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Engineering | Design | Planning | Construction Management

**FINAL REPORT**

October 2022

# CENTRAL BUSINESS DISTRICT PARKING STUDY • Village of Delhi, NY


**OWNER:** **Village of Delhi**
*9 Court Street,*
*P.O. Box 328*
*Delhi, NY 13753*


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# 1.0 Introduction

Greenman-Pedersen Inc. (GPI) has been retained by the Village of Delhi, in Delaware County New York, to perform a parking study for the Village's Central Business District. The purpose of this study was to assess parking occupancy and needs, review potential pay parking options, and project costs and revenues if pay parking were implemented. This report summarizes the data collection effort and pay parking research performed, and provides information concerning the various pay parking options identified, their costs and benefits.

# 2.0 Study Area

The study area, as depicted in Map 01 – "Location Map" on the next page, was determined by the Village of Delhi and encompasses the Central Business District (CBD) centered around Courthouse Square. The study area is comprised of public on-street parking along approximately 1.2 miles of Village streets, an off-street public parking lot, and numerous private and government-use parking lots.

# 3.0 Existing Conditions & Needs

Existing parking conditions were determined through field reconnaissance and parking occupancy counts performed by GPI.

## 3.1 Data Collection

A parking occupancy survey was conducted on Wednesday July 20th and Thursday July 21st, from 8:00 AM to 6:00 PM. Detailed parking occupancy counts can be found in Appendix A. The following information was gathered during the survey:

- The parking capacity of all available parking
- The number of occupied parking spaces in each public parking area (on-street and off-street) at two-hour increments
- General occupancy rates for private and government-use lots
- Land use data for adjacent properties
- Parking signage and restrictions
- Parking violations

It should be noted that the Thursday data is considered typical weekday parking values for study purposes. The Wednesday data was requested by the Village to determine the effects of the "Delhi Farmer's Market", which is hosted in the Courthouse Square every Wednesday from 9am – 2pm throughout the summer season (June – September). The market draws a large influx of people and causes an increase in parking demand, which was identified with the Wednesday data.

MAP 01 | Location Map

Limits of Study Area

CLINTON ST
FRANKLIN ST
CROSS ST
2ND ST
2ND ST
DELHI VILLAGE HALL
HIGH ST
PROSPECT ST
ORCHARD ST
DIVISION ST
COURT ST
CHURCH ST
MEREDITH ST
MAIN ST
MAIN ST
MAIN ST
MAIN ST
HOYT PARK LOT
BRIDGE ST
ELM ST
KINGSTON ST
WEST BRANCH DELAWARE RIVER
DELAWARE AVE

GPI

75 0 75 150 225 300'

## 3.2 Parking Inventory

The parking occupancy survey included a review of approximately 905 parking spaces within the limits of the study area that were identified as park of the parking inventory. These spaces include:

- 240 public on-street parking spaces.
- 38 public off-street parking spaces at the Hoyt Park Municipal Parking Lot.
- 627 business-owned/government-use off-street parking lot spaces.

For purposes of this study, these spaces were broken down into zones, as detailed on Map 02 – "Parking Study Zones". Public parking spaces were grouped together by Village block or parking lot and labeled A – U, while the business-owned/government-use lots were labeled 1 – 19. A summary of the public parking zones and the number of available parking spaces in each included in Table 1 – "Public Parking Zones". For the business owned and government-use lots the information is shown in Table 2 – "Business-owned and Government-use Parking Zones."

**Table 1**
**Public Parking Zones**

| ZONE | STREET | FROM | TO | SIDE OF STREET | NO. OF PARKING SPACES |
|---|---|---|---|---|---|
| **A** | MAIN ST | CLINTON ST | FRANKLIN ST | W | **7** |
| **B** | MAIN ST | CLINTON ST | FRANKLIN ST | E | **15** |
| **C** | MAIN ST | FRANKLIN ST | DIVISION ST | W | **8** |
| **D** | MAIN ST | FRANKLIN ST | KINGSTON ST | E | **15** |
| **E** | HOYT PARK MUNICIPAL PARKING LOT | | | - | **38** |
| **F** | MAIN ST | DIVISION ST | COURT ST | W | **11** |
| **G** | MAIN ST | KINGSTON ST | COURT ST | E | **8** |
| **H** | MAIN ST | COURT ST | CHURCH ST | W | **0** |
| **I** | MAIN ST | COURT ST | CHURCH ST | E | **6** |
| **J** | MAIN ST | CHURCH ST | MEREDITH ST | W | **16** |
| **K** | MAIN ST | CHURCH ST | BRIDGE ST | E | **23** |
| **L** | MAIN ST | MEREDITH ST | ORCHARD ST | W | **14** |
| **M** | MAIN ST | BRIDGE ST | ORCHARD ST | E | **11** |
| **N** | CHURCH ST | MAIN ST | COURT ST | N | **12** |
| **O** | COURT ST | MAIN ST | 2ND ST | N | **12** |
| **P** | COURT ST | MAIN ST | 2ND ST | S | **16** |
| **Q** | 2ND ST | COURT ST | DIVISION ST | W | **13** |
| **R** | 2ND ST | COURT ST | DIVISION ST | E | **10** |
| **S** | DIVISION ST | MAIN ST | 2ND ST | S | **11** |
| **T** | 2ND ST | DIVISION ST | FRANKLIN ST | W | **17** |
| **U** | 2ND ST | DIVISION ST | FRANKLIN ST | E | **15** |
| | | | | **TOTAL =** | **278** |

**Table 2**
**Business-owned and Government-use Parking Zones**

| ZONE | OWNER | PARKING LOT TYPE | ACCESSED VIA | NO. OF PARKING SPACES |
|---|---|---|---|---|
| 1 | FAMILY DOLLAR | COMMERCIAL/RETAIL | MAIN ST | 48 |
| 2 | STRICKLAND HOLLOW | COMMERCIAL/RETAIL | MAIN ST | 6 |
| 3 | HUGHSON & BENSON | COMMERCIAL/RETAIL | MAIN ST | 20 |
| 4 | COWEN LAW FIRM | COMMERCIAL/RETAIL | MAIN ST | 8 |
| 5 | EIGHTY MAIN | COMMERCIAL/RETAIL | MAIN ST | 15 |
| 6 | 4 DIVISION STREET | COMMERCIAL/RETAIL | DIVISON ST | 12 |
| 7 | GREENSLATE | COMMERCIAL/RETAIL | MAIN ST | 32 |
| 8 | TRACTOR SUPPLY CO. | COMMERCIAL/RETAIL | MAIN ST | 40 |
| 9 | PARTS PLUS | COMMERCIAL/RETAIL | KINGSTON ST | 15 |
| 10 | DELHI TELEPHONE CO. | COMMERCIAL/RETAIL | MAIN ST | 35 |
| 11 | O'NEILS SHIRE PUB | COMMERCIAL/RETAIL | MAIN ST | 10 |
| 12 | MAC ARTHUR FUNERAL | COMMERCIAL/RETAIL | MAIN ST | 20 |
| 13 | SHEPHARD REPAIR | COMMERCIAL/RETAIL | MAIN ST | 20 |
| 14 | UNITED MINISTRY | RELIGIOUS | CHURCH ST | 29 |
| 15 | VILLAGE HALL | VILLAGE | CHURCH ST | 23 |
| 16 | COUNTY SERVICES | COUNTY | MAIN ST | 88 |
| 17 | COUNTY OFFICES | COUNTY | MAIN ST | 165 |
| 18 | COUNTY CLERKS OFFICE | COUNTY | CHURCH ST | 26 |
| 19 | DELHI POST OFFICE | FEDERAL | COURT ST | 15 |
| | | | **TOTAL =** | **627** |

There are other minor parking locations for private residents and small businesses within the study area, but the number of spaces at any one of given locations is minimal and none are for general public use, so they were not considered in the study. A review of these minor parking locations within the study area, which includes residential driveways and small business areas that could accommodate 5 or fewer vehicles, reveals that parking for approximately 221 additional vehicles could be accommodated by these minor non-public parking locations. Although these spaces are private and could not be included in any pay parking option, they are noted to help assess the overall parking capacity of the area.

# MAP 02 | Parking Study Zones

- Public
- Commercial/Retail
- Religious
- Village
- County
- Federal

CLINTON ST
FRANKLIN ST
CROSS ST
2ND ST
ZONE T
ZONE U
ZONE Q
ZONE R
DELHI VILLAGE HALL
HIGH ST
PROSPECT ST
MEREDITH ST
ORCHARD ST
DIVISION ST
COURT ST
CHURCH ST
ZONE S
ZONE O
ZONE P
ZONE N
MAIN ST
ZONE A
ZONE B
ZONE C
ZONE D
ZONE F
ZONE G
ZONE H
ZONE I
ZONE J
ZONE K
ZONE L
ZONE M
HOYT PARK LOT
ZONE E
BRIDGE ST
ELM ST
KINGSTON ST
WEST BRANCH DELAWARE RIVER
DELAWARE AVE
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
GPI
75 0 75 150 225 300'

## 3.3 Public Parking Restrictions

The Village currently has several different on-street parking restrictions. These include:

- 15-minute parking
- 20-minute parking
- 2-hour parking
- No Parking
- Handicapped

2-hour parking is the most common parking restriction in the Village and is found throughout the central business district. 15-minute parking is confined to the southeast corner of Division Street and the diagonally orientated spaces adjacent to the Post Office. 20-minute parking is located on Church Street and at the corner of Main Street and Church Street. There are a total of 5 on-street handicapped spaces spread throughout the central business district. Public parking restrictions are shown depicted on Map 3 – "Public Parking Restrictions".

## 3.4 Land Use and Parking Generation

Understanding and evaluating land uses within the Village's central business district will help identify the parking generation and needs of each Village block or area. Parcels within the study area were broken out into five land use types (Residential, Commercial/Retail, Parks/Recreation, Government, and Religious) and grouped together geographically into land use zones (LU#). These land use zones and types are shown within the study area on Map 4 – "Land Use Zones"

The potential weekday parking generation for the land use zones was then estimated by using the data contained in the *Parking Generation Manual*, 5th Edition, published by the Institute of Transportation Engineers (ITE). This ITE publication contains data from various case studies on many different types of land uses. The parking generation, allowable off-street parking, and approximate on-street parking need for each land use zone is tabulated in Table 3 – "Parking Generation by Land Use"

# MAP 03 | Public Parking Restrictions

- No Restriction
- No Parking
- 2 Hr Parking
- Handicapped
- 15 - 20 Min Parking

CLINTON ST
FRANKLIN ST
2ND ST
2ND ST
CROSS ST
DIVISION ST
COURT ST
DELHI VILLAGE HALL
HIGH ST
CHURCH ST
MEREDITH ST
PROSPECT ST
ORCHARD ST
MAIN ST
MAIN ST
MAIN ST
MAIN ST
HOYT PARK LOT
BRIDGE ST
ELM ST
KINGSTON ST
WEST BRANCH DELAWARE RIVER
DELAWARE AVE

GPI

75 0 75 150 225 300'

MAP 04 | Land Use Zones

- Residential
- Commercial/Retail
- Parks/Recreation
- Government
- Religious

LU1
LU2
LU3
LU4
LU5
LU6
LU7
LU8
LU9
LU10
LU11
LU12
LU13
LU14
LU15
LU16
LU17
LU18
LU19
LU20
LU21
LU22
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LU29
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LU31
LU32
LU33
LU34
LU35
LU36
LU37

CLINTON ST
FRANKLIN ST
CROSS ST
2ND ST
2ND ST
DELHI VILLAGE HALL
HIGH ST
PROSPECT ST
DIVISION ST
COURT ST
CHURCH ST
MEREDITH ST
ORCHARD ST
MAIN ST
MAIN ST
MAIN ST
MAIN ST
HOYT PARK LOT
ELM ST
KINGSTON ST
BRIDGE ST
WEST BRANCH DELAWARE RIVER
DELAWARE AVE

GPI

75 0 75 150 225 300'

## Table 3
## Parking Generation by Land Use

| LAND USE ZONE | LAND USE TYPE | APPROX. SIZE (FOR PLANNING ONLY) | EXPECTED PARKING TYPE | EXPECTED WEEKDAY PARKING DEMAND | ALLOWABLE LOT / PRIVATE DRIVE PARKING | APPRX. ON-STREET PARKING NEED | COMMENTS |
|---|---|---|---|---|---|---|---|
| LU 1 | Residential | 9 Units | On-Street and Private Drives | 14 Spaces | 12 Spaces | 2 Spaces | |
| LU 2 | Residential | 2 Units | On-Street and Private Drives | 3 Spaces | 3 Spaces | 0 Spaces | |
| LU 3 | Residential | 8 Units | On-Street and Private Drives | 12 Spaces | 9 Spaces | 3 Spaces | |
| LU 4 | Commercial/Retail | 28,000 SF GFA | On-Street / Private Lots | 100 Spaces | 86 Spaces | 14 Spaces | |
| LU 5 | Parks/Rec | 0.1 Acres | On-Street | Minimal | 0 Spaces | 0 Spaces | |
| LU 6 | Commercial/Retail | 20,000 SF GFA | On-Street / Private Lots | 70 Spaces | 109 Spaces | 0 Spaces | |
| LU 7 | Commercial/Retail | 15,000 SF GFA | On-Street / Village Lot | 50 Spaces | 50 Spaces | 0 Spaces | |
| LU 8 | Commercial/Retail | 25,000 SF GFA | On-Street | 75 Spaces | 45 Spaces | 30 Spaces | 30 of the spaces from County Lot across Main St |
| LU 9 | County Offices | 9,000 SF GFA | County-Use Lot | 50 Spaces | 58 Spaces | 0 Spaces | 88 Space Lot, Assume 30 spaces used by retail Across Main Street |
| LU 10 | Commercial/Retail | 6,000 SF GFA | Private Lots | 20 Spaces | 35 Spaces | 0 Spaces | |
| LU 11 | County Offices | 20,000 SF GFA | County-Use Lot | 120 Spaces | 140 Spaces | 0 Spaces | 165 Space Lot, but split between County & Retail |
| LU 12 | Parks/Rec | 0.8 Acres | On-Street | Minimal | 0 Spaces | 0 Spaces | |
| LU 13 | Commercial/Retail | 12,000 SF GFA | On-Street / Private Lots | 40 Spaces | 40 Spaces | 0 Spaces | 25 of the spaces from adjacent County Lot |
| LU 14 | Commercial/Retail | 7,400 SF GFA | On-Street | 15 Spaces | 0 Spaces | 15 Spaces | |
| LU 15 | Residential | 1 Unit | On-Street | 2 Spaces | 2 Spaces | 0 Spaces | Shared 20 Space Lot |
| LU 16 | Commercial/Retail | 2,400 SF GFA | On-Street / Private Lot | 8 Spaces | 15 Spaces | 0 Spaces | Shared 20 Space Lot |
| LU 17 | Church | 6,000 SF GLA | On-Street / Private Lot | 3 Spaces | 3 Spaces | 0 Spaces | Shared 20 Space Lot |
| LU 18 | Residential | 3 Units | Private Drives | 5 Spaces | 4 Spaces | 1 Spaces | |
| LU 19 | Commercial/Retail | 1,500 SF GFA | On-Street / Private Lot | 5 Spaces | 2 Spaces | 3 Spaces | |
| LU 20 | Residential | 3 Units | Private | 5 Spaces | 5 Spaces | 0 Spaces | |
| LU 21 | Residential | 5 Units | On-Street | 8 Spaces | 6 Spaces | 2 Spaces | |
| LU 22 | Commercial/Retail | 5,500 SF GFA | Private Lot | 20 Spaces | 20 Spaces | 0 Spaces | |
| LU 23 | Commercial/Retail | 2,300 SF GFA | Private | 8 Spaces | 8 Spaces | 0 Spaces | |
| LU 24 | Residential | 5 Units | On-Street / Private Lots | 8 Spaces | 6 Spaces | 2 Spaces | |
| LU 25 | Commercial/Retail | 3,500 SF GFA | Private Lot | 12 Spaces | 20 Spaces | 0 Spaces | Overage |
| LU 26 | Commercial/Retail | New Construction | Private Lot | As Available On-Site | - | | |
| LU 27 | Residential | 5 Units | On-Street and Private Drives | 8 Spaces | 8 Spaces | 0 Spaces | |
| LU 28 | Residential | 7 Units | On-Street and Private Drives | 11 Spaces | 11 Spaces | 0 Spaces | |
| LU 29 | Church | 7,500 SF GFA | On-Street / Private Lot | 3 Spaces | 13 Spaces | 0 Spaces | 29 Space Lot, but only 13 spaces reserved for church during weekdays |
| LU 30 | County Offices | 20,000 SF GFA | County-Use Lot | 60 Spaces | 47 Spaces | 13 Spaces | Assumes 16 spaces of Church Parking Lot, 5 Spaces fo Village Lot Used |
| LU 31 | Village Offices | 5,000 SF GFA | Village-Use Lot | 15 Spaces | 18 Spaces | 0 Spaces | 23 Space Lot, assume 5 spaces used by County |
| LU 32 | Post Office | 2,500 SF GFA | Private Lot | 10 Spaces | 15 Spaces | 0 Spaces | |
| LU 33 | Offices | 1,000 SF GLA | Private Lot | 6 Spaces | 6 Spaces | 0 Spaces | |
| LU 34 | Residential | 10 Units | On-Street and Private Drives | 15 Spaces | 11 Spaces | 4 Spaces | |
| LU 35 | Church | 2,800 SF GFA | On-Street | 3 Spaces | 3 Spaces | 0 Spaces | |
| LU 36 | Residential | 15 Units | On-Street and Private Drives | 22 Spaces | 22 Spaces | 0 Spaces | |
| LU 37 | Residential | 15 Units | On-Street and Private Drives | 22 Spaces | 16 Spaces | 6 Spaces | |
| | | | **Grand Totals:** | **828 Spaces Potential Overall Need** | **848 Spaces Off-Street (Not All Utilized)** | **95 Spaces On-Street Need** | |

As shown in Table 3, the potential overall need within the land use zones is 828 parking spaces. Much of this parking need is met though available off-street parking, owned privately or by government agencies within each of the land use zones. Based on the land use analysis, approximately 95 on-street parking spaces would be required to meet the typical weekday public parking demand for the average day of the year, with the majority of that demand being located on Main Street between Division Street and Court Street. The existing 278 public parking spaces are sufficient to cover the general parking demand of the land uses within the study area with about a 35% occupancy rate.

## 3.5 Public Parking Utilization

While the previous section of this report provided theoretical parking requirements, a parking survey was conducted to verify the actual parking needs and occupancy data in the field. For this survey, the number of parked cars were counted on a bi-hourly basis, for the hours between 8:00 AM and 6:00 PM, and a parking utilization rate was calculated for each zone. As mentioned previously in this report, data collection was conducted over two days, Wednesday July 20th, to capture parking utilization during days when the farmer's market is active, and Thursday July 21st, which represents typical summer parking demand. The observed parking utilization rates are summarized in Table 4 - "Public Parking Utilization Rates", and detailed parking inventory and occupancy count data is included in Appendix A.

