First Street Area Parking Planning Study

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June 14, 2019

First Street Area Parking Planning Study

The City of Cambridge retained the services of Kleinfelder, lead engineering and public outreach consultants, and McMahon Associates (McMahon), transportation planning and engineering consultants, to prepare an evaluation of the current parking supply in the vicinity of the First Street Garage located in the East Cambridge neighborhood of Cambridge, Massachusetts.

Study Purpose

The City of Cambridge seeks to study the parking utilization patterns of existing on-street and off-street parking in the area around the First Street parking garage, located at 55 First Street. The study was initiated based on a request received by the City to lease 420 unassigned parking spaces and approximately 9,000 square feet of ground floor area intended for a retail use, in the City-owned First Street Garage for a period of 30 years. Based on a public meeting held on October 30, 2018, City Councillors and residents of the East Cambridge neighborhood have expressed a desire to better understand parking availability in the area and the impact that leasing 420 unassigned parking spaces in the First Street Garage could have on parking supply and demand in the future, both at the garage specifically and more generally in the adjacent neighborhood.

The results of the parking utilization study will inform discussions and decision-making associated with the potential disposition of the 420 unassigned parking spaces and approximately 9,000 square feet of ground floor area intended for retail use.

Study Area & Parking Inventory

The original study area is within the following boundaries:

- Linskey Way to the south;
- Land Boulevard to the east;
- Third Street to the west; and
- Monsignor O'Brien Highway to the north.

A subsequent subarea (expanded study area) was added for analysis in response to comments from the community open house held on Tuesday, March 26, 2019. At this meeting the public showed interest in seeing parking utilization data in the residential neighborhood west of the First Street Garage, between Third Street and Fifth Street. This subarea contained the following boundaries, to capture more

of the adjacent residential neighborhood as well as the streets directly adjacent to the First Street Garage to provide a second day of utilization data:

- First Street to the east;
- Otis Street to the north;
- Hurley Street to the south; and
- Fifth Street to the west.

Although every block is unique, this subarea was also intended to provide a sense of parking availability in the overall East Cambridge residential neighborhood. Further information on the community open house and results of the public outreach process are provided in **Appendix A**.

The study area includes all on-street parking on both sides of the street within the entire study area (both original study area and expanded study area) as well as a representative sample of off-street parking lots and garages. All curbside regulations were inventoried and are listed in **Table 1**. **Table 2** provides a list of off-street parking included in the analysis, which was both inventoried in the field and analyzed based on available data and reports.

The complete inventory of all on-street and off-street parking is depicted in **Figure 1: Study Area Map.**

The original study area included 650 on-street parking spaces. An additional 351 spaces in the expanded study area west of Third Street were included in the April 2019 utilization data collection, which totals 1,001 on-street parking spaces.

The entire study area includes the following parking:

- 1,001 on-street parking spaces (curbside)
- 5,707 off-street parking spaces (privately owned garages and lots)
- 1,110 parking spaces in the First Street Garage (City of Cambridge)

For the most part, on-street parking is signed, but not delineated with striping, with the exception of metered parking spaces. For un-striped areas, an estimate of the number of parking spaces was determined by block face, taking into account driveway locations and setbacks from intersecting streets, assuming 18-feet per parking space.

Types of on-street parking in the study area include:

On-Street Parking

Types of on-street parking in the study area include:

- ***Two-hour meter parking, effective:***
  9:00 A.M. to 5:00 P.M., or
  8:00 A.M. to 6:00 P.M.
- ***Two-hour meter/permit parking:***
  Meter from 8:00 A.M. to 6:00 P.M.
  Residential permit parking from 6:00 P.M. to 8:00 A.M. except on Sundays
- ***Two-hour non-metered parking:***
  8:00 A.M. to 6:00 P.M.
- ***Residential permit parking***
- ***Unregulated parking***
- ***Accessible parking***
- ***Traffic/municipal vehicle parking (Thorndike Street)***
- ***Best Buy in-store pick-up (Cambridgeside Place east of First Street. Note that Cambridgeside Place is a private way not under the jurisdiction of the City).***
- ***Loading zone regulations are typically in place from 8:00 A.M. to 6:00 P.M.***

FIGURE 1: STUDY AREA MAP

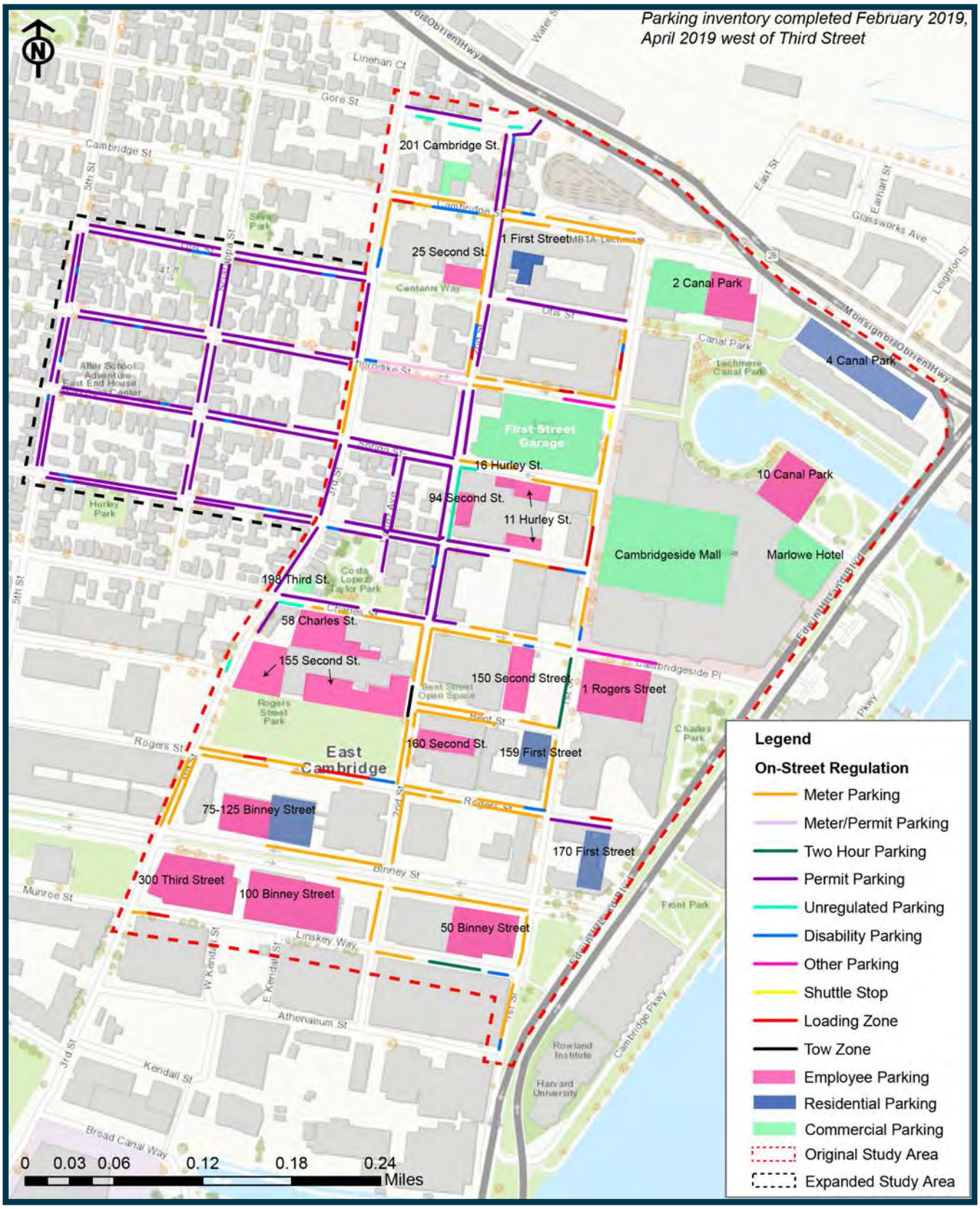


TABLE 1: ON-STREET PARKING REGULATIONS

Regulation Type	Total Spaces – Original Study Area	Total Spaces – Additional Study Area	
Resident Permit	228	338	
Accessible (HP)	26	13	
Meter/Permit	10	0	
Meter	313	0	
Two-Hour (unmetered)	16	0	
Unregulated	22	0	
Loading	18	0	
Tow Zone (7a.m. – 6p.m.)	5	0	
Other	12	0	
Shuttle Stop	1	0	
TOTAL SPACES:	**650**	**351**	**1,001**

(does not include shuttle stop)

TABLE 2: OFF-STREET PARKING SUMMARY (EXCLUDING FIRST STREET GARAGE)

