	(4)	7	0	3
B	21	127%	53%	0%	100%	131%	53%	0%	102%	135%	60%	0%	107%	(11)	6	0	(5)	(12)	6	0	(6)	(13)	5	0	(8)
B	22	89%	119%	131%	130%	89%	119%	131%	130%	100%	125%	132%	130%	0	(4)	(131)	(135)	0	(4)	(131)	(135)	(1)	(5)	(132)	(138)
B	23	0%	51%	0%	51%	0%	78%	0%	78%	0%	95%	0%	95%	0	55	0	55	0	22	0	22	0	0	0	0
B	24	95%	85%	0%	89%	95%	85%	0%	89%	100%	91%	0%	95%	(2)	3	0	1	(2)	3	0	1	(3)	1	0	(2)
C	25	0%	74%	0%	74%	0%	76%	0%	76%	0%	80%	0%	80%	0	54	0	54	0	50	0	50	0	40	0	40
C	26	0%	37%	0%	37%	0%	37%	0%	37%	0%	39%	0%	39%	0	36	0	36	0	36	0	36	0	35	0	35
C	27	133%	103%	0%	105%	133%	105%	0%	107%	150%	110%	0%	112%	(3)	(10)	0	(13)	(3)	(12)	0	(15)	(4)	(18)	0	(22)
C	28	0%	58%	0%	58%	0%	67%	0%	67%	0%	74%	0%	74%	0	108	0	108	0	80	0	80	0	61	0	61
C	29	0%	100%	0%	100%	0%	100%	0%	100%	0%	105%	0%	105%	0	(1)	0	(1)	0	(1)	0	(1)	0	(2)	0	(2)
C	30	0%	113%	0%	113%	0%	113%	0%	113%	0%	122%	0%	122%	0	(4)	0	(4)	0	(4)	0	(4)	0	(6)	0	(6)
D	31	144%	114%	0%	115%	144%	116%	0%	117%	150%	122%	0%	123%	(9)	(53)	0	(62)	(9)	(59)	0	(68)	(10)	(76)	0	(86)
D	32	175%	175%	0%	175%	175%	178%	0%	178%	188%	187%	0%	187%	(14)	(150)	0	(164)	(14)	(156)	0	(170)	(16)	(173)	0	(189)
D	33	0%	111%	0%	111%	0%	113%	0%	113%	0%	119%	0%	119%	0	(32)	0	(32)	0	(36)	0	(36)	0	(48)	0	(48)
D	34	136%	92%	0%	95%	145%	94%	0%	97%	155%	99%	0%	102%	(6)	5	0	(1)	(7)	2	0	(5)	(8)	(6)	0	(14)
D	35	0%	121%	0%	121%	0%	123%	0%	123%	0%	130%	0%	130%	0	(67)	0	(67)	0	(74)	0	(74)	0	(90)	0	(90)
D	36	44%	95%	0%	88%	44%	101%	0%	93%	50%	107%	0%	99%	7	0	0	7	7	(7)	0	0	6	(14)	0	(8)
E	37	0%	119%	0%	118%	0%	121%	0%	120%	0%	128%	0%	126%	3	(87)	0	(84)	3	(95)	0	(92)	3	(118)	0	(115)
E	38	32%	56%	0%	54%	32%	57%	0%	55%	37%	60%	0%	58%	10	118	0	128	10	115	0	125	9	106	0	115
E	39	132%	52%	0%	57%	132%	53%	0%	58%	142%	56%	0%	62%	(9)	113	0	104	(9)	110	0	101	(11)	103	0	92
E	40	25%	57%	0%	56%	25%	58%	0%	57%	25%	61%	0%	60%	2	54	0	56	2	52	0	54	2	48	0	50
E	41	90%	75%	0%	76%	90%	77%	0%	78%	95%	81%	0%	82%	(1)	47	0	46	(1)	43	0	42	(2)	34	0	32
E	42	45%	102%	72%	75%	48%	104%	72%	76%	52%	109%	72%	76%	13	(7)	88	94	12	(9)	88	91	11	(13)	88	86
E	43	117%	48%	0%	60%	117%	49%	0%	61%	122%	52%	0%	64%	(6)	39	0	33	(6)	38	0	32	(7)	36	0	29
E	44	100%	132%	0%	125%	100%	135%	0%	128%	106%	142%	0%	134%	(3)	(23)	0	(26)	(3)	(25)	0	(28)	(4)	(29)	0	(33)
E	45	175%	58%	100%	90%	175%	58%	100%	90%	183%	60%	107%	95%	(11)	15	(3)	1	(11)	15	(3)	1	(12)	14	(5)	(3)
E	46	133%	18%	128%	101%	133%	18%	131%	103%	133%	18%	137%	108%	(1)	17	(24)	(8)	(1)	17	(26)	(10)	(1)	17	(30)	(14)
Total		107%	93%	108%	98%	109%	96%	109%	100%	115%	101%	111%	104%	(130)	109	(326)	(347)	(140)	(46)	(342)	(528)	(173)	(328)	(367)	(868)