**Table 4**
**Public Parking Utilization Rates**

| VILLAGE OF DELHI PARKING UTILIZATION RATES - COMBINED | | | | | | |
|---|---|---|---|---|---|---|
| ZONE | STREET | NO. OF PARKING SPACES | WEDNESDAY | | THURSDAY | |
| | | | AM (8:00a - 12:00p) | PM (2:00p - 6:00p) | AM (8:00a - 12:00p) | PM (2:00p - 6:00p) |
| A | MAIN ST | 7 | 0% | 10% | 5% | 0% |
| B | MAIN ST | 15 | 7% | 7% | 13% | 7% |
| C | MAIN ST | 8 | 58% | 38% | 46% | 17% |
| D | MAIN ST | 15 | 36% | 42% | 7% | 29% |
| E | HOYT PARK | 38 | 55% | 51% | 40% | 34% |
| F | MAIN ST | 11 | 103% + | 42% | 61% | 73% |
| G | MAIN ST | 8 | 75% | 29% | 88% | 50% |
| H | MAIN ST | 0 | +++ | +++ | --- | --- |
| I | MAIN ST | 6 | 100% | 28% | 50% | 28% |
| J | MAIN ST | 16 | 75% | 25% | 25% | 15% |
| K | MAIN ST | 23 | 61% | 42% | 46% | 39% |
| L | MAIN ST | 14 | 31% | 24% | 33% | 33% |
| M | MAIN ST | 11 | 18% | 18% | 27% | 21% |
| N | CHURCH ST | 12 | 108% + | 25% | 36% | 36% |
| O | COURT ST | 12 | 78% | 25% | 69% | 31% |
| P | COURT ST | 16 | 90% | 33% | 46% | 31% |
| Q | 2ND ST | 13 | 100% | 23% | 51% | 41% |
| R | 2ND ST | 10 | 103% + | 33% | 57% | 47% |
| S | DIVISION ST | 11 | 103% + | 61% | 88% | 106% + |
| T | 2ND ST | 17 | 27% | 12% | 12% | 2% |
| U | 2ND ST | 15 | 24% | 7% | 11% | 11% |
| | | TOTALS | 61% | 31% | 38% | 32% |

\+ Indicated vehicles parking in restricted/no-parking areas
--- Indicated zone contains no legal parking spaces

The public parking utilization rates were reviewed, and the general findings are as follows:

- Because of the farmer's market, Wednesday mornings have the highest parking utilization rate, with 61% of all public parking spaces within the central business district being occupied.
- The overall average public parking utilization rate for the study area, on typical days when the farmer's market is not in session, is about 34%.
- The parking utilization is highest around Courthouse Square and generally decreases as you move away from the Square.
- Division Street (Zone S) is the most utilized parking zone with an average utilization rate of 89%.
- Main Street from Clinton Street to Franklin Street (Zones A & B) and 2nd Street from Franklin Street to Division Street (Zones T & U) all have average parking utilization rates under 15%.
- Parking areas around Courthouse Square and in the center of the business district were found to be over capacity on several occasions. This was caused by vehicles illegally parking up on the sidewalk, as is the case on Division Street (Zone S) or parked in restricted no parking zones such as on Main Street between Court Street and Church Street (Zone H).

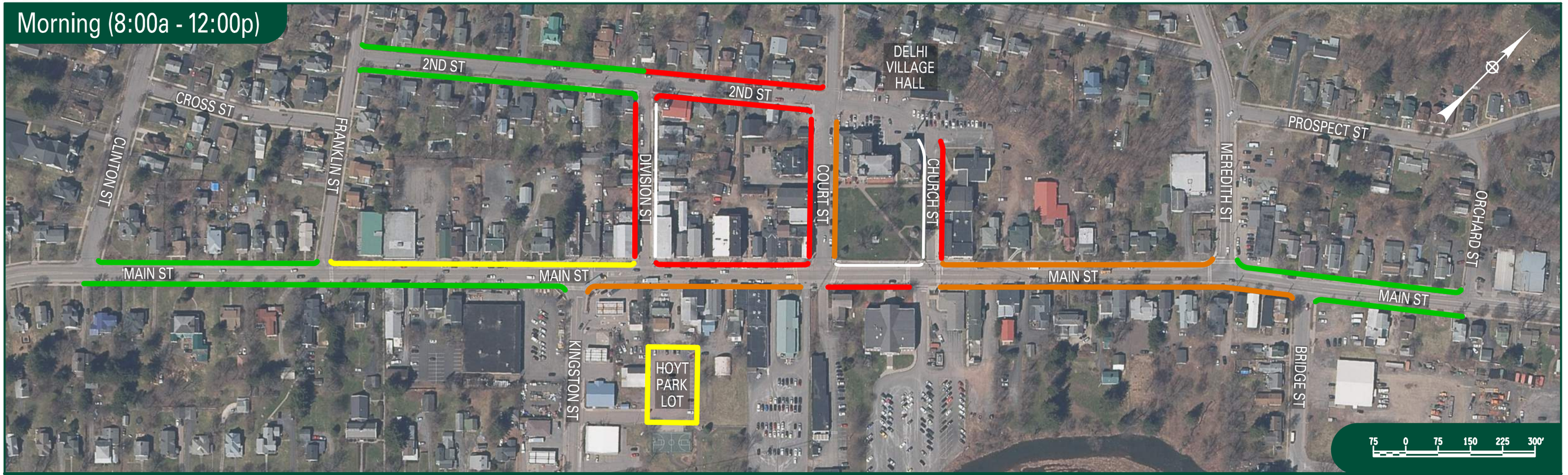
For a better understanding of the parking utilization and needs, color coded maps are included for reference. Map 5 – "Parking Utilization – Wednesday" and Map 6 – "Parking Utilization – Thursday" visually represent the general daily parking use in each of the parking zones.

Reviewing these maps, the impact of the Wednesday morning farmers market is quite noticeable, with parking utilization along the streets near the market (2nd St, Division St, Court St, Church St) being significantly higher when the market is active than in the afternoon after it closes.

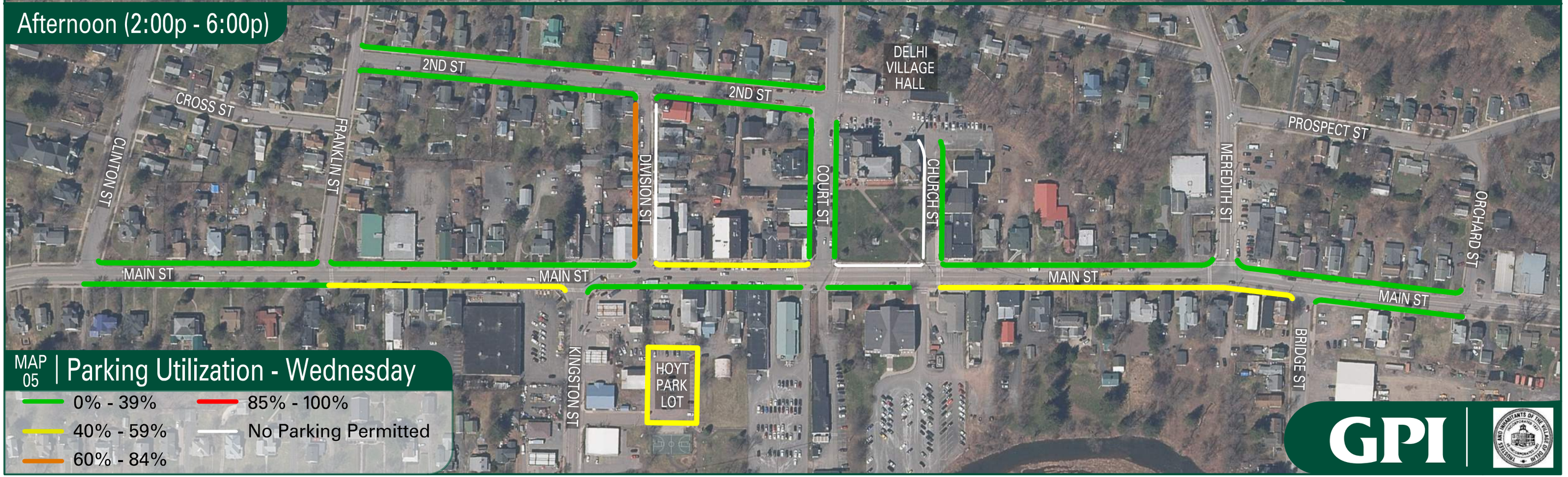
Another interesting fact is that the Wednesday afternoon utilization in these areas is much less than the utilization in either the morning or afternoon of a typical parking day (Thursday data). It is assumed that this is because the influx of farmer's market vehicles occupy spaces typically taken up by "normal" daily users, forcing those users to spread out farther away from the central Village. This causes a more even distribution throughout the central business district in the afternoon, once the market vehicles go away.

Overall, typical daily parking utilization within the study area averages about 35%, with utilization jumping up to about 60% on Wednesday mornings when the Farmers Market is in Session. The 35% average utilization is consistent with the parking generation estimates based on the land uses within the area.

## Morning (8:00a - 12:00p)




## Afternoon (2:00p - 6:00p)




MAP 05 | Parking Utilization - Wednesday

- 0% - 39%
- 40% - 59%
- 60% - 84%
- 85% - 100%
- No Parking Permitted

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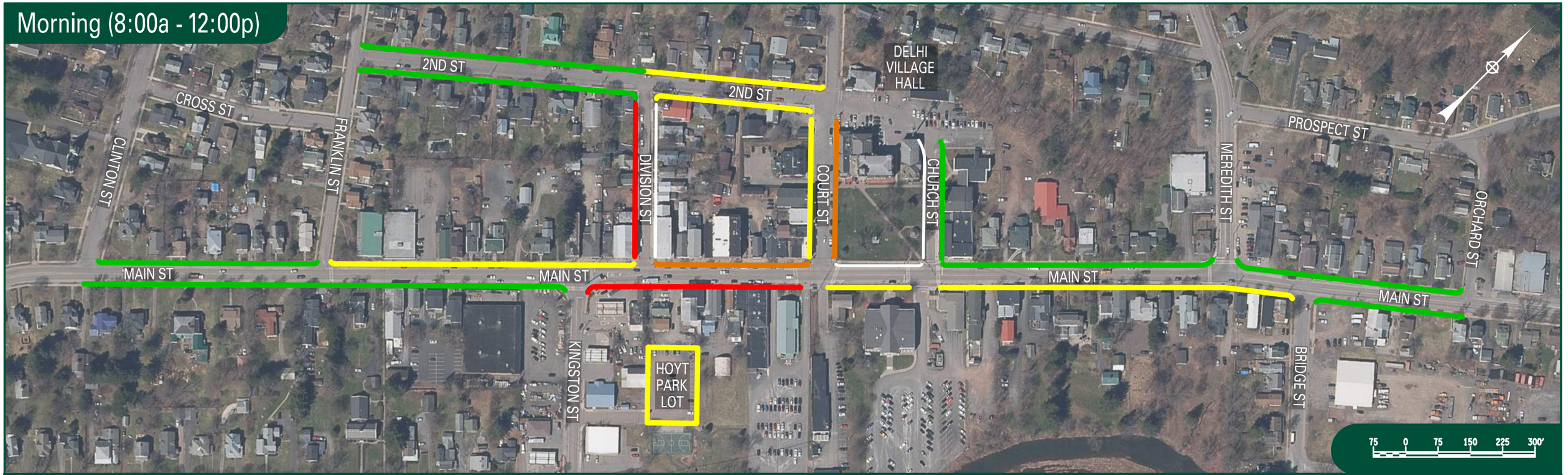
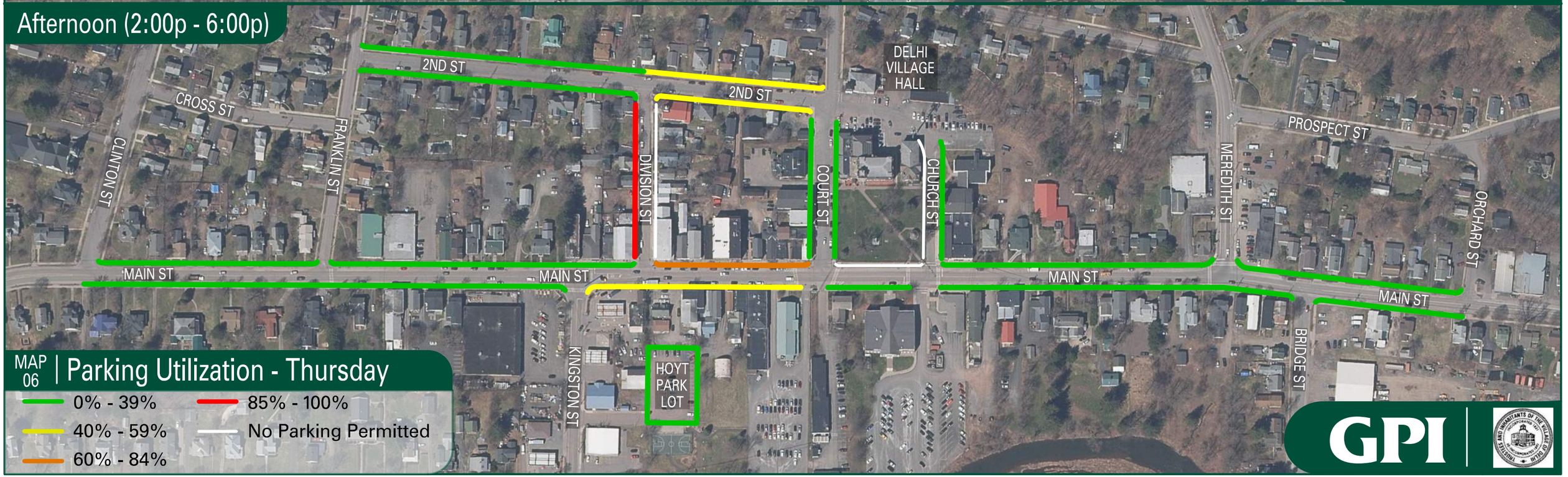
## Morning (8:00a - 12:00p)




## Afternoon (2:00p - 6:00p)




MAP 06 | Parking Utilization - Thursday

- 0% - 39%
- 40% - 59%
- 60% - 84%
- 85% - 100%
- No Parking Permitted

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## 3.6 Business-use and Government-use Lot Occupancy

There are 19 business-specific or government-use lots of note (with 6 or more parking spaces) within the study area. These lots, their owners, and the number of available parking spaces within each are listed in Section 3.2, Table 2. The average daily occupancy for these lots varies greatly from roughly 30% or less for many of the commercial/retail lots, including the Family Dollar and Tractor Supply Company lots to 70% or greater for the three County lots and one Village lot.

The Village had expressed interest in bringing these private use lots within the pay parking system. However, we have not found a municipality in upstate NY that has monetized private parking, and it is not something that is recommended. Not only does it pose legal issues, but it could also be highly unpopular with the parking lot property owners, who would see the Village profiting off of property for which the business owners already pay Village taxes on. Because of this, the parking costs and revenues discussed later in the report assume that the private parking lots will remain under the control of the property owners, who will dictate whether their parking will be free or not for their patrons, and any revenue generated by these lots are outside the control of the Village.

It should be noted that a pay parking system implemented for public parking may drive some of the public to park in these private lots, to avoid paying for parking. To help prevent this, the business and government-use lots will need to be clearly signed for use of the respective businesses only. This will deter some from illegally parking in these lots, but it is expected that some migration will still occur. Based on lot availability and the potential parking needs, it can be assumed that daily parking utilization along the public streets will be reduced by 5% if pay parking for public spaces is implemented.

## 3.7 Parking Needs Assessment

As discussed previously in this report, a review of the Village's parking needs was performed through a land use review, which determined that a 40% public parking occupancy should be expected, and a field inventory of existing parking, which verified that approximately 40% of the public spaces are utilized on a daily basis. This increase to about 60% when the farmer's market is in use, but this is still well within acceptable levels. Based on our review, all users should be able to find a space within acceptable walking limits (300 to 600 feet) during a typical weekday, and no additional parking is required.

The area with the most parking need centers around the block formed by 2nd St, Division St, Main St and Court St, where the heaviest business activity is focused, and some illegal parking in "no parking" zones along Division St and in front of the park on Main St is occurring. It is recommended that stricter enforcement be implemented in these areas if a pay parking system is implemented, to avoid safety issues.

# 4.0 Pay Parking Alternatives

There are a variety of pay parking systems that can be implemented within a municipality. These pay parking solutions are examined below and include the following:

- Single/dual space parking meters
- Parking kiosk
- Mobile parking applications
- Parking permits

## 4.1 Pay Parking Systems Utilized in Other Municipalities

The pay parking systems of multiple municipalities were reviewed to get a better understanding of the pay parking rates, hours/days of enforcement, and pay parking hardware/software utilized in other upstate New York State municipalities. The locations reviewed and parking system information for each are shown below in Table 5 – "Municipal Pay Parking System Comparison".

**Table 5**
**Municipal Pay Parking System Comparison**

| Local Municipal Parking Comparision | | | | | | |
|---|---|---|---|---|---|---|
| MUNICIPALITY | HRS OF ENFORCEMENT | | AVG. COST (PER HR) | DAYS OF WEEK ENFORCED | PARKING METER HARDWARE | MOBILE PARKING APP. |
| | AM START | PM END | | | | |
| Village of Saugerties | 9:00 AM | 5:00 PM | $0.50 | Monday - Saturday (Free Holidays) | Coin Meters | - |
| City of Poughkeepsie | 8:00 AM | 6:00 PM | $1.00 | Monday - Friday (Free Holidays) | Kiosks | - |
| Town of Middleburgh | 8:00 AM | 6:00 PM | $0.13 | Monday - Saturday (Free Holidays) | Coin Meters | - |
| Village of Cooperstown | 9:00 AM | 6:00 PM | $2.00 | Monday - Sunday (Seasonal) | Kiosks | Passport |
| Village of Lake George | 8:00 AM | 12:00 AM | $2.00 | Monday - Sunday (Seasonal) | Kiosks | ParkMobile |
| City of Ithaca | 9:00 AM | 6:00 PM | $1.50 | Monday - Friday (Free Holidays) | Kiosks | ParkMobile |
| City of Kingston | 9:00 AM | 6:00 PM | $1.00 | Monday - Saturday (Free Holidays) | Coin Meters / Kiosks | Flowbird |
| City of Hudson | 9:00 AM | 5:00 PM | $0.50 | Monday - Saturday (Free Holidays) | Coin Meters | - |
| Village of Geneseo | 8:00 AM | 5:00 PM | $0.25 | Monday - Friday (Free Holidays) | Coin Meters | - |
| Village of Lake Placid | 9:00 AM | 6:00 PM | $2.00 | Monday - Saturday (Free Holidays) | Kiosks | Flowbird |
| Village of Alfred | 7:00 AM | 5:00 PM | $1.25 | Monday - Friday (Free Holidays) | - | ParkMobile |

Note: customers also pay an added convenience fee that will go directly to the App provider.