Parking Area	Spaces	Land Use	Data Source
11 Hurley St.	29	Employee	Field Collection
16 Hurley St.	6	Employee	Field Collection
94 Second St.	11	Employee	Field Collection
10 Canal Park	32	Employee	Field Collection
201 Cambridge St.	15	Commercial	Field Collection
25 Second St.	22	Employee	Field Collection
198 Third St.	8	Commercial	Field Collection
58 Charles St.	63	Employee	Field Collection
155 Second St.	102	Employee	Field Collection
160 Second St.	25	Employee	Field Collection
Marlowe Hotel	42	Commercial	Field Collection
2 Canal Park	47	Commercial – Public Garage	Report
2 Canal Park	80	Employee – Private Garage	Report
4 Canal Park	220	Residential	Property Owner
1Rogers Street	656	Employee	Report
159 First Street	65	Residential	Report
170 First Street	276	Residential	Property Owner
100 Binney Street	185	Employee	Report
50 Binney Street	899	Employee	Report
75-125 Binney Street	397	Employee/Residential	Report
1 First Street	200	Residential	Report
CambridgeSide mall	1293	Commercial – Lower Garage	Report
Cambridge Side mall	795	Commercial – Upper Garage	Report
150 Second Street	93	Employee	Report
300 Third Street	146	Employee	Report
TOTAL SPACES:	**5,707**		

The parking locations listed in **Table 2** were selected to inform off-street parking utilization in the study area. They were selected based on a review of the off-street parking data provided by the City, a field inventory, and on their proximity to the First Street Garage.[1] Parking use information for each facility was provided by the City,[2] and are defined as:

- **Employee:** Parking for employees of a specific employer
- **Commercial:** Parking available to the public, but may be owned by a private entity
- **Residential:** Parking available for residents of a specific location

Off-street parking data was collected in the field at the eleven locations noted in **Table 2** (identified as "Field Collection" in the Data Source column). Parking utilization information for the remaining parking areas was extracted from reports and data provided by the City of Cambridge.[3] The total parking inventoried by land use type is provided in **Table 3.**

TABLE 3: OFF-STREET PARKING BY LAND USE TYPE

Land Use	Number of Spaces
Employee	2,677
Commercial	2,200
Residential	830
Total	**5,707**

Data Collection Methodology

The curbside inventory and on-street parking utilization data were collected using the GIS-based ArcCollector App, a mobile application that was accessed on tablets in the field. On-street parking utilization data was collected on one weekday and one Saturday for the original study area. A second weekday data collection followed for the expanded study area on-street parking, in response to comments at the community open house for additional data in the blocks adjacent to the First Street Garage and in the residential neighborhood west of the garage.

The off-street parking inventory and utilization data were collected using paper maps and inventory sheets. Off-street parking utilization data was collected over one weekday and one Saturday. Weekdays and Saturdays were chosen to understand residential, employee, and commercial parking demand in the study area to provide insight on the availability of resident parking, and employees and visitors of local businesses at different times of day. Residential and retail parking demand is likely to be captured over the course of a "typical weekday" whereas restaurant parking may be higher on a Friday or Saturday evening.

Weekdays Tuesday through Thursday, and Saturdays were selected for data collection to capture demand over the course of a representative weekday and a representative weekend day. Dates were selected to best represent typical parking patterns, avoiding school vacation week and President's Day, Valentine's Day, the Patriot's Super Bowl Parade, snow fall, and street sweeping in the study area. To obtain a representative sample of parking demand, the dates and time periods listed in **Table 4** were selected for on-street and off-street parking counts.

TABLE 4: FIELD COLLECTION DATES AND TIMES

On-Street Data Collection		Off-Street Data Collection	
Date	**Times**	**Date**	**Times**
Tuesday February 26	6 AM – 12 AM every hour	Wednesday February 13	8 AM – 8 PM every two hours
Saturday March 9	6 AM – 12 AM every hour	Saturday February 9	8 AM – 8 PM every two hours
Tuesday April 9*	9 AM – 11PM every hour	N/A	N/A

* Supplemental data collection day in response to public comments received at the March 26, 2019 community open house. Includes the expanded area bounded by First Street to the east, Otis Street to the north, Hurley Street to the south, and Fifth Street to the west.

1 List of off-street parking facilities provided by the City of Cambridge via email on January 11, 2019. The off-street inventory contains the majority of off-street parking facilities in the area. Some smaller, privately owned surface parking lots were excluded.

2 City of Cambridge email January 24, 2019. For facilities with multiple land uses the following assumptions were made: 2 Canal Park (47 commer- cial spaces, 80 employee spaces) 75-125 Binney Street (328 employee spaces, 69 residential spaces).

3 Utilization for 4 Canal Park and 170 First Street was provided by property owners to the City and assumed to be the same for weekdays and Saturdays.

Occupancy for each parking space was recorded in increments of 1-hour for on-street parking and every 2-hours for off-street parking throughout the observation periods. Study area utilization maps, showing the percentage of parking utilized at each time period, are provided in **Appendix B** for the weekday analysis and **Appendix C** for the Saturday analysis.

Parking Utilization Trends

The parking utilization analysis was conducted to better understand overall parking demand in the First Street study area and its relationship to the City leasing an additional 420 access passes in the First Street Garage. The utilization trends analysis consists of three parts:

1. Documentation of existing parking utilization in the First Street Garage (1,110 parking spaces).
2. Documentation of existing parking utilization for off-street parking lots and garages (5,707 parking spaces in privately owned garages and lots). Overall utilization, as well as utilization by land use is examined.
3. Documentation of existing parking utilization for on-street parking (1,001 curbside parking spaces) in the study area. Overall utilization, as well as utilization by selected parking regulations is examined.

First Street Garage Utilization

FIRST STREET GARAGE INVENTORY

The First Street Garage has a total of 1,110 spaces currently available. Ten of these spaces are reserved for uses including ZipCar, Cambridge Health Alliance (CHA) carpool/vanpool, golf carts, and operational uses.[4] The garage has multiple users, including City of Cambridge residents via monthly passes or during snow emergencies, local building tenants via monthly passes are required by the US Department of Housing and Urban Development (HUD) Urban Development Action Grant (UDAG), and the general public via short-term parking by the hour or day. **Table 5** lists monthly passes for the garage by pass type for January 2019.[5] Certain user groups, such as the CHA are required to occupy less than 200 spaces at any given time.[6]

Between 2011 and 2018 the First Street Garage was most heavily used:

- **During winter months, December to February**
- **Mid-week on Wednesdays and Thursdays**
- **Seasonal and weekly fluctuations**

TABLE 5: MONTHLY PASSES BY USER TYPE

Cambridge Residents	236
Regular office/non-resident users (includes UDAG required passes)	617
Cambridge Health Alliance	358
Commonwealth of Massachusetts	57
Gore Street Project	23
Complimentary*	211
TOTAL	**1,502**

*Complimentary passes provided for City vehicles garage staff, a limited number of CHA and state employees, and others per temporary agreements.

FIRST STREET GARAGE HISTORICAL UTILIZATION

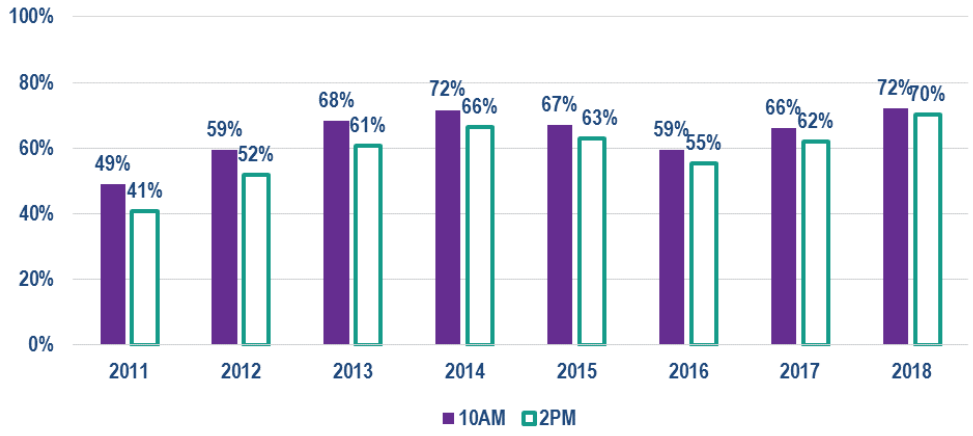
Historical parking utilization data for the First Street Garage was examined from 2011-2018. **Figure 2** compares utilization at 10:00 AM and 2:00 PM over these years for typical weekdays (excluding holidays). First Street Parking Garage staff manually collected parking occupancy data on weekdays at these two times.

Use of the garage on weekdays has increased between 2011 and 2018, with the average utilization growing from approximately 45% in 2011 to approximately 71% in 2018. Potential causes of the up and down changes in utilization over this time include the following:

- Closure of the Sullivan Courthouse in 2014;
- Growth in the economy, which led to an increase in development bringing more residents and employees to the area;
- Variation in parking fees within East Cambridge;
- Increased hourly parking rates at the CambridgeSide mall;
- Leasing of spaces to Cambridge Health Alliance employees during renovations to one of their garage facilities;
- Issuance of approximately 125 parking passes to non-residents who are on a waiting list to enhance revenue and better serve local businesses. These passes have been issued with a clear understanding that they can be cancelled with limited notice.

4 Data provided by City of Cambridge First Street Garage Manager via email April 1, 2019
5 Accounts by Rate, provided by City of Cambridge
6 Data provided by City of Cambridge First Street Garage Manager via email April 1, 2019

FIGURE 2: FIRST STREET GARAGE UTILIZATION OVER TIME [WEEKDAY]



Overall average utilization between 2011 and 2018 is 67% at 10:00 AM and 60% at 2:00 PM.[7] To better understand trends overtime when the garage is highly utilized, the days when the garage was at least 80% utilized were evaluated from 2011-2018. In the summaries below these are referred to as "high utilization days."

As seen in **Figure 3**, 2018 had the most high utilization days of the seven year period analyzed. There is a notable decline in high utilization days from 2014 when there were 26 days where the garage was over 80% utilized, to 2016 following the closure of the Sullivan Courthouse, when there were no days when the garage was over 80% utilized. Since that time, the City has issued additional parking passes from a waiting list, which has led to the increase in high utilization days. However, these passes have been issued with a clear understanding that they could be cancelled with limited notice.

The months with the most high utilization days are February, January, and December, as seen in **Figure 4**. The days of the week when the most high utilization days occur are Wednesdays and Thursdays, as seen in **Figure 5**.

Examining high utilization days over time helps illustrate that there is no true "typical" day for parking utilization, as it is constantly in flux between hours of the day, days of the week, and months of the year. Data used in this analysis for off-street parking and the First Street Garage was taken on Wednesday, February 13, 2019. Based on the historical utilization trends, this provides a conservative approach to the analysis, as utilization on this day is likely higher than average compared to other days of the week and months of the year.

FIGURE 3: NUMBER OF HIGH UTILIZATION DAYS (AT LEAST 80% UTILIZATION) THAT OCCUR EACH YEAR

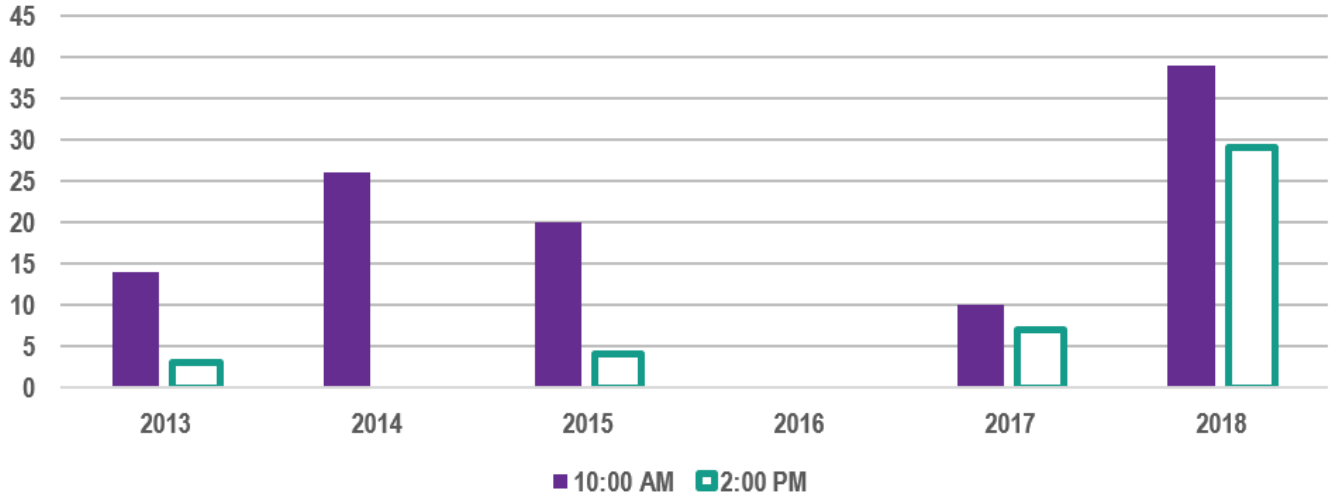


FIGURE 4: NUMBER OF HIGH UTILIZATION DAYS (AT LEAST 80% UTILIZATION) THAT OCCUR

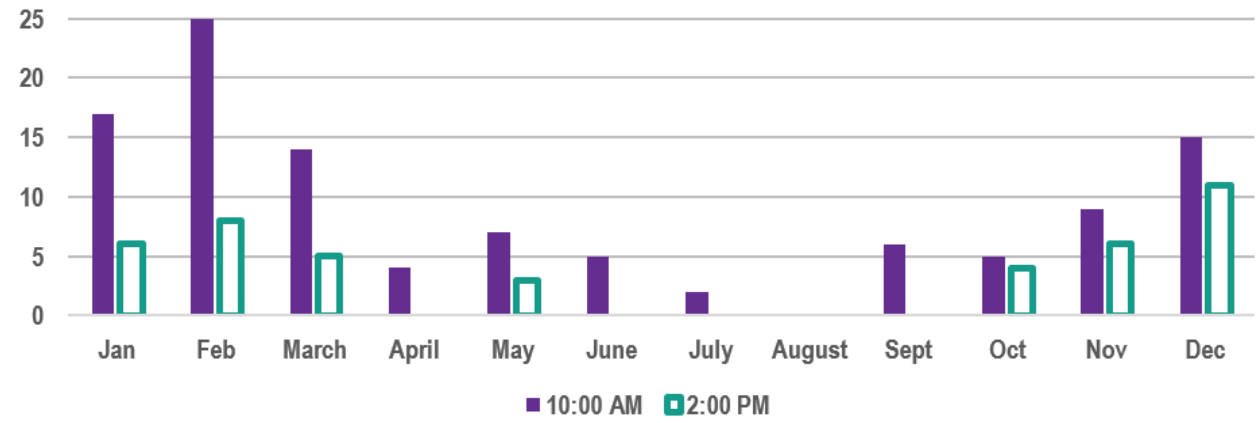
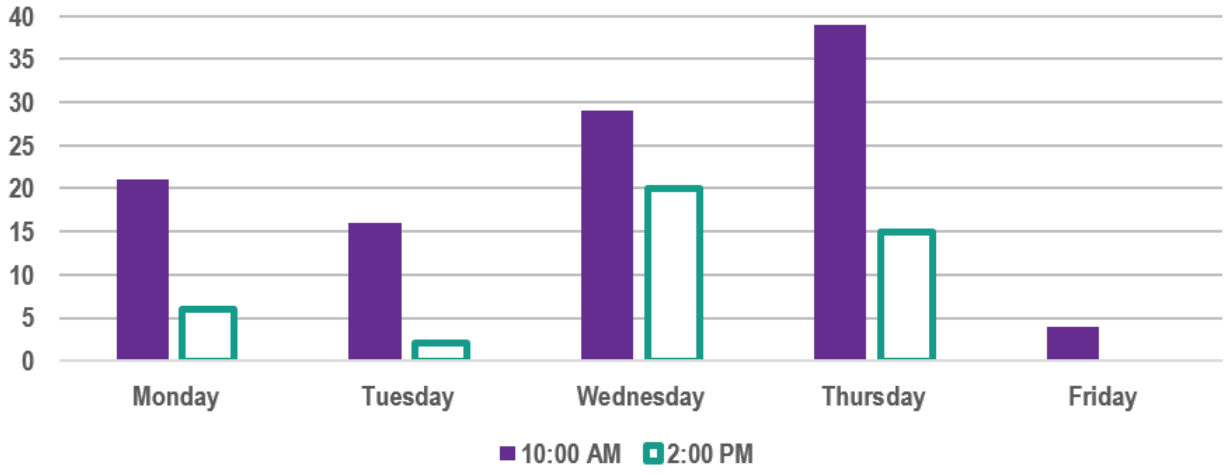


FIGURE 5: NUMBER OF HIGH UTILIZATION DAYS BY DAY OF THE WEEK (AT LEAST 80% UTILIZATION)