The general findings of the review are as follows:

- Pay parking typically begins at 8:00am or 9:00am in the morning and continues to 5:00pm or 6:00pm in the evening.
- The cost of parking varies from a low of $0.13 per hour in the Town of Middleburgh, NY to $2.00 per hour in the more tourist driven Villages of Lake George, Lake Placid, and Cooperstown. The average rate is about $1.00 per hour.
- Pay parking is generally enforced from Monday to Friday or Saturday with the exception of holidays.
- Almost all municipalities utilize physical parking meters or kiosks.
- About half of the municipalities offered a mobile application for parking payment.

## 4.2 Pay Parking System Options

### 4.2.1 Typical Pay Parking Operations

There are several ways pay parking systems can be operated and include the following:

- Pay by Space – The customer pays for a specific parking space.
- Pay by Display – A ticket is purchased and displayed on the dash as proof of payment.
- Pay by Plate – Parking is paid for under a specific license plate number.
- Parking Permit – A permit is purchased to park on a monthly or annual basis. If implemented, a permit system would work in conjunction with one of the other operational methods and would not be a stand-alone system.

Typically, pay by space is done via parking meters, while pay by display and pay by plate are accomplished through kiosks and/or mobile parking applications, which are described in more detail below.

### 4.2.2 Single/Dual Space Parking Meters

Single/dual space parking meters operate by reserving a single parking space for a paid amount of time (pay by space). When the time expires, the meter will visually indicate to the customer and enforcement officials that the space is no longer paid for. A single unit is required for every individual or every pair of parking spaces. Most single/dual space parking meters today can accept coins and credit cards.

### 4.2.3 Parking Kiosks


Parking kiosks are generally located at centralized locations along each block and cover between 10 and 20 parking spaces. They can be equipped to either issue tickets (pay by display) or have the customer manually enter their license plate number (pay by plate). Most kiosks are solar powered and can accept coins, cash, or credit cards as payment. They can easily be integrated with mobile parking applications. A cellular connection is required to process credit cards and/or utilize the pay by plate system and as such there is generally a monthly subscription fee paid to the Kiosk provider.

Product brochures for several different models of parking meters and kiosks can be found in Appendix B

### 4.2.4 Mobile Parking Applications

Mobile parking applications can be used in conjunction with

physical parking equipment (kiosks or meters) or as a standalone parking solution. Users simply download the application and pay for their parking straight from their phone. The Village is provided with a list of the vehicles (by license plate) that are currently paid to park within the specified zone for enforcement. There are several different providers of these type applications. The three most commonly used, and their fee structures, are included in Table 6 - "Mobile Parking Applications".

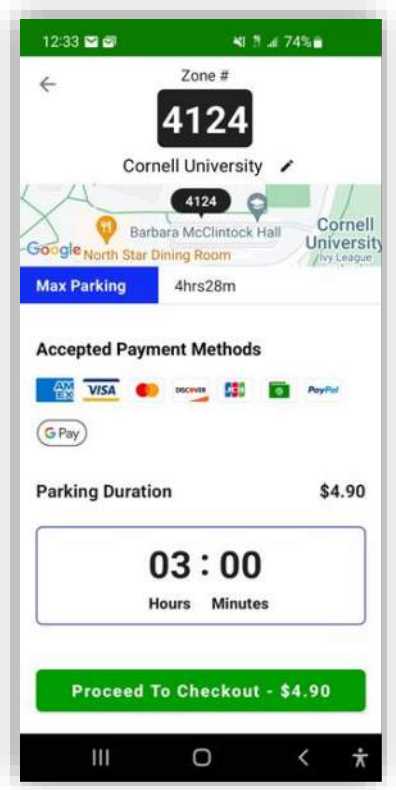


**Table 6**
**Mobile Parking Applications**

| MOBILE APPLICATION | ANNUAL FEE | CONVENIENCE FEE | COMMENTS |
|---|---|---|---|
| **Passport Parking** | $6,000 | $0.30 | Can provide detailed analytical reports |
| **Flowbird (Whoosh)** | None | $0.35 | - |
| **ParkMobile** | None | $0.30 | Provides all necessary signing at no cost |

As seen above, only Passport Parking has an annual fee which would be paid by the Village. All the applications utilize a convenience fee that is usually paid by the customer. In addition, there is a transaction processing fee that typically runs about 10-15% of the total transaction amount. This can either be covered by the Village or the customer.

Additionally, some of the applications can provide enforcement assistance. Both Flowbird and Passport Parking can provide a parking enforcement application that streamlines the enforcement and ticket writing process for additional fee.

While mobile parking applications can be utilized as a standalone solution, eliminating any cost associated with the procurement and installation of physical hardware, the system would be only available to those individuals who have a mobile internet connected device (i.e. Smartphones). This would limit the number of individuals who would have access to the pay parking spaces and would cause an inequitable system that would not serve all members of the public. As such, implementing a mobile application system without kiosks is not recommended.,

Product brochures for the different mobile parking applications discussed above can be found in Appendix C.

### 4.2.5 Parking Permits

Parking permits work in tandem with any of the other systems and are a good option to have in a pay parking area that encompasses residential properties, as is the case for the Village. An individual (usually limited to Village residents or shop owners) would purchase a parking permit, on a monthly, or annual basis. The permit can either be done by use of a physical tag displayed in the vehicle or

by license plate. The cost for a parking permit generally runs around $20 to $30 per month or $100 to $150 per year, with this one-time fee replacing any other parking fees for an individual/vehicle for the length of time purchased. Implementation of a permit plan will reduce the number of vehicles in the pay parking system (reduce utilization by about 2%), but will significantly improve acceptance by the local residents.

### 4.2.6 Parking System Comparisions

Each of the potential parking systems have various pros and cons. Parking meters may be more convenience for users, but they allow unused meter time to be used by a second user "piggybacking", thus reducing revenues. Pay by plate takes more time to monitor for enforcement, but it saves the Village the cost of parking receipt paper and supplies. Kiosks are more expensive than parking meters, but much fewer will need to be installed. Table 7 – "Parking System Comparison" summarize the advantages and disadvantages of each system.

**Table 7**
**Parking System Comparison**

| Parking System or Hardware | Advantages | Disadvantages |
|---|---|---|
| Parking Meters | ▪ Quick & easy visual identification of violations.<br>▪ More convenient for users than walking to kiosk. | ▪ Significantly more equipment locations to monitor and maintain than with kiosks.<br>▪ "piggybacking" will reduce Village revenue. |
| Parking Kiosks Only (Pay by Display) | ▪ Still provides visual identification of violations, though not as quick as meters.<br>▪ Fewer equipment installation locations to maintain.<br>▪ Avoids additional fees charged by mobile apps.<br>▪ No loss of revenue from "piggybacking". | ▪ Required paper and supplies for receipts that Pay by Plate does not need.<br>▪ Least convenience option for users, who are forced to walk to a kiosk. |
| Parking Kiosks with Mobile Parking Application (Pay by Plate) | ▪ Allows the use of enforcement App (for a fee).<br>▪ Fewer equipment installation locations to maintain.<br>▪ More convenient for users than a kiosk only system.<br>▪ Kiosks can operate without paper receipts.<br>▪ No loss of revenue from "piggybacking". | ▪ Enforcement will be either more time consuming or expensive, depending on whether an enforcement app is utilized, or not.<br>▪ Adds convenience and processing fees, which will marginally increase costs to Village and for users. |
| Parking Permits | ▪ Provides residents and shop-owners a more convenient and reduced cost parking option. | ▪ Added responsibility for the Village to distribute and maintain permits.<br>▪ Reduced overall revenue to the Village. |

When considering these options for the Village of Delhi, the following should be noted:

- If parking meters are to be installed, a total of approximately 160 meters would be required at an average installation cost of $1,250. Total cost would be about $325,000 for design and construction (once mobilization, traffic control and contingencies are included).
- If Kiosks are to be installed, a total of approximately 20 kiosks would be required, at an average installation cost of $10,000. Total cost would be about $325,000 for design and construction (once mobilization, traffic control and contingencies are included)..
- With parking meters, "piggybacking", where a second user utilizes the remainder of paid time from a first user, can reduce the revenue generation of a pay parking system by up to 30%. This cannot be done with any of the other parking systems.
- Significantly more time will be required to maintain and collect coins from a parking meter system, than from kiosks, as there would be 8 times as many locations to monitor.
- The use of parking applications significantly increases convenience to the user over a kiosk alone option, but does add a convenience fee for the user, and a processing fee that would be paid by the Village (or passed on to the user).
- Parking permits are a reasonable option for local resident and business owners, without adding a permit option, there could be significantly more public resistance to the implementation of a pay parking system.

## 4.3 Parking Enforcement

For a pay parking system to function effectively parking enforcement is required. This is usually done through the employment of a meter attendant or as an added responsibility for the local police department. As the Village of Delhi has its own police force, it is assumed that the department will take on parking enforcement at no additional cost to the Village. Citations can either be issued through the Village's current system or through a mobile pay parking enforcement application. As mentioned previously, both Flowbird and Passport Parking can provide a parking enforcement application that streamlines the enforcement and ticket writing process. However, these systems tend to be quite expensive. Passport Parking estimated an annual fee somewhere between $20,000 and $25,000 for the Village to use their enforcement system. Given the size of the Village the cost of implementing this type of automated system would likely be cost prohibitive.

In addition, it is expected that the Village would spend roughly $2,000 per year on enforcement supplies (ticket books, envelopes, etc.).

From our review of other municipal systems, it was revealed that monetary fines for pay parking violations are generally in the range of $15 to $30. Some municipalities have a repeat offender policy that escalated fines to $50 to $100 for subsequent violations.

It is expected that reasonable and vigilant monitoring and enforcement of the parking system would result in issuing 10 violation citations per day, or approximately 3,000 per year.

## 4.4 System Recommendations

Based on the review and comparison performed and the various costs, advantages and disadvantages of each alternative, the recommended option for the Village of Delhi includes **a pay by plate system with parking kiosks and the use of a mobile parking application, along with parking permits for local residents**. This option requires less maintenance than for meters, or kiosks with printed receipts, it is accessible for all users, and is more convenience for users than the kiosk only option. The pay by plate option does increase the time and effort for enforcement compared to metered or pay by display options, but the Village has indicated that there is sufficient staff within the police department to monitor and enforce the system, and the additional time to patrol should not be an issue. Because of this, the preferred parking application would be "Parkmobile" for the Village. However, if enforcement under this system is a concern, the Village would want to use either the "Passport" or "Flowbird" applications, as they can provide an enforcement application to reduce the enforcement time and effort, though it would increase costs.

To implement this system, the following parameters are recommended:

- Pay parking should be in effect 8:00 am – 6:00 PM, Monday Through Saturday (excluding Holidays)
- Parking fee of $1.00 per hour.
- Violation Ticket cost of $25.
- Annual parking permit cost for resident of $120 per year.

## 4.5 Projected Costs and Revenue

Costs and revenues of the system above were calculated using the recommended parameters and the following assumptions:

1. Pay parking will be in effect 300 days a year, 10 hours per day.
2. Daily parking utilization throughout the year, adjusting for 16 days of higher usage for the Farmer's market, is currently about 36%. However, it is assumed that some public migration to free-use private lots will occur once a public pay system is implemented. For revenue calculations, it is assumed that the future daily parking utilization rate would be 32%.
3. The 'Parkmobile" app will be utilized, with a $0.30 convenience fee charged to the user, and a processing fee of 3% + $0.15 per transaction which is assumed to be paid by the Village.
4. Average parking stay is assumed to be 2 hours, which will result in approximately 445 transactions a day within the study area. This totals 133,500 transactions per year through the mobile application.
5. Approximately 2,000 parking tickets are expected to be issued annually (1 per each 1-1/2 hour period) for parking violations, with a 70% collection rate on parking tickets expected. For reference, the City of Utica, with much larger parking pool, issues about 10,000 per year.

6. Approximately 200 parking permits will be sold annually, with no more than 12 of them parking within the study area at any given time during the day. It is estimated that implementing a permit system will reduce the number of vehicles using the daily pay parking system utilization by 4%.

Based upon the recommendations and assumptions listed the costs and revenues of the recommended pay parking system are as out lines in Table 8 – "Projected Cost & Revenue Summary".

**Table 8**
**Projected Parking System Costs & Revenue**

| **Installation Costs (with or without permit system)** | | |
|---|---|---|
| Design (10% of construction) | | $25,000 |
| Construction (to include mobilization & traffic control) | | $250,000 |
| Contingencies (20% of construction) | | $50,000 |
| **Total Estimated Cost** | | **$325,000** |
| Estimates Lifespan Before Replacement | | 10 years |
| **Total Annualized Cost per Year** | | **$32,500** |
| **Annual Parking Fee Revenue** | **w/No Permits** | **W/ Permit System** |
| Annual Number of Hours Parking Fees Apply | 3,000 | 3,000 |
| Average Hourly Paid Parking Utilization | 0.32 | 0.28 |
| Number of Available Parking Spaces | 278 | 278 |
| Hourly Parking Fee Paid by User | $1.00 | $1.00 |
| **Gross Revenue from Parking Fees** | **$266,880** | **$233,520** |
| Annual Parking Permits Sold | 0 | 200 |
| Annual Parking Permit Cost | $0 | $120 |
| **Gross Revenue from Permit System** | **$0** | **$24,000** |
| **Overall Annual Gross Revenue of Parking System** | **$266,880** | **$257,520** |
| **Annual Operational Costs** | **w/No Permits** | **W/ Permit System** |
| Average Parking Stay Length | 2 hours | 2 hours |
| Number of Pay Parking Transactions | 133,440 | 116,760 |
| Mobile Application Transaction Fees (3% + $0.15) | $28,022 | $24,520 |
| Kiosk Communication Fees (20 Kiosks x $900 Each) | $18,000 | $18,000 |
| Violation/Non-payment Rate (caught and uncaught) | 5% | 5% |
| Lost Revenue from Violations/Non-Payment | $13,344 | $11,676 |
| **Overall Annual Operating Costs** | **$59,366** | **$54,196** |
| **Overall Annual Net Revenue (Gross Revenue minus Costs)** | **$207,514** | **$203,324** |
| **Adjusted Net Revenue (Net Revenue minus Annualized Construction Costs)** | **$175,014** | **$170,824** |

As shown in the preceding table, the parking system, as proposed, would result in a Net Revenue of approximately $200,000 annually, exclusive of enforcement costs/revenue, which are discussed below. Subtracting out the initial investment of $325,000, annualized over the 10 year effective life

of the equipment, the resulting adjusted net revenue for the Village would be about $170,000 per year. If the residential permit aspect of the system was removed, the Village would take in about $5,000 more per year, but it would create a less palatable system for local residents and business owners.

When considering the enforcement costs and revenues of the system, the village needs to consider how the potential revenue ties to time investment. As mentioned previously, it is assumed that the enforcement hours will be absorbed by the police department, but it should be noted that to maximize violation captures, and realize the assumed 2,000 or more tickets issued per year, a parking attendant would need to patrol parked vehicles bi-hourly each day (at a minimum), which may be difficult without a dedicated parking enforcement officer. If the police department can only perform a thorough parking review one or twice a day, that would significantly reduce the number of violations detected and the overall revenue from enforcement.

For comparison purposes, a review of two scenarios was performed, one that includes parking monitoring for a 1 hour period every 2 hours, which we assume will capture 2,000 violations per year and reviewing the parking status twice a day, which we assume will capture 1,000 violations per year.

**Table 9**
**Projected Enforcement Costs & Revenue**

| Enforcement Revenue | Bi-hourly Monitoring | Twice Daily Monitoring |
|---|---|---|
| Estimated No. of Tickets Issues | 2,000 | 1,000 |
| Average Ticket Price | $25 | $25 |
| Collection Rate | 70% | 70% |
| **Annual Enforcement Revenue** | **$35,000** | **$17,500** |
| **Enforcement Costs (Excludes Labor)** | | |
| Ticket Books and Envelopes | $2,000 | $1,000 |
| **Annual Enforcement Costs** | **$2,000** | **$1,000** |
| **Annual Net Revenue from Enforcement (excluse time investment/labor costs)** | **$33,000** | **$16,500** |
| **Time Investment** | | |
| Daily Parking Patrol & Monitoring Time | 5 hours | 2 hours |
| No. of parking Monitoring Days | 300 | 300 |
| **Annual Enforcement Hours to be Absorbed by Police** | **1500 hours** | **600 hours** |

As shown above, highly vigilant enforcement could result in up to $33,000 in Net Revenue to the Village, while a less aggressive approach may only bring in $16,500 or less in Net Revenue. Overall, enforcement revenue is highly variable and extremely depended on the number of hours invested.

## 5.0 Findings and Conclusions

The preceding parking study evaluated the existing parking conditions, reviewed parking occupancy, and identified parking needs within the central business district of the Village of Delhi, Delaware County, New York. In addition, several pay parking options were reviewed and the costs and benefits of implementing a pay parking system were assessed. Findings and conclusions derived from the assessment performed include the following:

- The study area includes 905 marked parking spaces (240 public on-street spaces, 38 public off-street spaces at the Hoyt Park Municipal Parking Lot, and 627 business-use/government-use off-street spaces) that were inventoried, and private residential or unmarked parking that can accommodate about 220 additional vehicles. Of these spaces, only 278 are controlled by the Village for general public use.
- A review of the land use parking generation potential indicates that 95 public spaces (approximately 35% of the total number of public spaces) are needed to meet the parking demand not captured by off-street parking. This was verified through the parking occupancy survey, which observed an average daily parking utilization of 35% (when the Delhi Farmer's Market is not in session). Overall, the 278 public parking spaces available within the Village's central business district are more than enough to meet this demand.
- The farmer's market, which in active on Wednesday mornings during the summer months, significantly increases parking utilization to 61% within the study area, but this demand dissipates, by afternoon, where the parking utilization falls back to the average.
- For the most part, the parking areas along most blocks withing the study area are not overly congested. The exception to this is along Division St and Court Street, and along both 2nd Street and Main Street between Division and Court. This block routinely experiences utilization above 85%, which makes finding a parking space on this block difficult at times, especially when the Farmer's market is in session. However, there are less utilized parking areas within a short walk of this block, so additional parking in this area is not warranted.
- On Division Street, vehicles frequently park up on the sidewalk and block pedestrian foot traffic. It is recommended the "no parking" zones in this area be netter enforced to reduce this behavior and include pedestrian safety along this roadway.
- Based on our review of other municipalities, municipal pay parking is something exclusive to the public spaces controlled by the municipality. It would be extremely difficult to incorporate private and government-use lots in the pay parking system as it could pose legal issues and cause discontent in property owners. To make pay parking effective and to minimize migration of general public parking to private lots, it is recommended that all business-owned and government-use lots be clearly signed for use of the respective businesses only.

- A variety of pay parking systems were reviewed, including single/dual space parking meters, parking kiosks, mobile parking applications and parking permits. Both pay by display and pay by plate were considered for the Kiosk systems. The advantages and disadvantages of each system were reviewed and it was determine that the Village would benefit from a pay parking system. Based on the Assessment performed, it is recommended to implement a **pay by plate system with parking kiosks and the use of a mobile parking application, along with parking permits for local residents.**
- Given the reasonable small size of the Village the most cost-effective mobile parking application for use appears to be the "Parkmobile" app, based on the research performed.
- Recommended parking system parameters include 8 AM-6 PM Mon-Sat hours of operations (excluding holidays), a $1.00 per hour parking fee, the availability of a $120 annual parking permit for residents, and a $25 cost for parking tickets.
- It is estimated that the parking system would cost approximately $325,000 to design and implement, and would likely generate about $200,000 in revenue each year. Spreading the cost of construction over the 10-year life span of the system, the Village would still yield an adjusted net revenue of $170,000 per year. Revenue could be increased by an additional $5,000 a year if the residential parking permit system were not implemented, but removal of that aspect of the overall system would make it difficult achieve consensus with residents and local business owners.
- The Village of Delhi Police Department will be responsible for the enforcement of the pay parking system and administration of the residential permit parking program. Enforcement costs will be minimal outside of labor expenses, but the labor effort could be substantial, depending on how aggressive the Village wants to be in identifying violators. With 1,500 hours of annual enforcement monitoring the Village could generate as much as $33,000 in annual net revenue from enforcement, if only 600 hours of monitoring are performed, the Village would likely see only $16,500 in net revenue. Given the minimal potential income from enforcement.

Overall, the study shows that there is a sufficient number of parking spaces within the central business district to meet the needs of the community and those parking spaces could be monetized through a pay parking system to benefit the Village. If implemented, a pay parking system would add to the responsibilities of the police department and may cause some inconvenience for residents and local businesses, but could generate upwards of $200,000 per year in revenue for the Village.

# APPENDIX A

## Detailed Parking Occupancy Counts

| VILLAGE OF DELHI PARKING INVENTORY - WEDNESDAY | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CODE | STREET | FROM | TO | SIDE | PARKED CARS | | | | | | |
| | | | | | AVAIL. | 8:00a | 10:00a | 12:00a | 2:00p | 4:00p | 6:00p |
| A | MAIN ST | CLINTON ST | FRANKLIN ST | W | **7** | 0 | 0 | 0 | 0 | 1 | 1 |
| B | MAIN ST | CLINTON ST | FRANKLIN ST | E | **15** | 1 | 1 | 1 | 1 | 1 | 1 |
| C | MAIN ST | FRANKLIN ST | DIVISION ST | W | **8** | 3 | 5 | 6 | 3 | 2 | 4 |
| D | MAIN ST | FRANKLIN ST | KINGSTON ST | E | **15** | 1 | 7 | 8 | 10 | 6 | 3 |
| E | HOYT PARK MUNICIPAL PARKING LOT | | | - | **38** | 13 | 24 | 26 | 17 | 16 | 25 |
| F | MAIN ST | DIVISION ST | COURT ST | W | **11** | 10 | 12 | 12 | 8 | 3 | 3 |
| G | MAIN ST | KINGSTON ST | COURT ST | E | **8** | 6 | 7 | 5 | 3 | 3 | 1 |
| H | MAIN ST | COURT ST | CHURCH ST | W | **0** | 5 | 1 | 0 | 5 | 0 | 0 |
| I | MAIN ST | COURT ST | CHURCH ST | E | **6** | 6 | 6 | 6 | 5 | 0 | 0 |
| J | MAIN ST | CHURCH ST | MEREDITH ST | W | **16** | 8 | 16 | 12 | 5 | 3 | 4 |
| K | MAIN ST | CHURCH ST | BRIDGE ST | E | **23** | 11 | 18 | 13 | 12 | 9 | 8 |
| L | MAIN ST | MEREDITH ST | ORCHARD ST | W | **14** | 3 | 5 | 5 | 2 | 2 | 6 |
| M | MAIN ST | BRIDGE ST | ORCHARD ST | E | **11** | 2 | 2 | 2 | 1 | 5 | 0 |
| N | CHURCH ST | MAIN ST | COURT ST | N | **12** | 13 | 12 | 14 | 8 | 1 | 0 |
| O | COURT ST | MAIN ST | 2ND ST | N | **12** | 9 | 9 | 10 | 7 | 2 | 0 |
| P | COURT ST | MAIN ST | 2ND ST | S | **16** | 12 | 15 | 16 | 10 | 5 | 1 |
| Q | 2ND ST | COURT ST | DIVISION ST | W | **13** | 13 | 12 | 14 | 8 | 1 | 0 |
| R | 2ND ST | COURT ST | DIVISION ST | E | **10** | 9 | 11 | 11 | 5 | 4 | 1 |
| S | DIVISION ST | MAIN ST | 2ND ST | S | **11** | 11 | 10 | 13 | 9 | 8 | 3 |
| T | 2ND ST | DIVISION ST | FRANKLIN ST | W | **17** | 3 | 4 | 7 | 3 | 2 | 1 |
| U | 2ND ST | DIVISION ST | FRANKLIN ST | E | **15** | 2 | 3 | 6 | 1 | 1 | 1 |
| | | | | **TOTALS** | **278** | 141 | 180 | 187 | 123 | 75 | 63 |

| VILLAGE OF DELHI PARKING INVENTORY - THURSDAY | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CODE | STREET | FROM | TO | SIDE | PARKED CARS | | | | | | |
| | | | | | AVAIL. | 8:00a | 10:00a | 12:00a | 2:00p | 4:00p | 6:00p |
| A | MAIN ST | CLINTON ST | FRANKLIN ST | W | 7 | 0 | 0 | 1 | 0 | 0 | 0 |
| B | MAIN ST | CLINTON ST | FRANKLIN ST | E | 15 | 2 | 3 | 1 | 1 | 1 | 1 |
| C | MAIN ST | FRANKLIN ST | DIVISION ST | W | 8 | 0 | 5 | 6 | 1 | 1 | 2 |
| D | MAIN ST | FRANKLIN ST | KINGSTON ST | E | 15 | 0 | 2 | 1 | 6 | 5 | 2 |
| E | HOYT PARK MUNICIPAL PARKING LOT | | | - | 38 | 5 | 19 | 22 | 23 | 10 | 6 |
| F | MAIN ST | DIVISION ST | COURT ST | W | 11 | 5 | 9 | 6 | 11 | 6 | 7 |
| G | MAIN ST | KINGSTON ST | COURT ST | E | 8 | 3 | 7 | 11 | 6 | 2 | 4 |
| H | MAIN ST | COURT ST | CHURCH ST | W | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| I | MAIN ST | COURT ST | CHURCH ST | E | 6 | 2 | 2 | 5 | 4 | 1 | 0 |
| J | MAIN ST | CHURCH ST | MEREDITH ST | W | 16 | 1 | 6 | 5 | 3 | 2 | 2 |
| K | MAIN ST | CHURCH ST | BRIDGE ST | E | 23 | 9 | 13 | 10 | 7 | 8 | 12 |
| L | MAIN ST | MEREDITH ST | ORCHARD ST | W | 14 | 3 | 5 | 6 | 6 | 4 | 4 |
| M | MAIN ST | BRIDGE ST | ORCHARD ST | E | 11 | 1 | 3 | 5 | 3 | 4 | 0 |
| N | CHURCH ST | MAIN ST | COURT ST | N | 12 | 1 | 9 | 3 | 8 | 4 | 1 |
| O | COURT ST | MAIN ST | 2ND ST | N | 12 | 6 | 9 | 10 | 7 | 3 | 1 |
| P | COURT ST | MAIN ST | 2ND ST | S | 16 | 6 | 7 | 9 | 9 | 5 | 1 |
| Q | 2ND ST | COURT ST | DIVISION ST | W | 13 | 4 | 6 | 10 | 7 | 6 | 3 |
| R | 2ND ST | COURT ST | DIVISION ST | E | 10 | 2 | 6 | 9 | 7 | 5 | 2 |
| S | DIVISION ST | MAIN ST | 2ND ST | S | 11 | 7 | 8 | 14 | 12 | 12 | 11 |
| T | 2ND ST | DIVISION ST | FRANKLIN ST | W | 17 | 3 | 1 | 2 | 1 | 0 | 0 |
| U | 2ND ST | DIVISION ST | FRANKLIN ST | E | 15 | 2 | 2 | 1 | 2 | 1 | 2 |
| | | | | TOTALS | 278 | 62 | 122 | 137 | 124 | 80 | 61 |

# APPENDIX B

## Parking Hardware Brochures

# MK BEACON™


## MKBEACON™ Single Bay Meter

MACKAY METERS™

### Key features:

- Supports single-space or multi-bay parking.
- EMV compliant, PA-DSS certified and FCC approved.
- Accepts coins, credit cards, contactless credit cards and smart cards.
- MacKay's patented SmartChute™ coin validation technology.
- Green Technology - High efficiency solar panel providing long-lasting power to a single, rechargeable battery pack.
- Runs entirely on renewable energy.
- Weatherproof Piezo style keypad.
- Superior design for serviceability providing quick access to components for on-street maintenance.
- Meter components protected in strong, light-weight polycarbonate housing.
- Large high contrast graphics display.
- Bright, front and rear enforcement LEDs can be easily seen from passing enforcement vehicles.
- Night light on front for night use.
- Powerful off-site monitoring capabilities using Sentinel ™ Meter Management System.
- Fits into existing housings or ships with new vault and coin can ready for the street.
- Manufactured under stringent ISO 9001:2008 certified quality process.
- MacKay Meters backs its product lines with a solid warranty based on the confidence in the quality of its products.

<over for specifications>

www.mackaymeters.com

# MK BEACON

# SPECIFICATIONS

**General Specifications**

- Compatible with all MacKay mechanism housings and many competitor's housings.
- Manufactured under ISO 9001:2008 certified quality processes. Strong polycarbonate housing front and stainless steel back.
- Designed to work under extreme environmental conditions.
- Operating temperature range: -22°F (-30°C) to 176°F (80°C).

**Power Source Details**

- High efficiency, solar recharged, lithium-ion battery pack.
- Battery pack is easy to replace on-street without the use of tools.

**Keypad & Human Interface Details**

- Sealed, weather-proof, Piezo style buttons for selecting menu items.
- Standard buttons include an "+" for increase, "-" for decrease, "✓" for accept and "X" for cancel.
- Audible feedback with all button presses.

**Front Graphical Display**

- High contrast and high visibility Liquid Crystal Display (LCD) and Light Emitting Diode (LED) backlight technologies.
- LCD has fully programmable displays and LED back light for effective night-time operation.
- Large 4.25" (108 mm) display.
- Client controlled customizable screens that can be sent remotely using Sentinel™ Meter Management System (MMS)

**Front and Rear LEDs**

- Dual colour (Red/Green) Super Bright LED's on both front and rear.
- Flashing LED visible at distance of 80 feet (24 meters) at night.
- LED "Night light" shines on meter front during dark hours.

**Communication and Data Transfer**

- Supports multiple secure interfaces for communication including:
  - Wireless cellular radio 3G and 4G cellular (HSPA, EVDO, LTE)
  - X-Key programming port
  - Future Expansions

**Coin Payment**

- Patented SmartChute™ coin discriminator proven in hundreds of thousands of meters worldwide.
- 3-coil design provides accurate coin reads and long life.
- Straight-drop/clear view coin chute allows for superior detection and removal of foreign objects.
- Coin chute is easily and quickly replaced/ serviced in the field without the need for special tools.
- Coin chute calibration or chute training is not required.
- Sorts up to 16 different coin/token signatures and uses a single stainless steel entrance slot.
- Can be programmed to detect non-metallic jams such as paper/gum.
- Validates and discriminates coins electronically by two different coil sensors/methods.
- Invalid coin indicator on display.

**Credit Card and Smart Card Payment**

- Single card slot for both credit card and smart card payment.
- Card reader rated at 50,000 insertions and is easily and quickly replaced / serviced in the field without special tools.
- Real time credit card authorization through cellular communications.
- PA-DSS validated.
- Programmable[2] to support numerous ISO7816 compliant smart card payment technologies including:
  - Microprocessor cards
  - Reloadable stored value memory cards
  - Other custom card payment schemes

**Contactless Payment**

- compact module easily serviced/replaced
- EMV compliant reader supports contactless payment applications with the following: Visa® payWave, MasterCard® PayPass™, American Express® ExpressPay®, Discover® Network Zip.
- EMV Certified by major card associations, FCC/CE Certified Class B

**On-Street Serviceability**

- Easy on-street replacement of cellular modem, coin chute, card reader, batteries, contactless reader, and solar panel.

**Transaction Data**

- All operational, maintenance and financial data is sent wirelessly to Sentinel™ MMS.
- Transaction log stores time-stamped data for the last 2,000 coin and/or card transactions.

**Programmable Features**

- Highly flexible rate/tariff/max-time structure including:
  - Up to sixteen (16) defined rates with defined max time for each.
  - Standard rate operation.
  - Time-of-day rate/max time control.
  - Day-of-week rate/max time control.
  - Day-of-year rate/max time control.
  - Progressive/regressive tariffs.
  - Cumulative grace.

**Meter Management System Features**

- Remote programming and monitoring using Sentinel™ MMS.
- Meter revenue audit including credit cards by type, individualized coin counts, plus total invalid coin count.
- Separate time-stamped transaction (coin/card) and maintenance logs for ticket adjudication.
- Transaction log stores time-stamped data for the coin and card transactions.
- Maintenance log stores time-stamped data for the all maintenance events.
- Swapping/moving meters within a meter system.
- Audit disable for coin/card check during:
  - Maintenance/testing.
  - Time/rate programming.
  - Meter maintenance.
  - Meter/post inventory.
- Password protected - user and group level security features.

**Warranty**

J.J. MacKay Canada Limited, the manufacturer, guarantees for a period of one year from the date of shipment against defects in workmanship and/or materials.

**Contact your local representative for further information.**

Easy Access for On-Street Servicing

[1] Certain restrictions and/or costs may apply.

MACKAY METERS™

95LT0000450v9-08/21



**Head Office:**
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**Head Office customer support and technical support:**
Toll free in North America: 1-888-4MACKAY (462-2529)
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Email customer.service@mackaymeters.com
Web www.mackaymeters.com

**Sales Office:**

MacKay mechanism

# MK BEACON™


## MKBEACON™ 2-Bay Meter

MACKAY METERS™

### Key features:

- Supports single-space or multi-bay parking.
- EMV compliant, PA-DSS certified and FCC approved.
- Accepts coins, credit cards, contactless credit cards and smart cards.
- MacKay's patented SmartChute™ coin validation technology.
- Green Technology - High efficiency solar panel providing long-lasting power to a single, rechargeable battery pack.
- Runs entirely on renewable energy.
- Superior design for serviceability providing quick access to components for on-street maintenance.
- Large high contrast graphics display.
- Bright, front and rear enforcement LEDs can be easily seen from passing enforcement vehicles.
- Powerful off-site monitoring capabilities using Sentinel ™ Meter Management System. Monitor your equipment remotely, generate reports, and receive alerts, no matter where you are.
- Fits into existing housings or ships with new vault and coin can ready for the street.
- Manufactured under stringent ISO 9001:2008 certified quality process.
- MacKay Meters backs its product lines with a solid warranty based on the confidence in the quality of its products.

<over for specifications>

www.mackaymeters.com

# MK BEACON™

# SPECIFICATIONS

### General Specifications

- Compatible with all MacKay mechanism housings and many competitor's housings.
- Manufactured under ISO 9001:2008 certified quality processes.
- Designed to work under extreme environmental conditions.
- Operating temperature range:
  -22°F (-30°C) to 176°F (80°C).

### Power Source Details

- High efficiency, solar recharged, lithium-ion battery pack.
- Battery pack is easy to replace on-street without the use of tools.

### Keypad & Human Interface Details

- Sealed weather proof buttons for selecting menu items.
- Standard buttons include an up arrow, down arrow, "✓" for accept and "X" for cancel.
- Audible feedback with all button presses.

### Front Graphical Display

- High contrast and high visibility Liquid Crystal Display (LCD) and Light Emitting Diode (LED) backlight technologies.
- LCD has fully programmable displays and LED back light for effective night-time operation.
- Large 4.25" (108 mm) display.
- Client controlled customizable screens that can be sent remotely using Sentinel™ Meter Management System (MMS)

### Front and Rear LEDs

- Dual colour (Red/Green) Super Bright LED's on both front and rear.
- Flashing LED visible at distance of 80 feet (24 meters) at night.

### Communication and Data Transfer

- Supports multiple secure interfaces for communication including:
  - Wireless cellular radio 3G and 4G cellular (HSPA, EVDO, LTE)
  - X-Key programming port
  - Future Expansions

### LED Night Light

- Bright LED provides light for the buttons and payment options during dark hours.

### Coin Payment

- Patented SmartChute™ coin discriminator proven in hundreds of thousands of meters worldwide.
- 3-coil design provides accurate coin reads and long life.
- Straight-drop/clear view coin chute allows for superior detection and removal of foreign objects.
- Coin chute is easily and quickly replaced/ serviced in the field without the need for special tools.
- Coin chute calibration or chute training is not required.
- Sorts up to 16 different coin/token signatures and uses a single stainless steel entrance slot.
- Can be programmed to detect non-metallic jams such as paper/gum.
- Validates and discriminates coins electronically by two different coil sensors/methods.
- Invalid coin indicator on display.

### Credit Card and Smart Card Payment

- Single card slot for both credit card and smart card payment.
- Card reader rated at 50,000 insertions and is easily and quickly replaced / serviced in the field without special tools.
- Real time credit card authorization through cellular communications.
- PA-DSS validated.
- Angled insertion design to prevent water ingress.
- Programmable[2] to support numerous ISO7816 compliant smart card payment technologies including:
  - Microprocessor cards
  - Reloadable stored value memory cards
  - Other custom card payment schemes

### Contactless Payment

- compact module easily serviced/replaced
- EMV compliant reader supports contactless payment applications with the following: Visa® payWave, MasterCard® PayPass™, American Express® ExpressPay®, Discover® Network Zip.
- EMV Certified by major card associations, FCC/CE Certified Class B

### On-Street Serviceability

- Easy on-street replacement of cellular modem, coin chute,

### Programmable Features

- Highly flexible rate/tariff/max-time structure including:
  - Up to sixteen (16) defined rates with defined max time for each.
  - Standard rate operation.
  - Time-of-day rate/max time control.
  - Day-of-week rate/max time control.
  - Day-of-year rate/max time control.
  - Progressive/regressive tariffs.
  - Cumulative grace.

### Transaction Data

- All operational, maintenance and financial data is sent wirelessly to Sentinel™ MMS.
- Transaction log stores time-stamped data for the last 2,000 coin and/or card transactions.

### Meter Management System Features

- Remote programming and monitoring using Sentinel™ MMS.
- Meter revenue audit including credit cards by type, individualized coin counts, plus total invalid coin count.
- Separate time-stamped transaction (coin/card) and maintenance logs for ticket adjudication.
- Transaction log stores time-stamped data for the coin and card transactions.
- Maintenance log stores time-stamped data for the all maintenance events.
- Swapping/moving meters within a meter system.
- Audit disable for coin/card check during:
  - Maintenance/testing.
  - Time/rate programming.
  - Meter maintenance.
  - Meter/post inventory.
- Password protected - user and group level security features.