7 2019 excluded from these averages as the year is not complete

FIRST STREET GARAGE CURRENT UTILIZATION

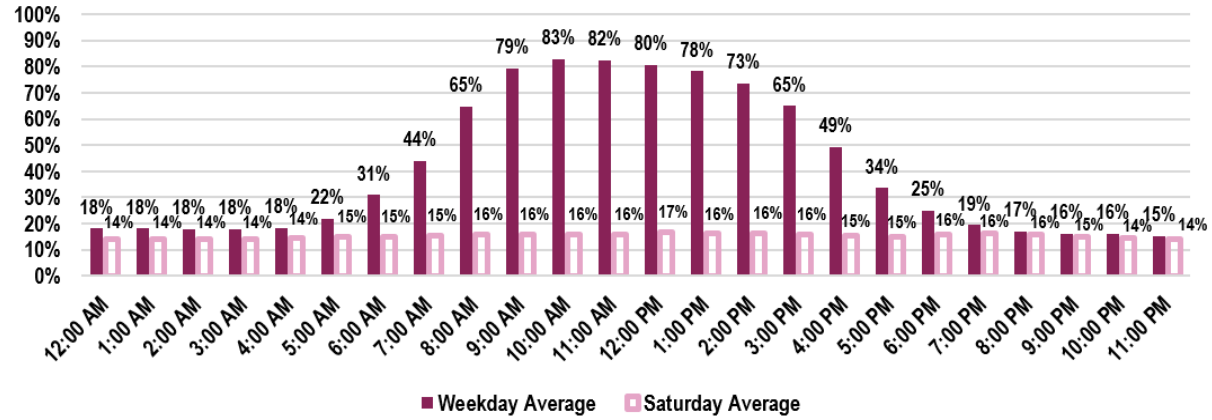
While 1,502 passes were issued in January 2019, data from the garage shows that only approximately 60% of pass holders use the garage on a daily basis.[8] Approximately 80% of the office building employees with parking access passes use the garage on any given day.[9] The number of monthly passes allocated does not reflect the daily utilization of each user group. The practice of "overselling" parking permits is common in the parking industry in order to optimize garage operations.[10] The number of permits issued for the First Street Garage is within industry standards. As not all parkers use the garage on the same dates and times, this practice helps ensure that the First Street Garage is used efficiently, but not overcapacity. For example, office building employees are likely parking during the day, while residents may use the garage mainly overnight and CHA employees are using the garage at a range of different times based on shifts and assignments at CHA facilities. The current utilization of the First Street Garage illustrates it as a successful example of shared parking, as peak utilization was not found to exceed 83% on a representative day in February 2019 (see **Figure 6)**, even with 1,502 monthly passes issued. Shared parking is a common model used to balance parking needs between different users, different times of day, and different days of the week.

Shared parking is a common model used to balance parking needs between different users, different times of day, and different days of the week.

The current utilization of the First Street Garage illustrates that it is a successful example of shared parking, as peak utilization was not found to exceed 83% on a representative day in February (see Figure 6), even with 1,502 monthly passes issued.

Based on the utilization trends observed in the garage, existing demand is well managed and there is room to increase the number of monthly passes issued by continuing to employ shared parking principles.

FIGURE 6: FIRST STREET GARAGE UTILIZATION OVER THE COURSE OF THE DAY



8 Data provided by the City of Cambridge

9 Data provided by the City of Cambridge

10 While a single source cannot be determined, this industry standard is cited in numerous parking garage studies and the Institute for Transpor- tation & Development Policy has stated that shared parking can reduce parking requirements by 20-40% https://www.itdp.org/wp-content/up- loads/2014/12/Shared-Parking_ITDP.pdf

Utilization data by hour for a 24-hour period on vehicle ins and outs from the First Street Garage was provided for all four of the days that parking data was collected in the study area during the original data collection effort: Saturday February 9th, Wednesday February 13th, Tuesday February 26th, and Saturday March 9th, 2019.[11] The average utilization in the garage across these four days is shown in **Figure 6**.

Peak Utilization of the First Street Garage occurs midday on a weekday between 9:00 AM and 2:00 PM. Data indicate that the amount of parking provided in the garage today comfortably accommodates existing demand throughout the day.

The data shows that:

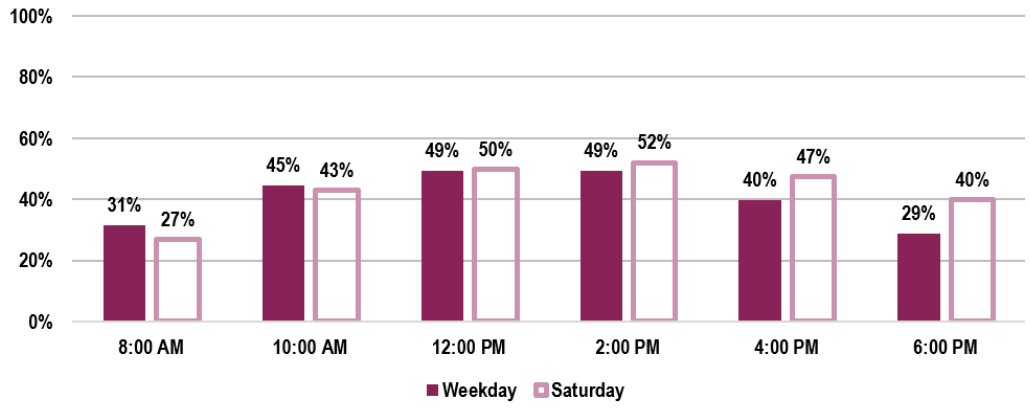
- The First Street Garage is mainly used on weekdays, with the most popular times between 9:00 A.M. and 2:00 P.M.
- The highest utilization observed in the data occurred at 10:00 AM with the garage 83% occupied.
- Outside of 9:00 AM and 2:00 PM, the garage is less than 65% occupied.
- It appears that the amount of parking provided in the garage today comfortably accommodates existing demand throughout the day.

OFF-STREET PARKING UTILIZATION

Off-street parking was analyzed in the First Street study area through a combination of data collection in the field and utilization data made available through existing reports. See **Figure 1** and **Table 2** for the off-street data collection locations.

Overall, off-street parking in the study area appears to be largely underutilized both on a representative weekday and a representative Saturday as seen in **Figure 7**. The data shows that demand was highest midday between 12:00 PM and 2:00 PM for both a weekday and a Saturday. The highest utilization for all parking combined was recorded at 49% on a weekday at 12:00 P.M. and 2:00 P.M. and 52% on a Saturday at 2:00 P.M. This suggests that even when off-street parking is most in demand, approximately half of the overall supply remains available.

FIGURE 7: TOTAL OFF-STREET PARKING UTILIZATION (ALL LAND USES)



11 Vehicle Activity Reports provided by City of Cambridge

FIGURE 8: WEEKDAY OFF-STREET PARKING UTILIZATION BY TYPE OF PARKING

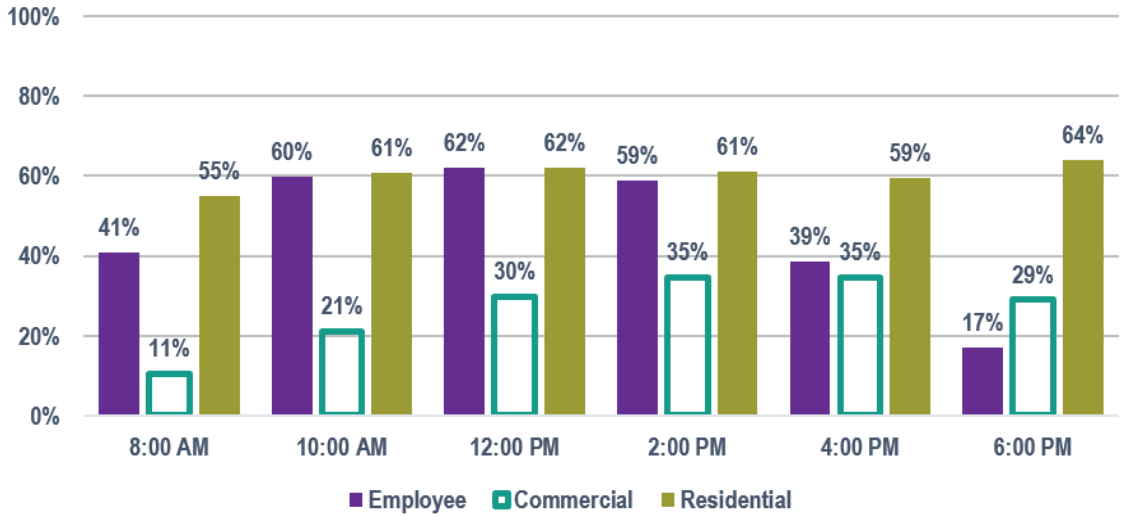
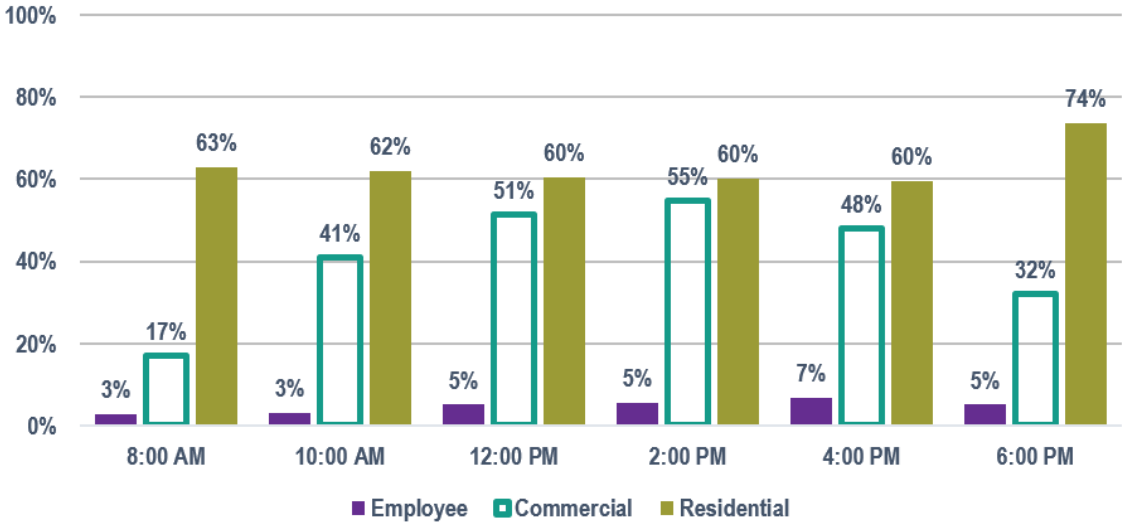


FIGURE 9: SATURDAY OFF-STREET PARKING UTILIZATION BY TYPE OF PARKING



Off-street parking was analyzed based on land use associated with the parking area. The land use of each off-street parking facility is illustrated in the **Figure 1 Study Area Map**. Primary findings from analyzing off-street parking by land use type are listed below. Utilization trends for a weekday and a Saturday are shown in **Figure 8** and **Figure 9**.

- Residential parking was found to have the most demand in the study area, reaching the highest utilization of all land uses at 74% on Saturday at 6:00 PM.
- As expected, employee parking demand was significantly higher on the weekday, ranging from a low of 17% at 6:00 PM and a high of 62% at 12:00 PM. On a Saturday employee parking demand ranged from 3-7% utilization.
- Commercial parking demand was higher during all time periods on a Saturday than on a weekday, ranging from a low of 17% at 8:00 AM to a high of 55% at 2:00 PM. Weekday utilization ranged from a low of 11% at 8:00 AM to a high of 35% at 2:00 PM and 4:00 PM.
- Residential parking demand has the most consistent utilization across the recorded time periods and when comparing a weekday to a Saturday, with Saturday utilization slightly higher. Saturday utilization ranges from a low of 60% from 12:00 to 4:00 PM to a high of 74% at 6:00 PM. Weekday utilization ranges from a low of 55% at 8:00 AM to a high of 64% at 6:00 PM.

Off-street parking in the study area appears to be largely underutilized both on a representative weekday and a representative Saturday. The data shows that demand was highest midday between 12:00 PM and 2:00 PM for both a weekday and Saturday.

On-Street Parking Utilization

Original Study Area

Public on-street parking is evaluated based on a standard of 85% occupancy, which is the level considered to be the "effective capacity" for business district parking systems comprised mainly of on-street commercial parking. At 85% occupancy, some parking (about 1 in 8 spaces) is available, so that drivers can reasonably find a space and turnover can be accommodated.[12]

On-street parking in the original study area, observed on Tuesday February 26 and Saturday March 9, 2019, was found to be below 81% on both days, as seen in **Figure 10**. On a weekday, parking utilization is highest midday, with peak utilization occurring at 11:00 AM at 81%. At this time, utilization is spread throughout the study area, across meter, 2-hour, unregulated, and permit parking. As seen in **Figure 11**, each of these parking types is at least 80% full during the 11:00 AM peak. This pattern suggests parking use is likely driven by "external" users such as employees, customers, and others who come to the area for work, shopping, dining, meetings, or appointments, as opposed to residents in the study area.

FIGURE 10: ON-STREET PARKING UTILIZATION (ORIGINAL STUDY AREA)

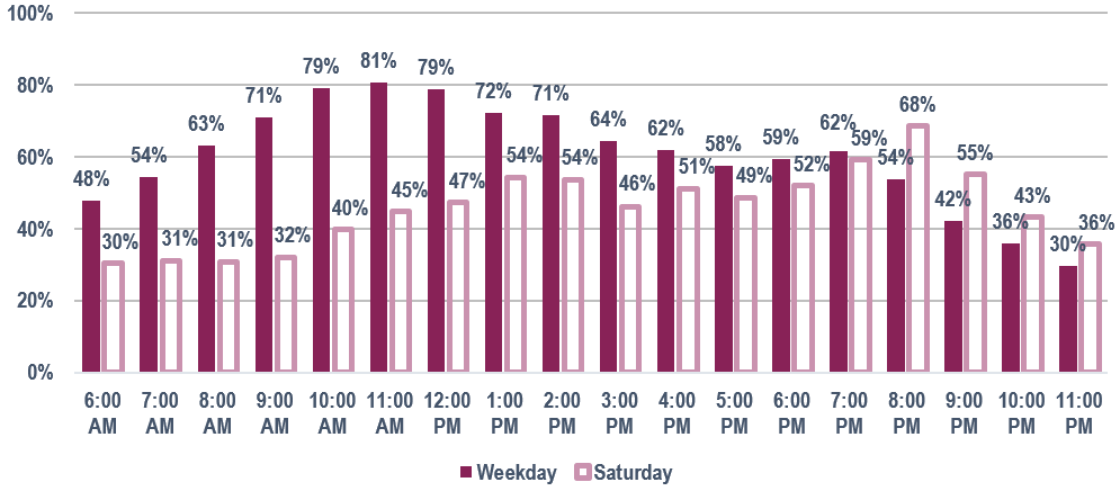
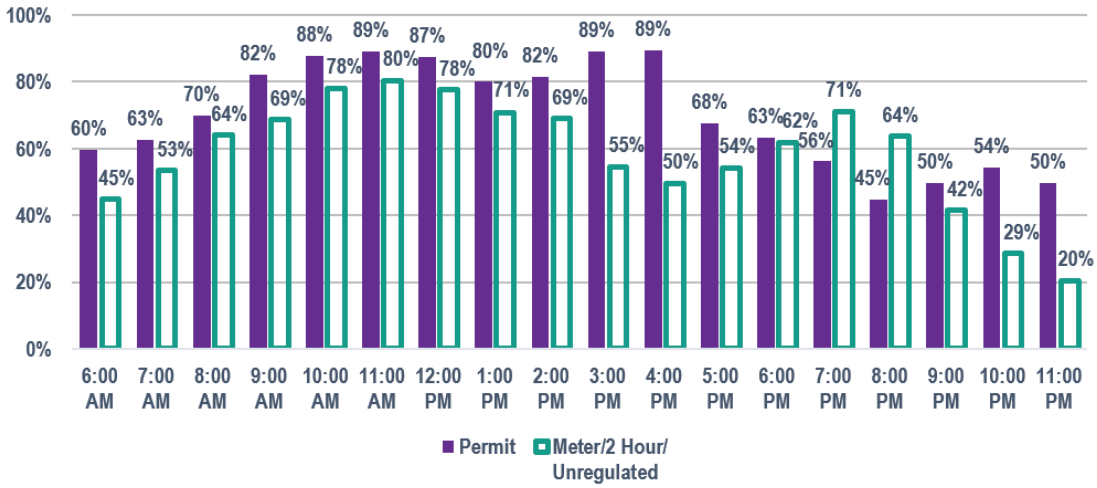
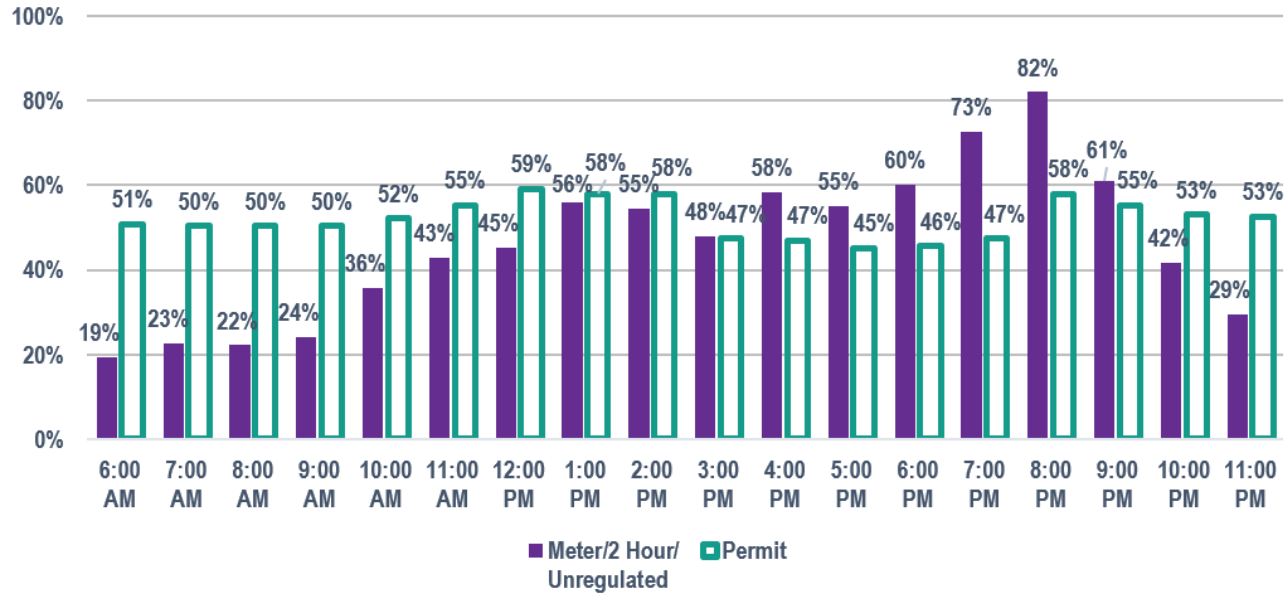