### Warranty

J.J. MacKay Canada Limited, the manufacturer, guarantees for a period of one year from the date of shipment against defects in workmanship and/or materials.

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Easy Access for On-Street Servicing

[1] Certain restrictions and/or costs may apply.

MACKAY METERS™

95LT0000450-09/21



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Email customer.service@mackaymeters.com
Web www.mackaymeters.com

**Sales Office:**

MacKay mechanism

# MacKay TANGO™


## MacKay TANGO™

MACKAY METERS™

### Key features:

- High strength stainless steel keeps it secure and rust free.
- Flexible, modular design that is easy to upgrade, service and maintain.
- Powerful off-site monitoring capabilities by adding a communications kit and Sentinel ™ Meter Management System. Monitor your equipment remotely, generate reports, and receive alerts, no matter where you are.
- Comprehensive and easy-to-use configuration menus.
- ADA Compliant.
- Features a large Liquid Crystal Display with back light, capable of displaying graphics.
- English? Español? Français? The multi-language capability allows users to select the language of their choice to carry out transactions.
- Optional credit card payment. Offer end users security, convenience, and reject fraudulent payment. Use MacKay's On-line Real-time Credit Card Approval feature utilizing secure PCI compliant electronic payment processes.
- MacKay Meters backs its product lines with a solid warranty based on the confidence in the quality of its products.

<over for specifications>

www.mackaymeters.com

MacKay TANGO™

# SPECIFICATIONS


## GENERAL SPECIFICATIONS

### Environmental

- Extended operating temperature range[1]: -30°C (-22°F) to +50°C (+122°F)
- Humidity: Up to 95% RH (non condensing)

### Cabinet Materials, Dimensions & Weight

- Welded reinforced Grade 304-2B stainless steel (9 gauge carbon steel equivalence)[2] for cabinet and doors
- Aluminium front with Lexan® display covers for the LCD screens, rate/instruction plate, LED panel and site branding display
- Overall dimensions: 1359 mm (53.5 inches) (H) x 315 mm (12.4 inches) (W) x 349mm (13.75 inches) (D)
- Weight (without battery) 72 Kg (160 lbs)

### Power Supply Configurations/Options

- Solar powered with commercially available battery
- AC Single Phase, 110/120VAC, 50/60 Hz

### Communication Options

- Cellular wireless technology supporting GPRS or CDMA modem[3]

### Payment Systems

- Coins
- Tokens (optional)
- Credit cards utilizing secure, on-line real-time PCI compliant processes (optional)
- MacKay Smart (Chip) Cards (optional)
- Cell phone payment (optional)

### Ticket Printing

- Thermal printer offers alphanumeric printing in various fonts and languages

## COMPONENTS

### Display

- High contrast, color, sunlight readable, 320 x 240 pixels graphics LCD
- Viewing area 114mm (4.5 inches) x 89mm (3.5 inches)

### Coin Acceptor

- Programmable: Accepts up to 16 coins or tokens
- 3-coil design provides accurate coin reads and long life.
- Straight drop coin chute allows for superior detection and removal of foreign objects.
- High security, stainless steel coin box that holds 4.2 L or approximately 2400 US quarters.
- Escrow and coin return holds up to 50 quarters

### Card Reader (Optional)

- Single slot, dual mode card reader captures magnetic stripe (ISO 7810/11) credit card data, and provides an ISO 7816 interface for smart card acceptance
- EMV upgradeable

### Keypads & Buttons

- Alphanumeric keypad
- Vandal resistant and rated for resistance to impact, shock and vibration to MIL standards
- Sealed against ingress of water and dust to IP67, and designed for exposed outdoor and extreme environmental conditions

### Printer

- Heavy-duty printer head with minimal moving parts ensuring quality, reliability and endurance
- Print life of over 20 million character lines
- Designed for high-resolution printing
- Guillotine type cutter with full or partial paper cutting options (software selectable)
- Accessible for ease of maintenance

## FEATURES

### Security

- High security locks for cash box, cash vault, and main door
- System monitored access sensors on main and vault doors and sensor detecting presence of cash box

### Audit and Statistic

- Remote monitoring of grand totals and subtotals for coins and card transactions per type
- Full or quick audit tickets are software selectable

### Maintenance

- User-friendly graphic interface tools for diagnostics, configuration and editing
- Easy access modular design

### Web-Based Hosted Sentinel™ Meter Management System

- Remotely monitor and generate audit, transaction and occupancy reports for all on-street equipment using a web browser and secure web portal
- Generates a variety of reports including grand totals and subtotals for coins and card transactions per type, which can be exported as PDF or CSV files, or imported into other applications

### Warranty

J.J. MacKay Canada Limited, the manufacturer, guarantees for a period of one year from the date of shipment against defects in workmanship and /or materials.

As our policy is one of continuous product improvement and development, we reserve the right to alter product specification and design.

Photos are representative; product appearance may differ.

[1] All MacKay Tango™ components are operational within this range. Standard sealed lead acid battery operational temperature rating is from -20C (-4F) to 50C (122F) when charging, and from -20C (-4F) to 60C (140F) when discharging.
[2] Independent laboratory tests indicate that all things being equal, a component made of 11-gauge 304-2B stainless steel, would have equal or greater tensile strength, shear strength and malleability, as compared to the same component made out of 9-gauge carbon steel.



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**Sales Office:**

MACKAY METERS™

MacKay multi-space

# Luke® II

## MULTI-SPACE PAY STATION FOR ON-AND OFF-STREET PARKING ENVIRONMENTS

Public and private operators are realizing the benefits of multi-space pay stations: increased revenue, reduced operational costs, and superior customer service, to name just a few. Consumers also enjoy the added convenience, diverse-payment options, and ease of use provided by pay stations. The Luke® II pay station is highly secure, flexible, and suitable for both on-and off-street deployments. Luke II fulfills customer service expectations and delivers superior performance and significant contributions to operators' top and bottom line.

### Luke II Features For Parkers

- Range of convenient payment options such as coins, bills, credit cards, smart cards, passcards (value cards, campus cards), coupons, and Pay-by-Phone services
- Contactless payments for rapid parking transactions
- Extend-by-Phone service provides expiry reminders and the ability to add time via mobile phone
- Large color screen that is easy to read
- Prompts in multiple languages
- Ability to pay for parking or add time using any pay station in the system
- Coin escrow refunds consumers' money upon a cancelled transaction
- 38-key full alphanumeric keypad for easy license plate entry
- Easily recognizable design identifies machine as a parking pay station

### Luke II Features For Parking Operators

- Separate maintenance and collections compartment for enhanced security
- Theft-resistant design to protect coin, bills, and internal components
- Enhanced locking mechanism and electronic lock support for added security
- PCI compliant and PA-DSS validated system ensures credit card data security
- Pay-and-Display, Pay-by-Space, and Pay-by-License Plate on the same pay station
- Remote configuration of rates and policies saves time and money
- Integration with leading parking technology partners for a complete solution
- Flexible rate structures and diverse payment options can increase revenue
- Reduced maintenance and collections costs
- Real-time credit card processing to reduce processing fees and eliminate bad debt
- Real-time reporting and alarming
- Complete audit trail and rich analytics

## ABOUT T2 SYSTEMS

T2 Systems is the largest parking technology provider in North America, with more than 24 years in the parking industry and currently serving thousands of parking professionals. T2 integrates the best people, processes, and technology for powerful, high performance, and secure parking solutions. Its open technology and processes are used to manage more than 200 million parking transactions for over 2 billion dollars annually across all 50 states and ten provinces in Canada. Customers rely on T2 for multi-space pay stations, permit management, enforcement, LPR, PARCS, business intelligence, vehicle counting, citation services, and event parking.

**To learn more about T2's reliable and innovative parking technology solutions, visit T2systems.com.**

# LUKE II SPECIFICATIONS

| | |
|---|---|
| **Cabinet** | *12 gauge cold rolled steel protected with an anti-corrosion coating* |
| **Payment Options** | *Coins, bills, credit cards, contactless payments, smart cards, value cards, campus cards, coupons, Pay-by-Phone services; coin escrow optional* |
| **Card Reader** | *Cards are not ingested - no moving parts; reads Tracks 1, 2, and 3 of all magnetic stripe cards conforming to ISO 7810 and 7811; reads and writes to chip-based smart cards conforming to ISO 7810 and 7816* |
| **Bill Stacker** | *1,000-bill capacity (U.S. only)* |
| **Printer** | *2" receipt width* |
| **Display** | *Color backlit LCD with 640x480 resolution* |
| **Keypad** | *38-key alphanumeric with tactile buttons* |
| **Locks** | *Can be re-keyed twice without removal of lock cylinder; electronic locks optional* |
| **Access** | *Separate compartments for maintenance and collections* |
| **Communication Options** | *GSM, CDMA, Ethernet* |
| **Environmental Requirements** | *-40°F to 140°F (-40°C to 60°C)*; relative humidity: up to 95%* |
| **Power** | *120 VAC; slimline solar panel optional* |
| **Operational Modes** | *Pay-and Display, Pay-by-Space, Pay-by-License Plate* |
| **Multilingual Support** | *Up to four languages using Roman or non-Roman characters* |
| **Audible Alarm** | *Sense shock and vibration* |
| **Color** | *Charcoal gray; additional colors optional* |
| **Standards** | *UL/CSA approved, ADA compliant, PCI compliant, PA-DSS validated* |

**Standard**

Charcoal Gray

**Premium**

Jet Black

Pebble Gray

Racing Green

Marine Blue

Citrus Yellow

**Using separately purchased heater/insulator option. Low end of range is -4°F (-20°C) ambient without heater/insulator option.*

FLOWBIRD
Urban Intelligence

WWW.FLOWBIRD.GROUP



# CWT S4+

MORE THAN A PAY STATION

# Technical Specifications

**KEY HIGHLIGHTS**

- **COLOR TOUCH SCREEN OPTION**
- **STAINLESS STEEL - *CORROSION RESISTANT***
- **MODULAR DESIGN**

| | |
|---|---|
| **GENERAL DESIGN** | |
| **MATERIAL** | 304 stainless steel; Powder coated with anti-graffiti design |
| **SIZE** | (HxWxD) 61.22” x 16.42” x 15.35” |
| **WEIGHT** | 229 pounds |
| **TEMP/HUMIDITY** | 0 ºF to 140 ºF (-31 ºF with main heater)/ Up to 97% humidity |
| **COLOR** | Standard - Black (Custom colors and wraps also available) |
| **COMPLIANCE** | EN 12414, CE, FCC, ISO 9001, ISO |
| **USER INTERFACE** | |
| **LIGHTING** | Front face lighting option available |
| **DISPLAY OPTIONS** | • 9.7” (S4+) 9" (S4) Color Touch Screen<br>• 7” Color Display<br>• 6.6” Monochrome Display |
| **LANGUAGE** | Multiple languages supported |
| **KEYPAD** (*for non-Touch Screen models*) | • 4 software-controlled buttons below the display<br>• Piezo keypad and buttons (Alphanumeric keyboard with up to 48 buttons) |
| **PAYMENT OPTIONS** | |
| **COIN PAYMENT** | • Up to 16 coins/tokens, three switch controlled, reprogrammable<br>• Mechanical coin slot shutter with inductive loop |
| **BANK NOTE PAYMENT** | 4-way note insertion; single bill escrow |
| **CARD PAYMENT** | Magnetic stripe, EVM chip card, and contactless card acceptance |
| **OTHER** | Cashless configuration available |
| **COLLECTION** | • Electronic lock option<br>• Coin canister capacity: 2,600 quarters<br>• Bill stacker capacity options: 500 or 1,000 notes |
| **POWER SUPPLY** | • Battery (12 V DC)<br>• Solar (12 V, 13.6 W)<br>• Mains (230 V/115 V AC) |
| **SECURITY** | • 4 point locking system<br>• Cash vault: 0.24” hardened steel, drilling protected locking latches |
| **TICKET** | • Thermo-electric printer, graphics supported, landscape or portrait.<br>• Paper Roll: 2.95” - 5.90” Length, 2.24” Width; 3,000 per roll for 4” tickets |
| **COMMUNICATIONS** | GPRS, 3G LAN Supported, 4G Supported |
| **REMOTE MANAGEMENT** | Connected to Flowbird back-office suite; rates are remotely configurable |

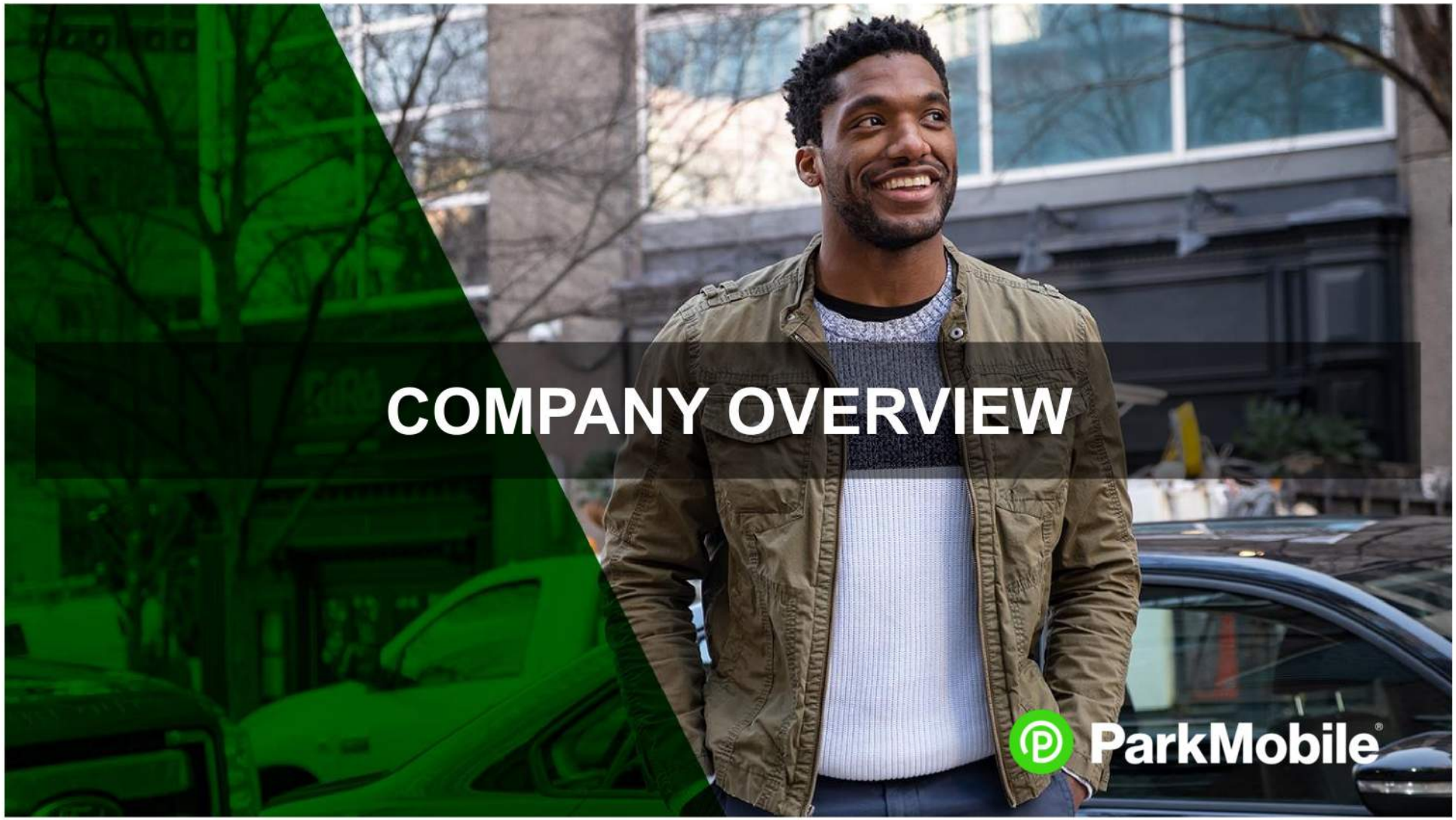
# APPENDIX C

## Mobile Parking Application Brochures

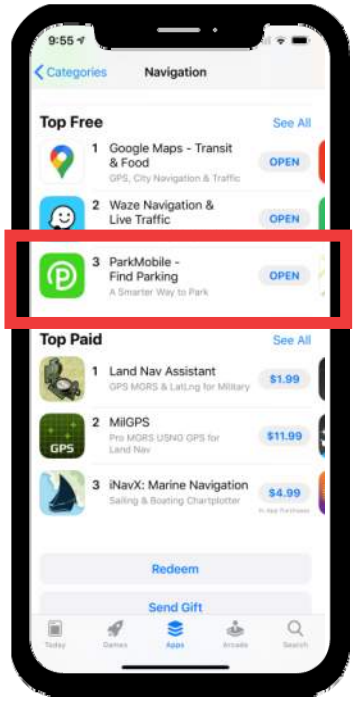
ParkMobile®

# Powering Smart Mobility for Delhi, NY

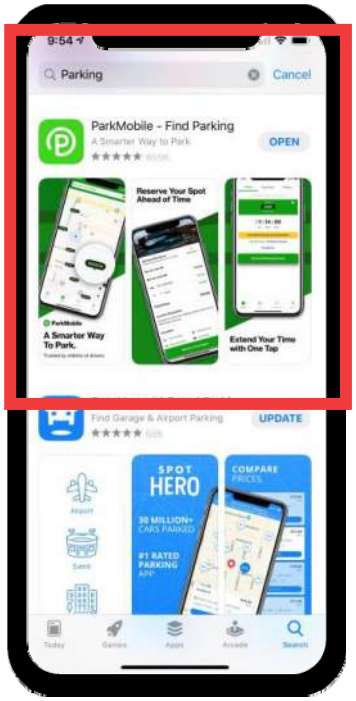

October 11, 2022


COMPANY OVERVIEW
ParkMobile

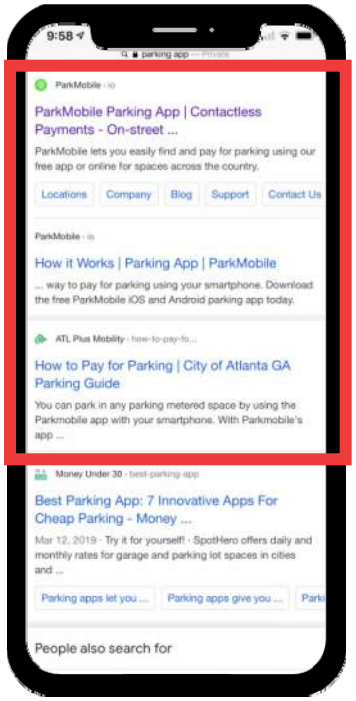
# The #1 App for Contactless Parking Payments