FIGURE 11: WEEKDAY ON-STREET PARKING UTILIZATION BY TYPE OF PARKING (ORIGINAL STUDY AREA)



12 Donald Shoup, professor at the University of California, Los Angeles (UCLA), is credited with popularizing this rule of thumb beginning with the book, The High Cost of Free Parking, 2005.

FIGURE 12: SATURDAY ON-STREET PARKING UTILIZATION BY TYPE OF PARKING



On a Saturday, the highest utilization of on-street parking occurs at 8:00 PM at 68%, as seen in **Figure 10.** At this time, metered, two hour and unregulated parking is 82% occupied, as seen in **Figure 12**, suggesting demand is driven by entertainment, retail, and restaurants in the area that do not have dedicated parking facilities. Parking demand is concentrated east of Second Street near Charles Street, though it is spread throughout the area. Resident permit parking is only 58% occupied during the 8:00 PM Saturday peak. By 11:00 PM Saturday, overall parking utilization has decreased to 36%, with resident permit parking 53% utilized and meter, two-hour, and unregulated parking 29% utilized. There does not appear to be high demand for overnight parking.

On-street parking in the study area is highest midday, with peak utilization occurring at 11:00 AM at 81%. This is within the recommended 85% "effective capacity" for on-street parking systems to be used efficiently.

Expanded Study Area

A subsequent day of on-street data collection was completed in the expanded study area on Tuesday, April 9, 2019 in response to comments from the community open house held on Tuesday March 26, 2019. The expanded study area is depicted in **Figure 13** and includes:

- Sub Area A, bounded by First Street to the east, Third Street to the west, Otis Street to the north and Hurley Street to the south; and
- Sub Area B, bounded by Third Street to the east, Fifth Street to the west, Otis Street to the north and Hurley Street to the south.

Data was collected for Sub Area A to provide a comparison to data collected on Tuesday, February 26, 2019 on the streets directly adjacent to the First Street Garage. Sub Area B was chosen to capture more of the demand from the adjacent residential neighborhood west of the First Street Garage. As the two on-street data collection days were not within the same boundaries, a full merge of data sets could not be completed to analyze the data. Sub Area A is analyzed to provide a comparison between the two data collection days, while Sub Area B is analyzed to provide insight on permit parking utilization.

Sub Area A

Table 6 shows an inventory of the parking in Sub Area A, which is mainly residential permit parking, totaling 56% of the supply, followed by meter parking, totaling 26%. To better understand utilization trends in Sub Area A, **Figure 14** provides a comparison between data collected on Tuesday February 26 and Tuesday April 9, 2019. A similar utilization pattern was observed in Sub Area A for the majority of time periods between the two data collection days. Peak utilization occurred at 11:00 AM at 91% on February 26 and at 10:00 AM at 88% on April 9. Utilization for both collection days was lowest at 10:00 PM at 25% and 38%, respectively. The largest differences observed ranged from 18% at 8:00 PM to 13% at 10:00 PM. This evening utilization change could be impacted by the daylight hours. Daylight hours on the first collection day ended around 5:30 PM whereas the daylight hours on the second collection day ended around 7:20 PM.

TABLE 6: SUB AREA A INVENTORY

Sub Area A Inventory		
Regulation Type	**Total Spaces**	**% of Total**
Permit	129	56%
Meter	60	26%
Meter/Permit	19	8%
Accessible Parking	6	3%
Loading	6	3%
Unregulated	7	3%
Other	5	2%
TOTAL	**232**	**100%**

FIGURE 13: STUDY AREA MAP IDENTIFYING SUB AREAS A AND B

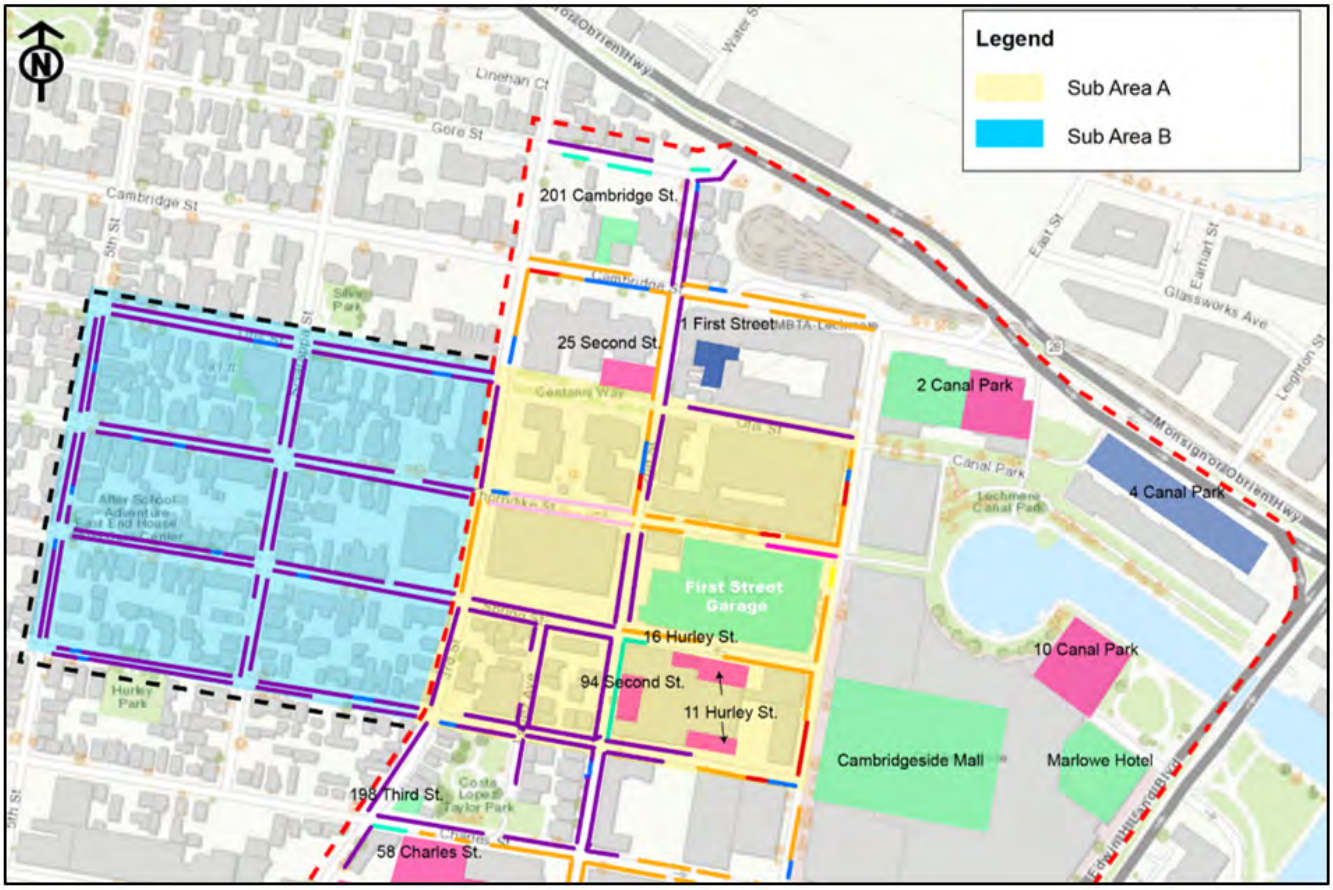
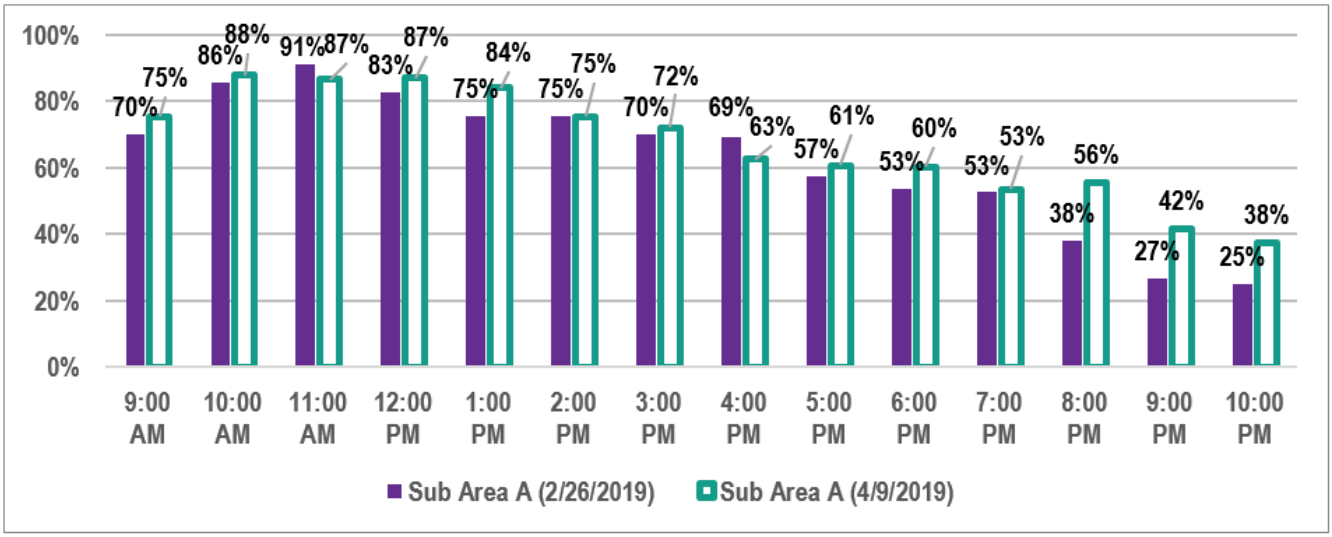


FIGURE 14: SUB AREA A WEEKDAY COMPARISON



Sub Area B

As seen in **Table 7**, the majority of parking in Sub Area B is residential permit parking, totaling 96% of the supply. The remaining 4% is comprised of accessible parking spaces. Parking demand in Subarea B was observed to be well utilized throughout the day. Utilization is consistent, ranging from 71-79%, with accessible parking consistently 2-3% of the total utilization, as seen in **Figure 15**.

Sub Areas A and B – Permit Parking

Comparing permit parking utilization data collected on February 26 (original study area) and data collected on April 9 (Sub Areas A and B), it is apparent that the data collected on April 9, which includes the neighborhood in between Third Street and Fifth Street, shows a more consistent utilization pattern throughout the day, as seen in **Figure 16**. Permit parking data collected on April 9 is less utilized during the day and more utilized after 5:00 PM than data collected on February 26.

TABLE 7: SUB AREA B INVENTORY

Sub Area B		
Regulation Type	**Total Spaces**	**% of Total**
Permit	338	96%
Accessible Parking	13	4%
TOTAL	**351**	**100%**

FIGURE 15: SUB AREA B UTILIZATION

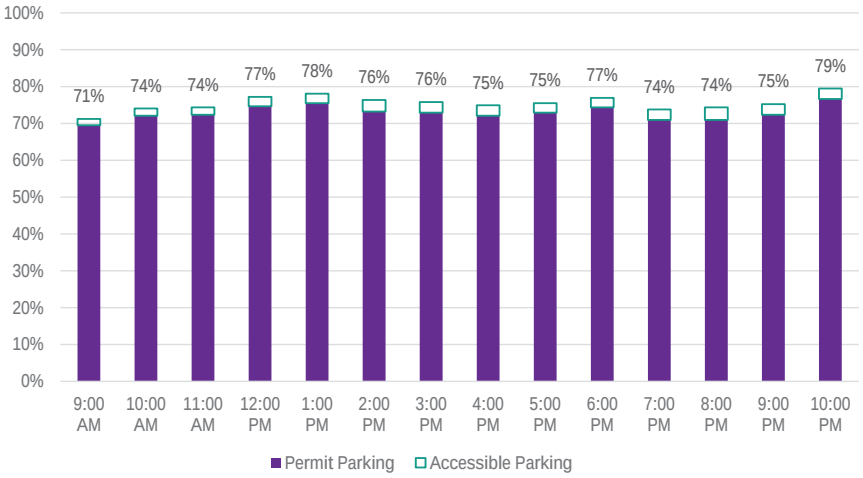
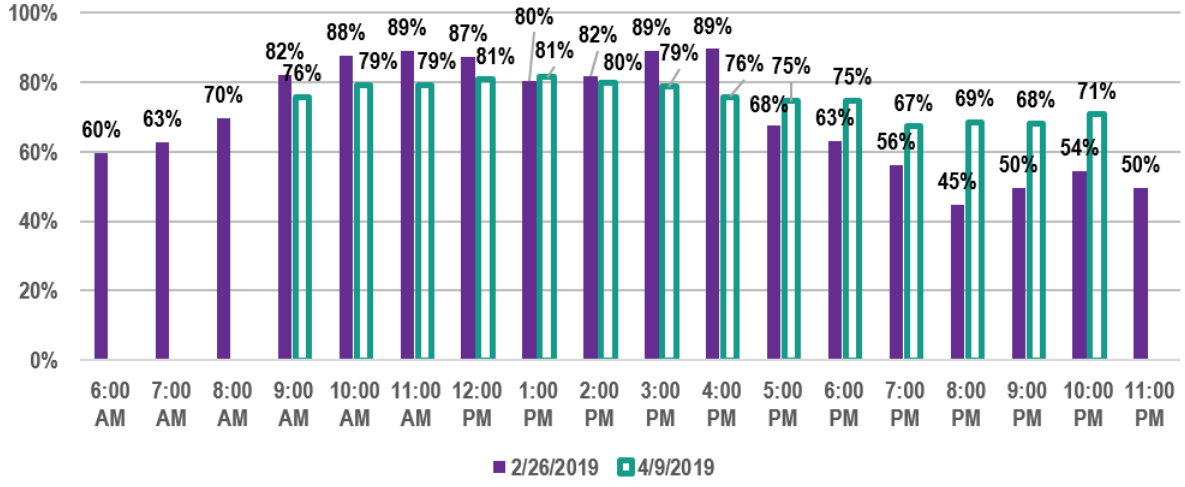


FIGURE 16: PERMIT PARKING UTILIZATION COMPARISON*



*2/26/2019 data includes all permit parking in the original study area and data collected on 4/9/2019 includes all permit parking in sub areas A and B.

Future Parking Needs

The above analysis as well as an assessment of the anticipated future parking supply in the study area was completed to answer the following questions. The results are documented below.

1. Focusing solely on the First Street Garage, what is the feasibility of the City making 420 parking access passes within the garage available to a third party, on a lease/disposition basis for a period of 30 years?
2. Looking at the entire study area, what are the impacts on on-street and off-street parking supply and demand within the study area in future scenarios where the City has leased 420 parking access passes to a third party for a period of 30 years?

The data utilized for the future scenarios provides a conservative analysis based on a higher than average day of the week and month of the year. The number of hours of the day and days of the week where demand would exceed capacity as shown in the analysis is more than typical.

The four scenarios developed to understand future parking demand include:

1. Impact on First Street Garage itself
2. Impact on existing off-street commercial parking supply
3. Impact on existing off-street commercial parking supply, with the assumption that the CambridgeSide mall upper garage parking is redeveloped and no longer a parking facility
4. Impact on existing off-street and on-street commercial parking supply, with the assumption that all of the CambridgeSide mall parking is only available to on-site uses.