**#3 ranking** in app store "Navigation" category




**#1 ranking** in app stores for "parking" and "parking app"




**#1 Google** ranking for "parking app" and other key search terms

# PARKMOBILE BY THE NUMBERS

**40 Million+**
USERS NATIONWIDE

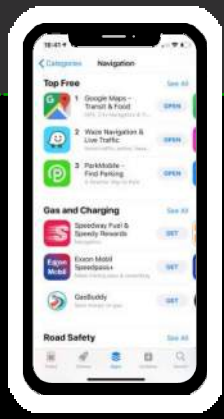
**12 Million+**
MONTHLY TRANSACTIONS

**500+**
CITIES & MUNICIPALITIES

**50**
OF THE TOP 100 CITIES

**25+**
AIRPORTS

**150+**
UNIVERSITIES




- **Ranked #3** in the Navigation category of the app store only behind Waze and Google Maps
- Adopted by over **1 in 13 U.S. drivers**
- 25% of users engage with the app as they **travel to different markets**


INNOVATION
ParkMobile®

# Integrated to the Entire Mobility Ecosystem

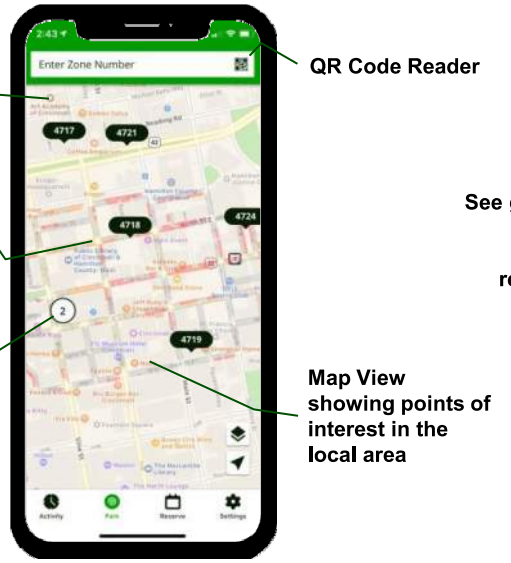
- Integrated into 100+ different systems including:


THE CUSTOMER JOURNEY
ParkMobile

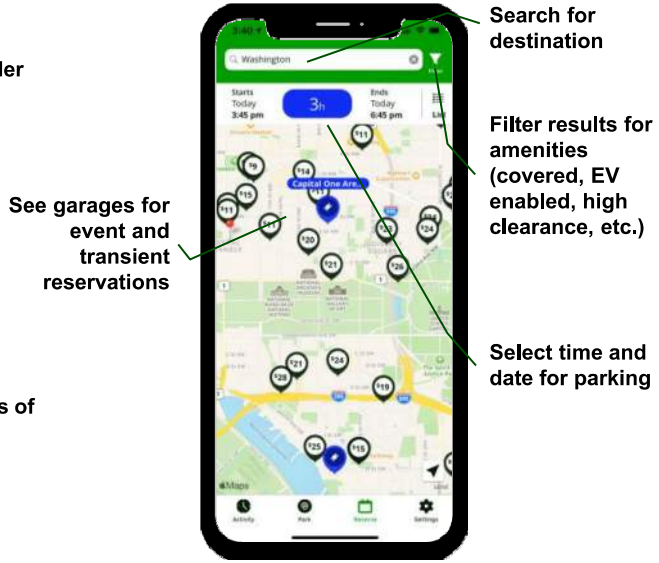
# The Most Feature Rich, Flexible And User-friendly Mobility Solution In The Industry

## More functionalities address all driver needs and use cases

### Zone Parking




### Reservations




## Other features

- Find My Car
- Off-Street Gate Access
- Notifications
- Manage vehicles
- Add and remove payment methods
- Account History
- IVR Phone Number
- 24/7/365 Customer Support
- Extend time

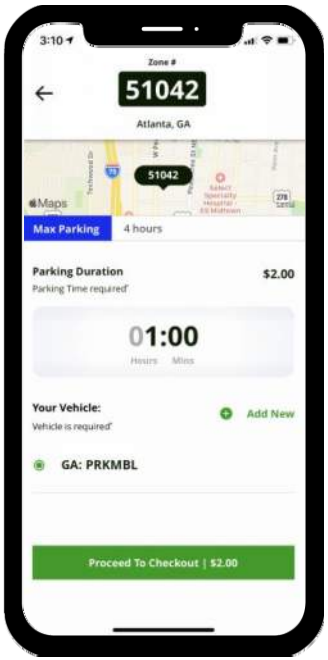
ParkMobile

# ParkMobile On-Demand Parking

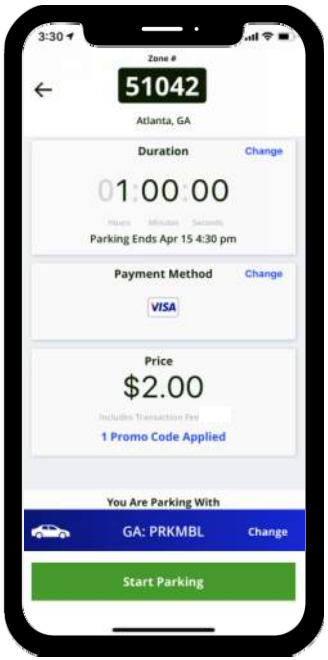
## Enhancing transparency and removing friction


Register or Login

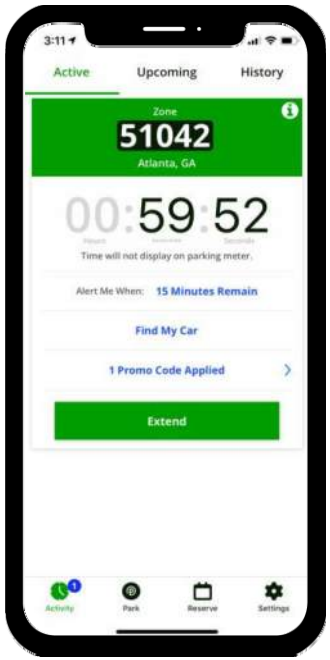

Select or Enter ParkMobile Zone




Choose Parking Time, Vehicle and Payment Method




Confirm Information and Start Parking



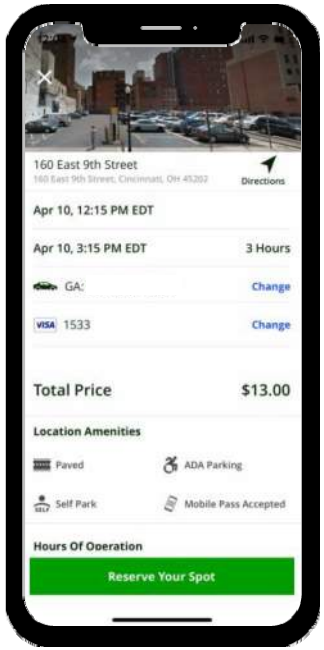

Know how much time you have left. Extend time remotely

ParkMobile

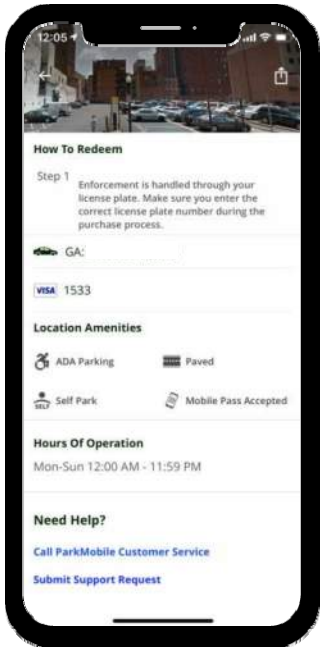
# Reservations

## An easy and intuitive user flow for reservations

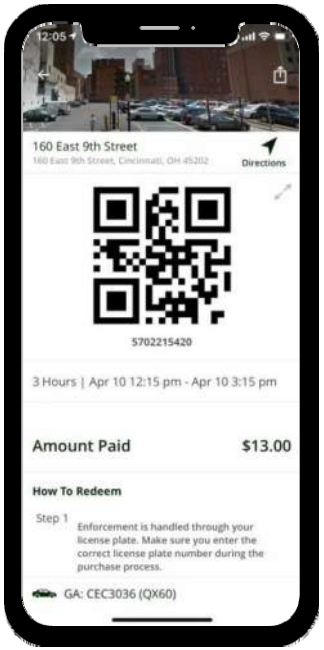

Reserve Parking Tab



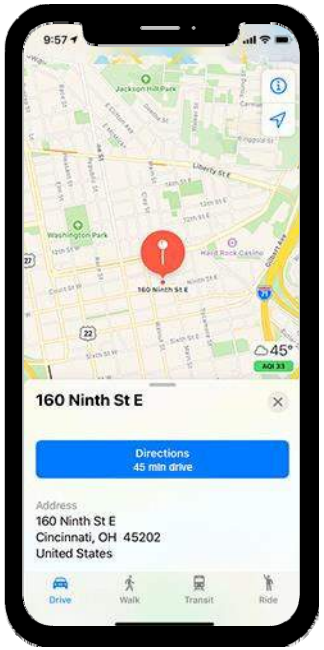

Detailed Description of Facility




Reserve and Receive Redemption Instructions




QR Code for Event Entry




Get Turn-by-Turn Directions

ParkMobile

# ParkMobile Gives More Options for Contactless Payments

Looking to provide more **contactless payment options** in your city or facility?

ParkMobile now offers multiple ways for your customers to pay for parking, making it easier than ever to go contactless. People can pay by app, web, or even text, whichever way they choose.

# Equitable Access for Patrons Without Smartphones, Credit, or Debit Cards

Pay for parking by calling, by PayPal, or by prepaid card

## An Equitable Experience

- **No smartphone?** Drivers who don't own a smartphone can easily pay for parking by calling a toll-free IVR number and making a payment over the phone.
- **No credit or debit card?** Drivers without a credit card can use PayPal to connect a bank account or use a prepaid card as payment
- **Unbanked?** Use a prepaid card or a reloadable prepaid card from a retailer like GreenDot or NetSpend.



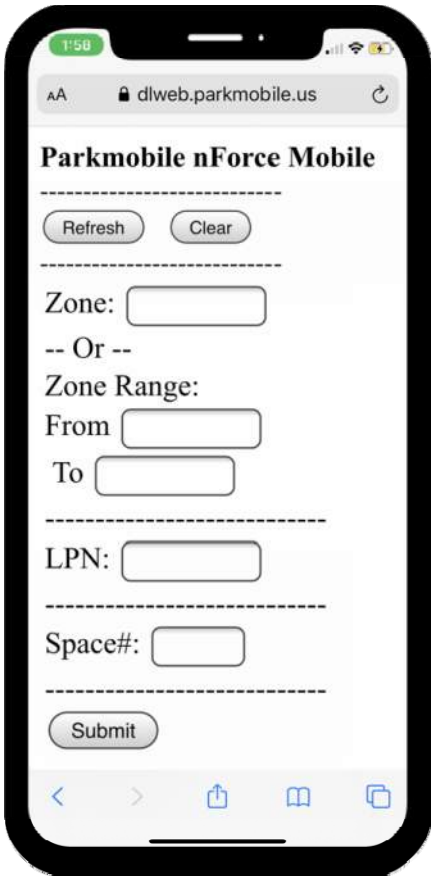

ParkMobile

# Enforcement with ParkMobile nForce

**ParkMobile nForce** enables your enforcement team to check that the vehicles parked on-street or in lots have paid for parking. Your enforcement team can use this solution in the field to verify parking payment prior to issuing a citation or other penalty.

**ParkMobile nForce** can be accessed via any internet-enabled mobile device. It will show all active ParkMobile parking sessions in real-time.

If you use another enforcement solution that integrates with ParkMobile, you may not need access to ParkMobile nForce. In these cases, nForce serves as a backup for your primary enforcement solution.



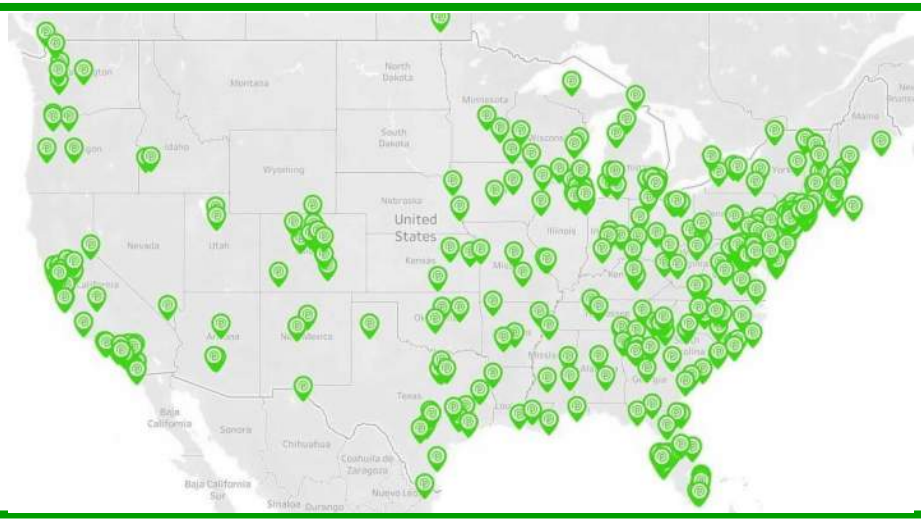
# Best Customer Support in the Industry

- Our Member Services team is available 24/7/365 and ready to assist whenever our customers need it.
- Our Level 1 PCI compliant call center ensures customer data is fully secured.
- ParkMobile maintains a multi-channel call center with in-house phone, email, web and in-app chat, social media & bilingual support.
- Our call center services nearly 25,000 customers per month, answering more than 85% of our calls within 30 seconds with an average of 20 seconds.
- ParkMobile maintains a minimum average Customer Satisfaction score of 90% for all interactions involving Member Services.

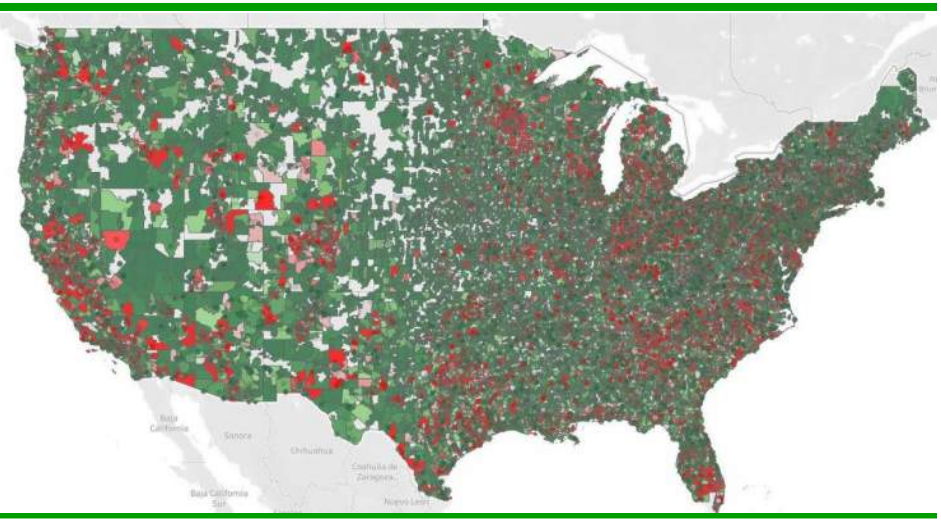

ParkMobile
PARKMOBILE FOOTPRINT

# ParkMobile is the National Market Leader

The ParkMobile network connects drivers to the **largest network** of mobility related services in the U.S., with parking in over 500 cities including **8 of the top 10** in the U.S.



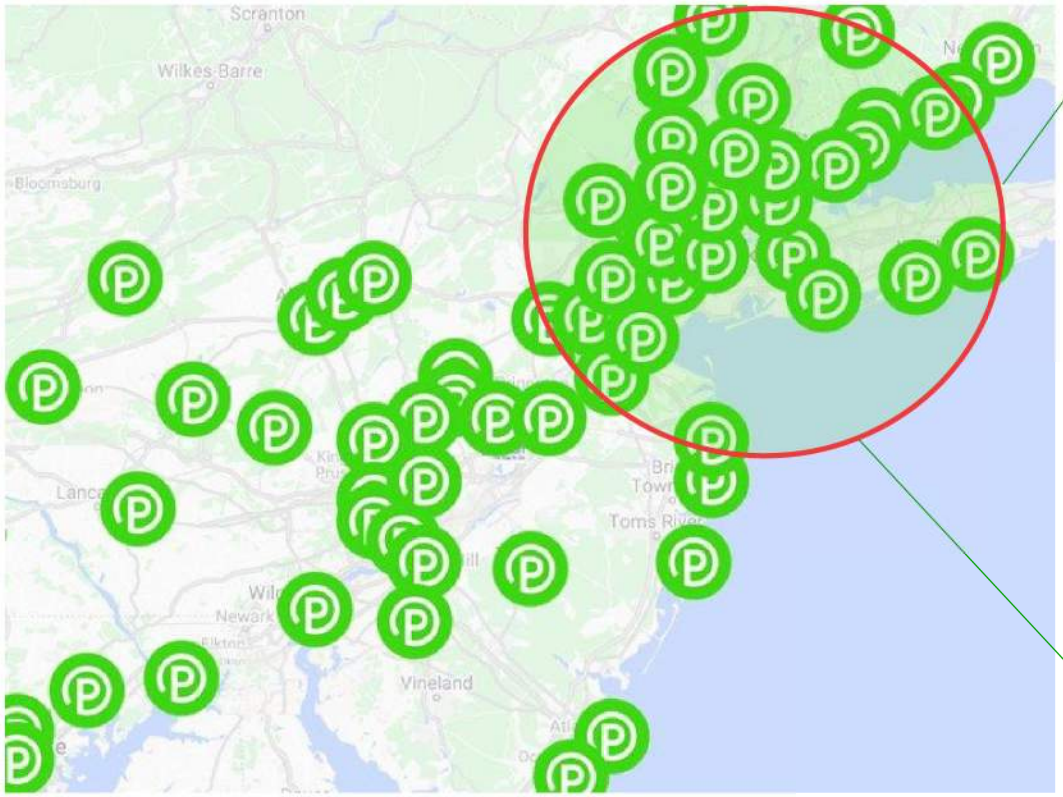

**Parking Suppliers**



**Consumers**

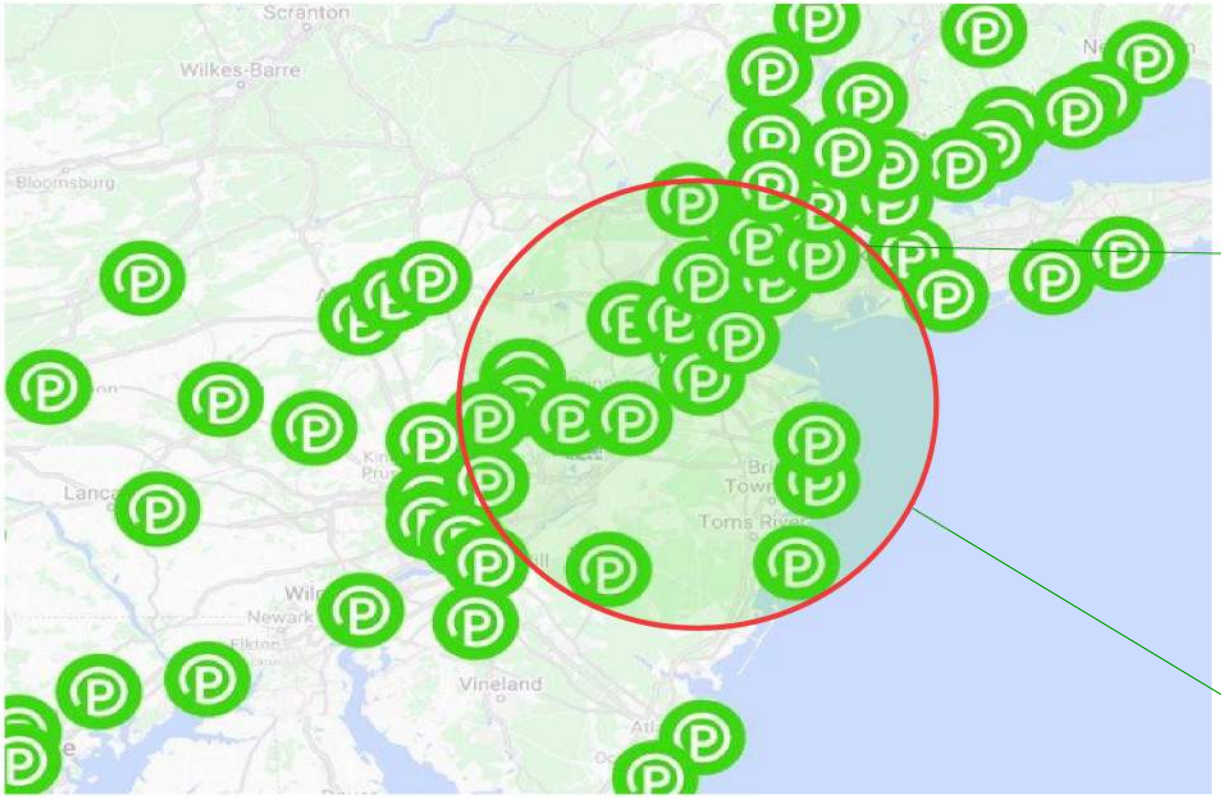
**25%** of ParkMobile members use our app as they travel across markets

# The ParkMobile Network In New York




| New York Clients | |
|---|---|
| Yonkers | New Rochelle |
| Cornell University | West New York |
| Mamaroneck | Nyack |
| Ithaca | Pay2Park Buffalo |
| Lefrak City Queens | Islip Downtown |
| Great Neck Plaza | Dobbs Ferry |
| Patchogue | Cronton Harmon Station |
| Syracuse | Hastings on Hudson |
| SUNY | Rochester Institute |
| Orangetown | Lake George |
| Brockport | Rochester |
| Ardsley | Suffern |
| Elmsford | East Hampton |
| Cold Spring | Tuxedo |
| Freeport | Islip Marina |
| Islip Train Station | Islip Dock |
| Sag Harbor | Cornwall on Hudson |
| Goodspeed Parking | SP Plus NY |
| Alfred | LAZ Fleetwood. |

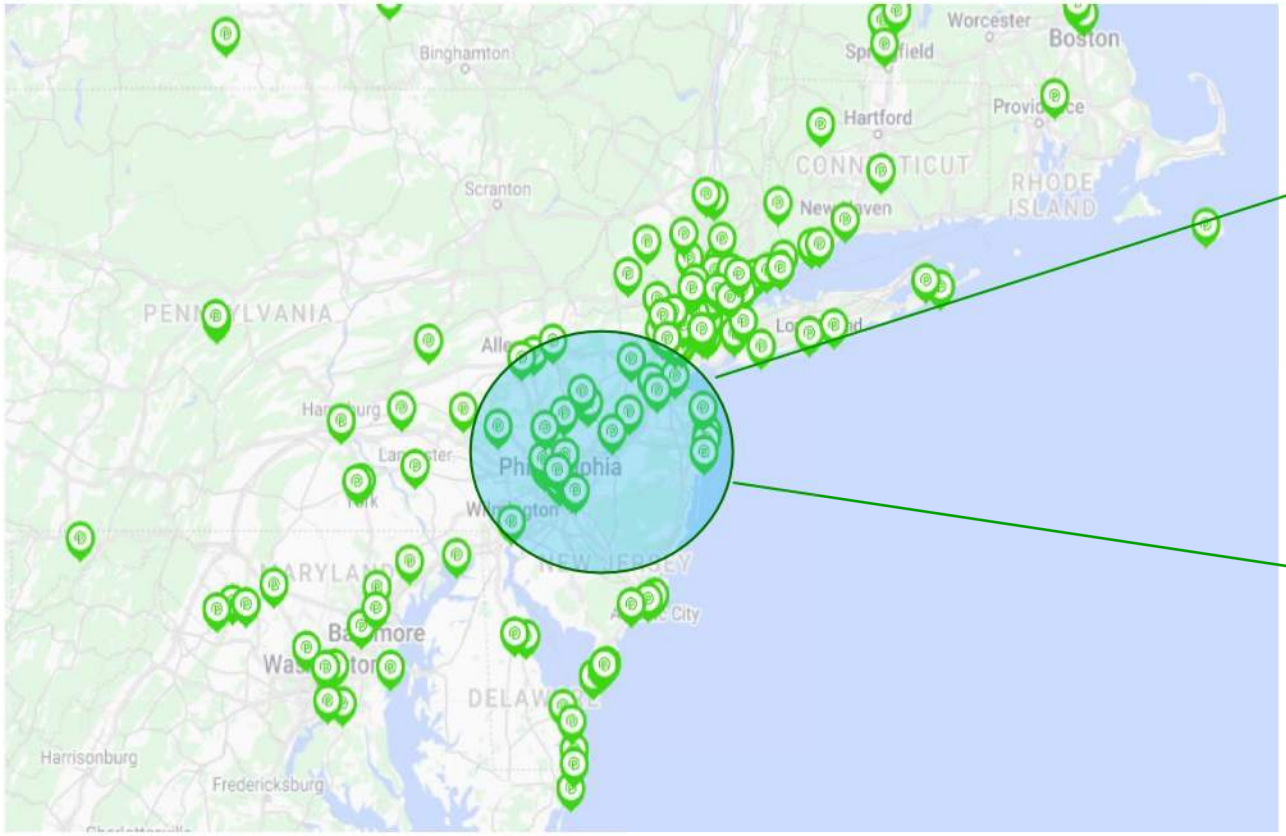
# The ParkMobile Network In New Jersey




## New Jersey Clients

| | |
|---|---|
| Bloomfield | Montclair |
| Boonton | New Brunswick |
| Caldwell | Newark |
| Cape May | Ocean City |
| Chatham | Perth Amboy |
| East Orange | Ridgewood |
| Englewood | Summit |
| Fair Lawn | Union City |
| Glen Rock | Verona |
| Guttenberg | West New York |
| Hoboken | Wildwood |
| Jersey City | Wildwood Crest |
| Lambertville | North Wildwood |
| Atlantic City | Belmar |
| Westwood | Passaic |
| Little Silver | Harrison |
| Collingswood | East Brunswick |
| Ho-Ho-Kus | Asbury Park |
| South Orange | Ventnor City |

# The ParkMobile Network - Pennsylvania.




## ParkMobile Clients

| Regional | |
|---|---|
| New Jersey | New York |
| Ohio | Maryland |
| Delaware | Connecticut |
| **PA Municipalities** | |
| Pittsburgh | Philadelphia Parking Authority |
| Lower Merion Township | Jenkintown |
| Conshohocken | Lansdale |
| Doylestown | Pottstown |
| New Hope | Reading |
| Allentown | Bethlehem |
| Easton | Lancaster |
| Lebanon | Pottsville |
| York | West York |
| Harrisburg | University Park |
| Mt. Lebanon | Bridgeville |


PAYMENT PROCESSING
ParkMobile

# Structured, Secured, and Privacy Compliant

**ParkMobile maintains the broadest certifications and highest levels of insurance coverage in the industry**

- ✓ **SSAE 16** – Statements of Standards for Attestations Engagements
- ✓ **PCI DSS Level 1** – Payment Card Industry Data Security Standard
- ✓ **ISO 9001 2015** – Quality Management Certification
- ✓ Cyber Insurance of $15,000,000+
- ✓ Compliant with new privacy regulations - PIPEDA (Canada) and CCPA (California)





# A Smarter Way to Process Parking Payments

ParkMobile is the leading provider in parking payment solutions, processing over 8 million transactions every month. In fact, we process more transactions under $10 than any other company in the U.S.

## Current ParkMobile Payment Integrations

BridgePay Network Solutions

PayPal

TSYS

point&pay

payment express

Elavon

TNS Transaction Network Services

CHASE

(Chase Paymentech and Chase Spectrum)

Heartland Payment Systems

(Heartland Bolletta and Heartland SpiDR)

First Data

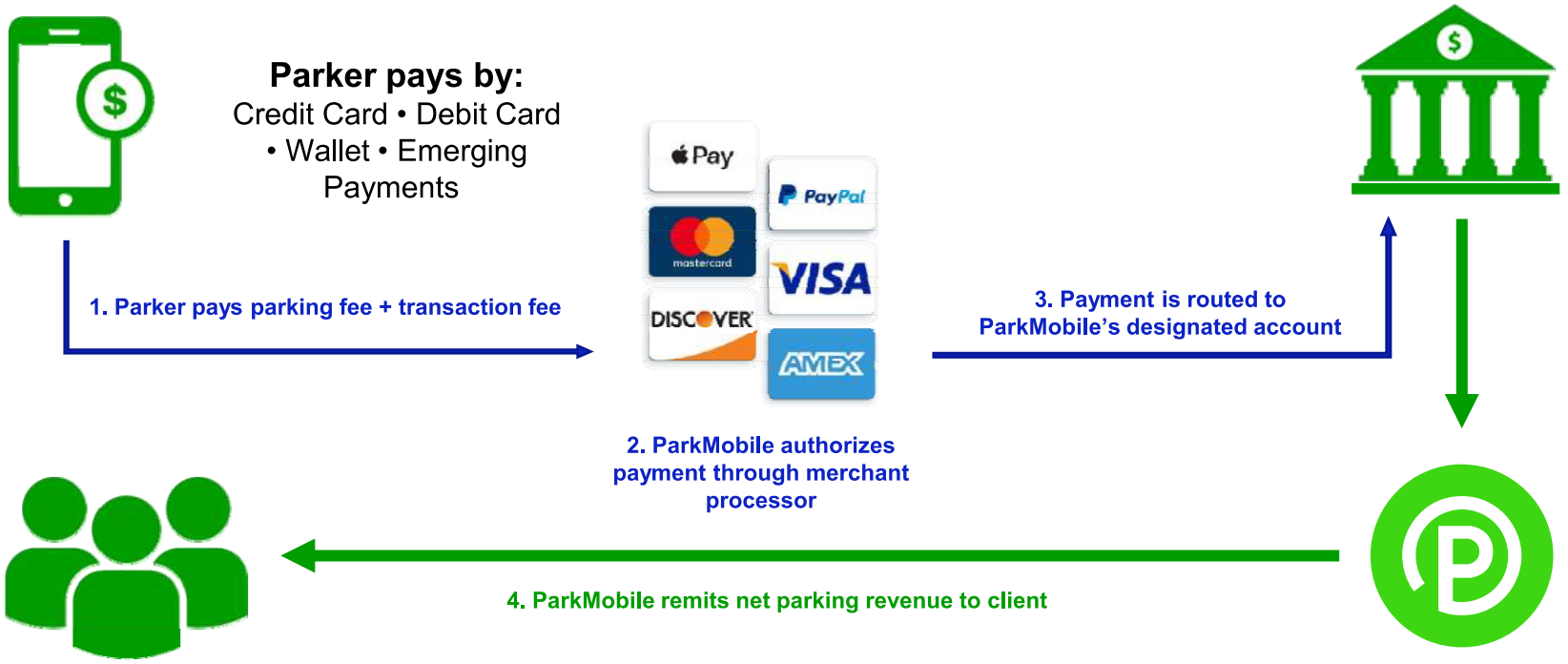
(Rapid Connect, First Data Nashville, and CardConnect)

worldpay

(Vantiv and Fifth Third)

3C Payment

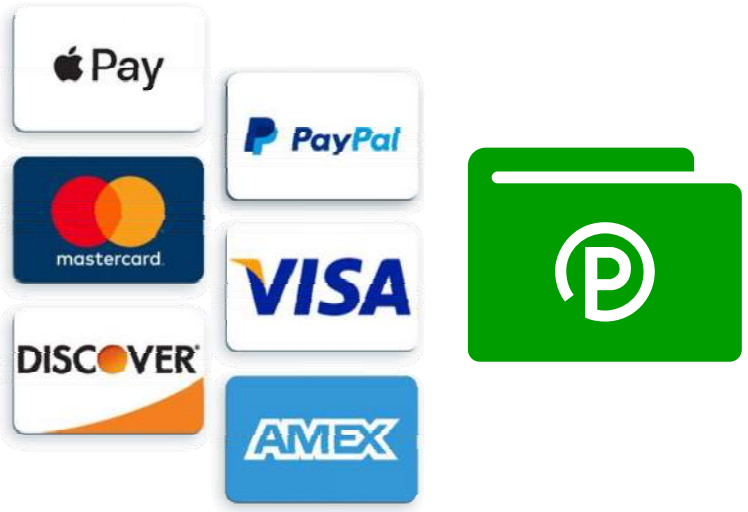
# Money Flow if ParkMobile is Merchant of Record



# Why Use ParkMobile for Payment Processing?

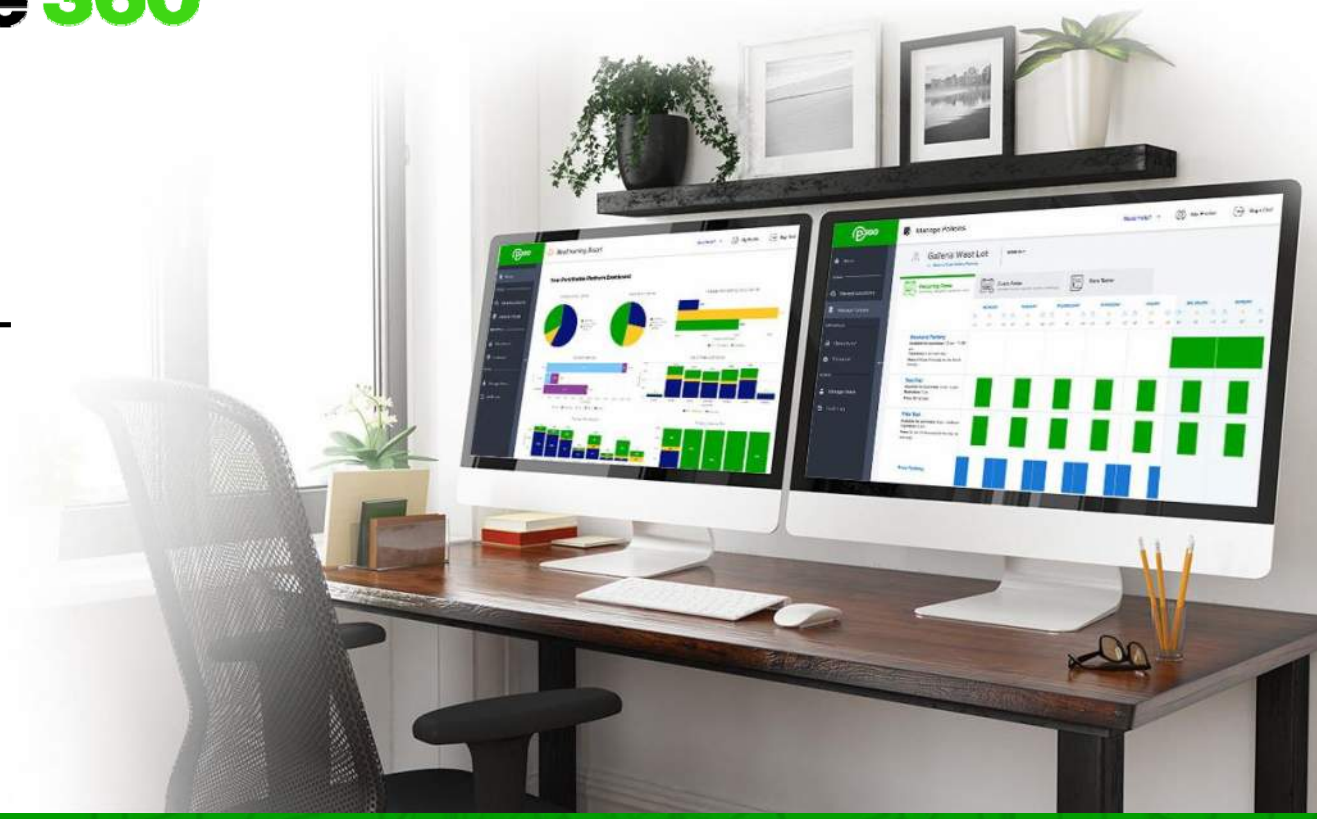
- Easy Configuration
- Cost Transparency
- Merchant of Record Assistance
- Information Protection
- Reporting Features
- Pre-Loaded Wallet Option

**Payment Types Accepted by ParkMobile**



# ParkMobile® 360

## ADMINISTRATION & ANALYTICS PORTAL

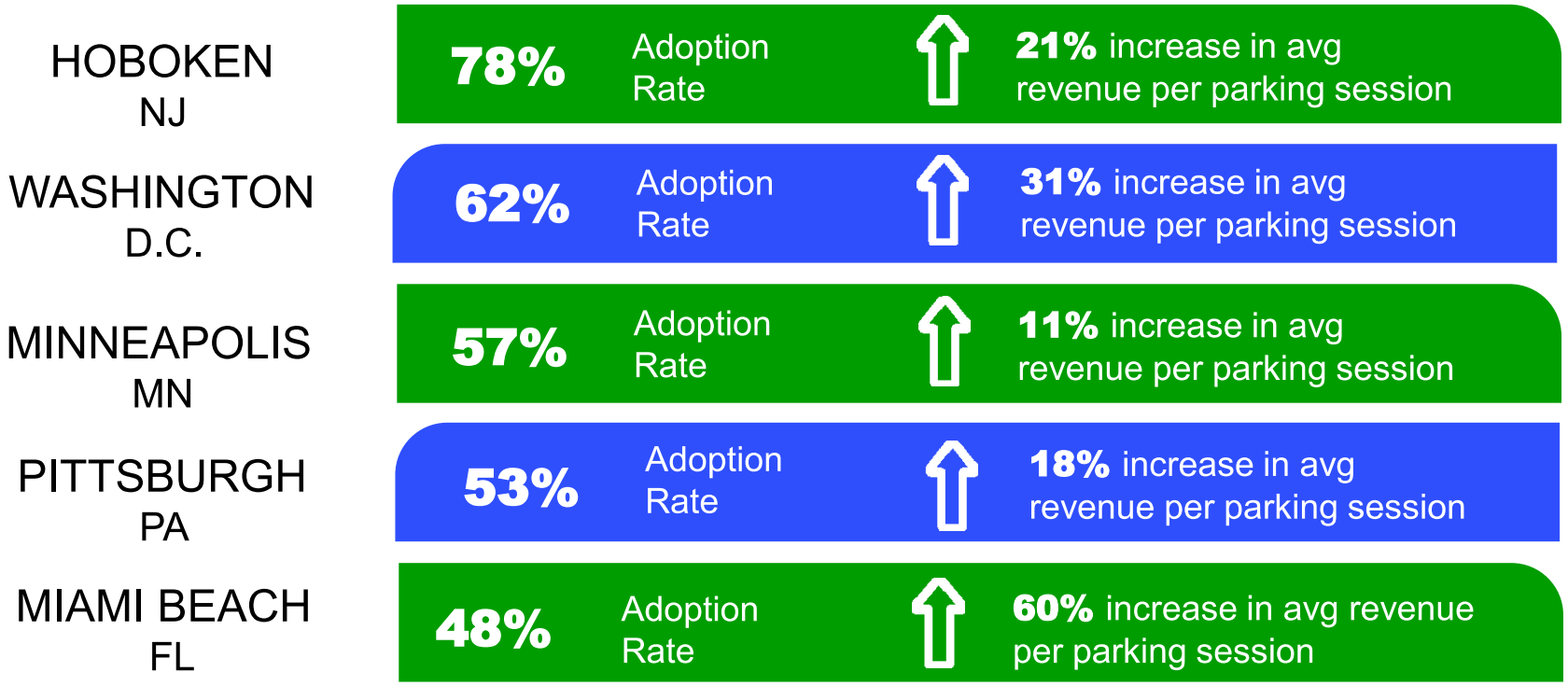


# ParkMobile 360 Operations Management Platform


ParkMobile


ParkMobile
Reservations
Accepted Here
Questions?
877-727-5457
ParkMobile.io
AUTOMOBILE
TRAFFIC ONLY
NO
AUTOMOBILE
TRAFFIC ONLY
ADOPTION
ParkMobile

# Driving the Highest Adoption and Revenue Per Session




MARKETING
Skip the Line.
Pay By App Parking
Download
ParkMobile App
ParkMobile
ParkMobile®

# End-to-End Engagement and Activation

- ParkMobile deploys and embeds sophisticated marketing technology, tools and tactics in every step of the consumer cycle, driving awareness, adoption and sustained growth
- Our experienced team delivers results significantly above all competitors in the market

## Awareness

- ✓ Signage
- ✓ Local Media
- ✓ Wallet Cards
- ✓ Advertising


## Adoption

- ✓ Welcome Email
- ✓ Demos
- ✓ In-App Messaging


## Engagement

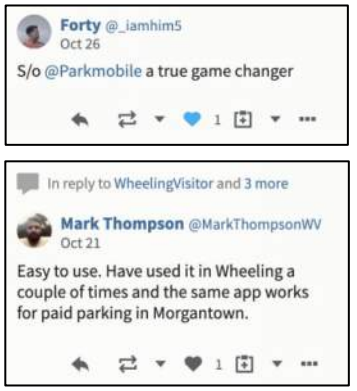
- ✓ Geo-Fencing and Geo-Targeting
- ✓ Event Notifications
- ✓ Push Triggers
- ✓ Facebook Ads


## Retention

- ✓ ParkMobile Pro
- ✓ Promotions
- ✓ Re-engagement
- ✓ News & Updates


## Advocacy

- ✓ App store reviews
- ✓ Social media
- ✓ Refer a Friend



# Why ParkMobile?

1. **Users:** ParkMobile has the **largest customer base in the US** with 40 million users and adding +1M every month. We have a large base of existing customers in North America and throughout North America who already use the app – this makes launching your program similar to "flipping a switch" and parking revenue will start flowing in.

2. **Functionality:** ParkMobile is the **only** solution to offer customers OnDemand mobile payments, prepaid reservations, location services and on-street parking availability all in a single app.

3. **Experience:** Unmatched record successfully launching complex markets nationally (LA, DFW, Atlanta, NYC, Washington DC, Boston, Philadelphia, Chicago, Houston, St. Louis, Orlando)

4. **Integrations:** We're integrated with every piece of the parking ecosystem so your operation will be streamlined and future proof.

5. **Commitment:** Dedicated support, marketing, and commitment to a successful launch during and after implementation.

# ParkMobile (NCPA) Pricing as of October 11, 2022

- **ZONE PARKING (NCPA Price)**
- Convenience fee paid by customer - $.30 cents
- MOR fee - 3% + $.15 of total Transaction

**(Some clients pass some or all of the $.15 to customer as part of the convenience fee.)**

**RESERVATIONS**/Monthly permit fee - 12% of total transaction.

To avoid the RFP process many municipalities join the National Cooperative Purchasing Alliance: https://www.ncpa.us/

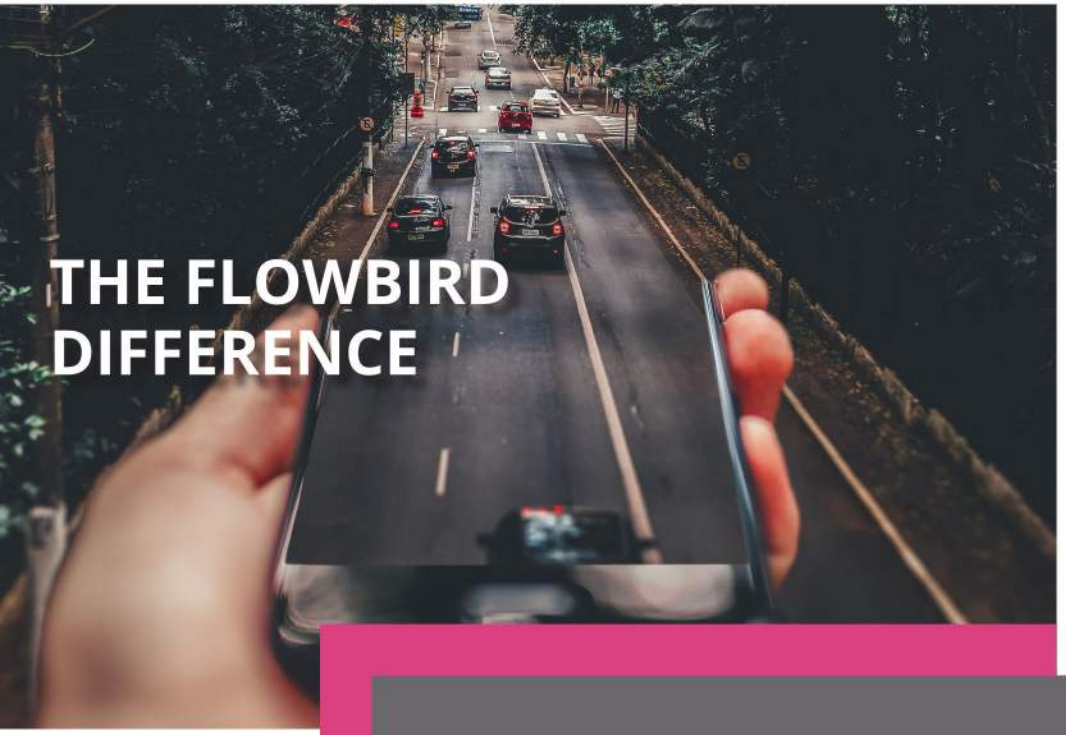
ParkMobile is a vendor and member of NCPA.


# Flowbird App

The revolutionary, multi-function app platform designed to improve downtown mobility.

GET IT ON Google Play

Download on the App Store



# THE FLOWBIRD DIFFERENCE

## Feature Rich and Simple to Use

### Curb Management
Manage the curb on your terms. Users may select their location via zone, machine number or GIS location within the app. The choice is yours.

### Parking Pressure
Functionality that displays street maps where users are most likely to find parking.

### Find My Car
Provides walking directions back to your vehicle.

### E-Wallet
Allows users to load money onto a virtual parking payment account.

### Validation Codes
Allows the Town or local merchants to distribute validation codes to app users so they don't have to pay for parking.

### Bluetooth
Bluetooth and QR code capabilities offer drivers a frictionless parking experience.

### In-Car Payments
Via Apple Carplay and Siri Payment.

### White Labeling
Customizes the app to match your Agency branding.

**We've made things personal.**

## Superior Functionality

**FLEXIBILITY**
Payment and account management through iPhone, Android, mobile web, or desktop web

**SECURITY**
Password protected access integrated with Face ID, Touch ID and Facebook credentials

**NOTIFICATIONS**
Time expiration reminders with ability for the end-user to customize the alert time on their phone or Apple Watch

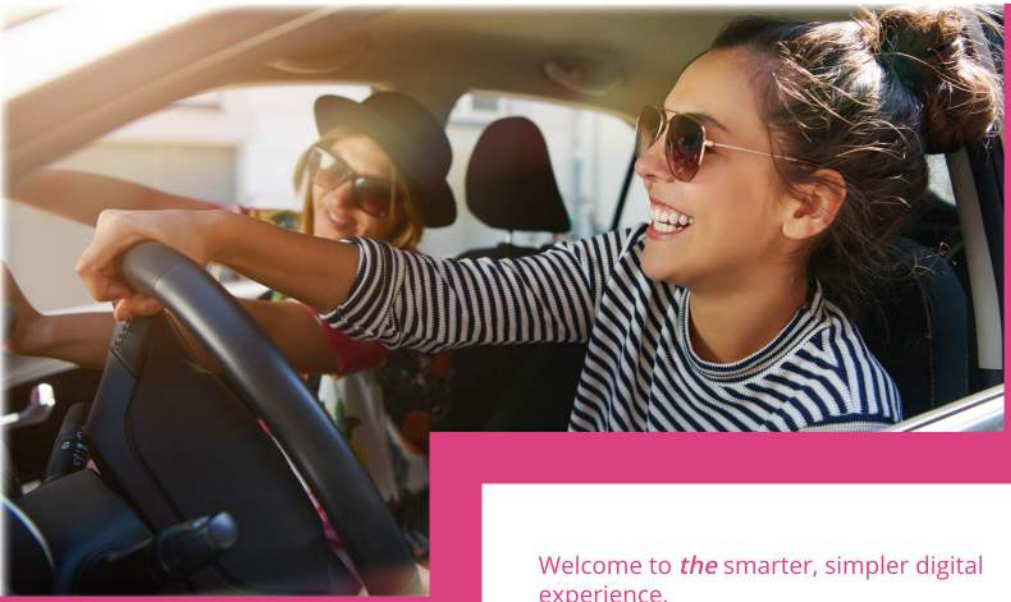
**EXTEND**
Add time from anywhere up to the maximum time limit


GPS BASED

VALIDATION CODES

IN CAR PAYMENTS

# MORE THAN A MOBILITY APP



**1.3 MILLION**
**Mobile Users**

**25+ MILLION**
**Transactions/Year**

**600+**
**Mobile Clients Worldwide**

**$4 MILLION**
**Invested in Mobile Platform R & D**

Welcome to ***the*** smarter, simpler digital experience.

Flowbird is a leader in mobility systems providing parking and transit solutions worldwide. This allows us to offer a wide variety of mobility solutions that can be centralized within a single, digital, open platform. Imagine providing your customers one app offering all possible mobility services!

# A MOBILITY COMPANION

## On-Street Parking

Manage the curb with an app that provides fast and secure payment, real-time pricing information, and accurate parking availability to reduce traffic congestion.

## Off-Street Parking

Find, Reserve, and Pay in garages and parking lots. By integrating Bluetooth and QR code capabilities, drivers can experience a frictionless parking experience.

## Transit

Fare payment made simple! Multi-product selection and multiple tickets in the same transaction makes paying for fares ultra-quick. A QR code is provided for integration with validators or handheld enforcement devices.

## Park Admissions

Keep up your customer communications even in unattended areas! Sell Admission Passes, Camp Site Reservations, Ferry Ride tickets and more. Display news, events, and emergency announcements remotely all on one multi-use kiosk.

MAKE EDUCATED DECISIONS WITH

# FLEXIBILITY . . .

# & SCALABILITY

Flowbird's integrated data hub provides a macro-view of the entire parking ecosystem, bringing you unparalleled insights into parking behavior.

We help you benefit from the data you collect by connecting, relating, interpreting and presenting it in one simple interface.

As part of Flowbird's Digital Services platform, you have access to one of the world's most integrative data hubs.

Browse user data.
Receive timely historical insights.
Make confident, educated decisions.


**Predictive Trends**
Explore parking trends & utilization patterns

**Historical Knowledge**
Get relevant information from Big Data analysis

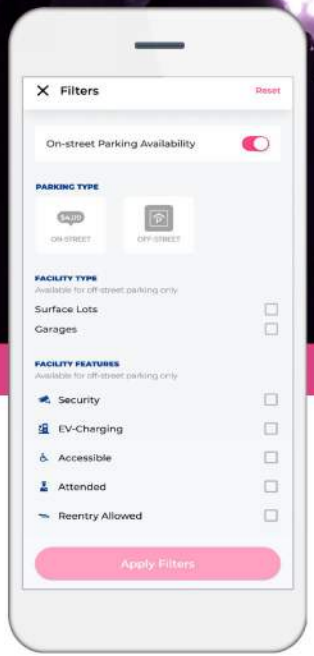
**Data Visualizations**
Spatial data analytics with advanced filtering

# DON'T BE LATE TO THE PARTY

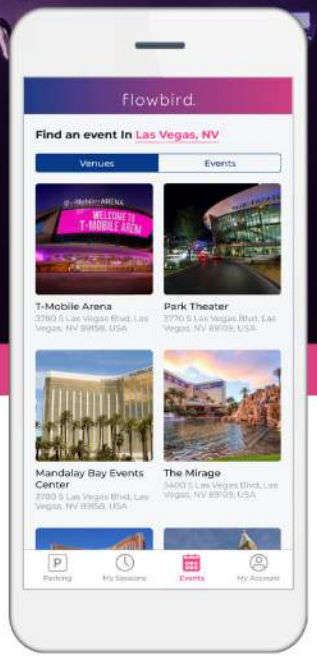
**Flowbird and Arrive** have joined forces to offer a "state of the art" solution for the US market to manage parking. Our ecosystem allows for complete control and remote management of:

- Event and Venue based reservations
- A frictionless experience at the parking facility with pre-validated ID's
- Integration with gated systems

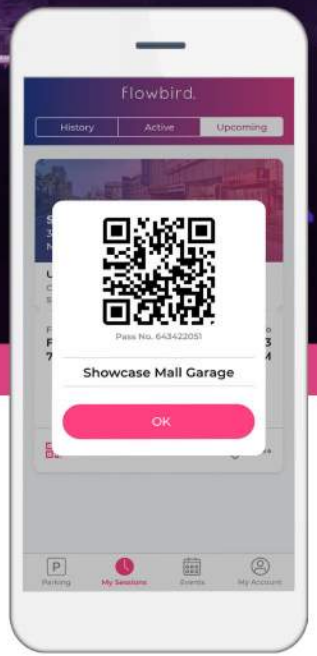

Find parking easier and quicker by having visibility into on and off-street parking availability in one platform.




Highlight parking inventory and pricing and allow the driver to evaluate and choose between different options.




Users can search for parking locations by events that will be happening in their area. The app will display specific features (e.g. accessibility, EV charging, security) about local facilities.




Parking reservations allow users to decide and pay for the parking garage or lot of their choice before they leave their home.

# URBAN MOBILITY PARTNERS WORLDWIDE

*5,000+ partners in 75+ countries around the world.*

## Las Vegas

Flowbird stepped in to replace the city's mobile payment system with an enhanced mobility app. Now parkers can make on-street payments and enjoy a frictionless off-street experience, for a seamless and personalized user journey.

## Paris

The City of Paris has been a Flowbird client for more than two decades. Flowbird systems help City staff control parking in 80,000 spaces downtown. The Flowbird app was recently added as a user-friendly payment option for parkers looking for added convenience.

## Detroit

White branded as the 'ParkDetroit' app, the Flowbird solution allows drivers to search for optimal parking on a GPS enabled map, displaying the prices of all on and off-street locations. The Flowbird platform manages the integration of meter and mobile payments with the City's enforcement system.

## Niagara Falls

Flowbird is a key mobile phone provider with 17 million transactions per year. Flowbird acts as the 'hub' for other providers towards enforcement systems, dispatching pricing policies and parking rules to the mobile phone providers.

## Hong Kong

The Flowbird App platform was designed, deployed, and now managed in one of the world's most densely populated regions - Hong Kong. Flowbird provides innovative payment means with providers such as Union Pay, Alipay, WeChat integration and real-time on-street occupancy.

## Brussels

Flowbird manages the multi-app parking solution for 19 cities across the country of Belgium, with the City of Brussels as the largest city in the system, centralizing 8 different mobile app providers. Flowbird consolidates the reporting and analysis of all transactions and integration with the enforcement solution, including the license plate recognition system.

*Innovating to make downtown travel simpler, safer, and faster.*

Flowbird.

40 Twosome Dr, Moorestown, NJ 08057
13190 56th Ct. #401 Clearwater, FL 33760
1-855-FLOWBRD | www.Flowbird.group

Passport

Parking

# Parking Management Software

## Digital parking has never been so simple.

Built for cities, private operators, and universities, Passport's Parking Management Software helps you manage parking inventory with components to scale your entire operation.

Our digital parking solution makes it easy for your customers to park and pay. Your entire team is going to thank you for implementing the most efficient, cost saving, real-time parking management system available on the market.

### CORE BENEFITS

**Streamlines Operations**

**Scalable Solution As You Grow**

**Improves Customer and Staff Experiences**

### PARKING. SIMPLIFIED.

Passport's digital parking solution is packed with innovative parking management and payment features to help you manage your entire parking operations efficiently.

### KEY CAPABILITIES

**Back Office**

- » Transaction reporting
- » Revenue reporting
- » Peak demand widget
- » Real-time dashboarding
- » Zone activity reporting
- » Support module
- » Downloadable reports
- » Customer service capabilities (session search, customer account management)

**Passport Parking App**

- » iOS, Android and mobile web apps integration
- » Reminder notifications, email receipts and remote session extensions
- » Direct integrations with leading providers of enforcement and LPR software
- » Merchant processing and gateway services
- » A convenient and self-service merchant portal where local businesses can print validation codes for their customers
- » End-user support tools consisting of self-guided FAQs
- » White label capabilities

**Schedule a demo to see Passport's Parking Management Software solution in action or visit passportinc.com/product/parking for more information.**

Stay Connected

Passport Labs, Inc, 128 S. Tryon St #1000, Charlotte, NC 28202 passportinc.com sales@passportinc.com

GPI

**Many Talents** One Firm

gpinet.com