The four scenarios are based on the assumption that 80% of the 420 new passes will be used on a daily basis, resulting in the need to accommodate 336 parkers. Past data trends for both the First Street Garage and parking garages generally in urban areas show that it would be unprecedented for 100% of parking passes to be used in the garage at one time. The 80% daily use rate assumption is based on current parking pass usage rates in the garage for offices in the area similar in use to the proposed lessee.[13] This analysis also assumes that any minor increase in parking demand associated with the use of the 9,000 square feet of ground floor space for retail can be accommodated either through existing metered parking on-street or hourly parking in the Garage. This demand is expected to be relatively small because most users are not expected to drive to the retail space.

Additionally, the use of February 2019 as the base utilization of the garage across scenarios provides a conservative analysis that illustrates the impacts of the scenarios with a high baseline level of utilization. As a result, it is unlikely that the actual outcome of leasing 420 parking access passes would have impacts on the existing parking supply greater than those shown in results of these scenarios. As seen in **Figure 2**, utilization of the garage in 2018 has been equal to or higher than the seven previous years. All eight years (2011-2018) show utilization at 10:00 AM at 72% or less, while the representative day selected in February 2019 has a utilization of 83% at 10:00 AM. Over time it has been demonstrated that February is the month with the largest number of days where the garage is over 80% utilized (see **Figure 4**). Due to these factors, it is likely that the scenarios in this analysis illustrate a higher than average utilization day in the garage, with an average daily usage rate for the new parking passes.

13 Based on conversation with City on April 9, 2019 and perception of existing garage users within East Cambridge.

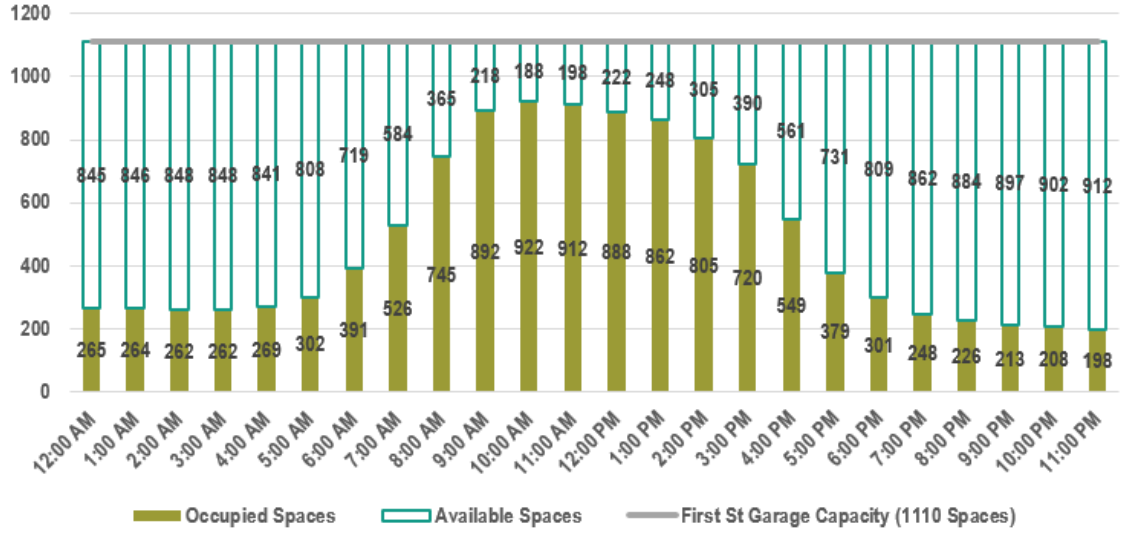
Scenario 1: *Impact of 80% of 420 parking access passes are used each hour on the First Street Garage.*

A representative day in February 2019 was used to understand the impact of the City making 420 additional parking access passes within the garage available to a third party. There are currently at least 188 parking spaces available during peak periods of utilization during a representative weekday in February 2019, as seen in **Figure 17**. The question is how many of the 420 parking access passes may be accommodated during periods of peak demand to understand if the supply of the garage can meet this new demand.

Scenario 1 examines the parking impact on the First Street Garage itself, as it can be assumed parkers with monthly garage passes would seek parking there first. The results show that there are a few hours of the day on a higher than average day of the week and month of the year where not all pass holders will be able to find parking in the garage. At these times, these parkers must either seek parking elsewhere in the study area or use an alternate mode of transportation. Scenarios 2 and 3 illustrate that there is ample parking within the study area to accommodate not only the anticipated 336 parkers, but all 420 new garage pass holders at all times of the day.

Data was analyzed on an above average day of the week and above average month of the year, and there are still at least 188 parking spaces available during peak periods in the First Street Garage.

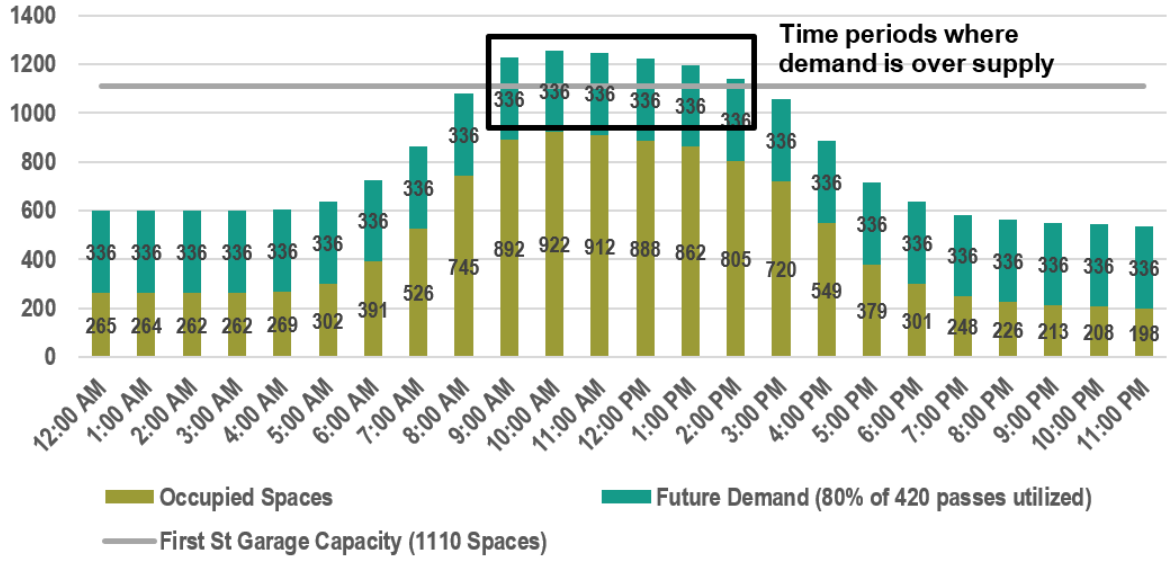
FIGURE 17: FIRST STREET GARAGE PARKING UTILIZATION FOR A REPRESENTATIVE DAY IN FEBRUARY 2019



With 80% of the 420 new passes used each hour of the day, the utilization would exceed the garage's capacity between 9:00 AM and 2:00 PM, resulting in 31 to 148 parkers needing to find parking elsewhere during these times, as shown in **Figure 18**. Monthly passes are most often used for entrance during a morning rush period from 7:00 AM to 9:30 AM and exit between from 3:00 PM to 6:30 PM.[14] There is minimum activity by monthly card holders during the day at the First Street Garage.

Given the assumptions of this scenario, the First Street Garage can accommodate 188 additional parkers at the 10:00 AM peak, leaving 148 of the 336 anticipated new parkers whose needs will need to be accommodated in another way. Scenarios 2, 3, and 4 evaluate the ability of commercial parking in the study area now and in the future to accommodate this demand.

FIGURE 18: SCENARIO 1 - FIRST STREET GARAGE PARKING UTILIZATION ASSUMING 80% OF 420 NEW PASSES ARE USED EACH HOUR FOR A REPRESENTATIVE DAY IN FEBRUARY 2019



14 First Street Parking Garage management, email April 10, 2019

Based on existing parking pass usage in the garage by other office users in the area, it is estimated that 60-80% of pass holders will use passes at any given time.

Scenario 2: *Impact of "surplus demand" parkers on existing off-street commercial parking supply, assuming 80% of 420 parking access passes are used each hour.*

This scenario analyzes parking supply and demand in the First Street study area with the assumption that "surplus demand" parkers from the garage will seek parking in existing off-street commercial parking lots. As seen in **Figure 19**, the off-street commercial parking supply is sufficient to accommodate existing parking demand and new demand from the First Street Garage, assuming the available supply of off-street commercial parking remains as it was in February 2019.

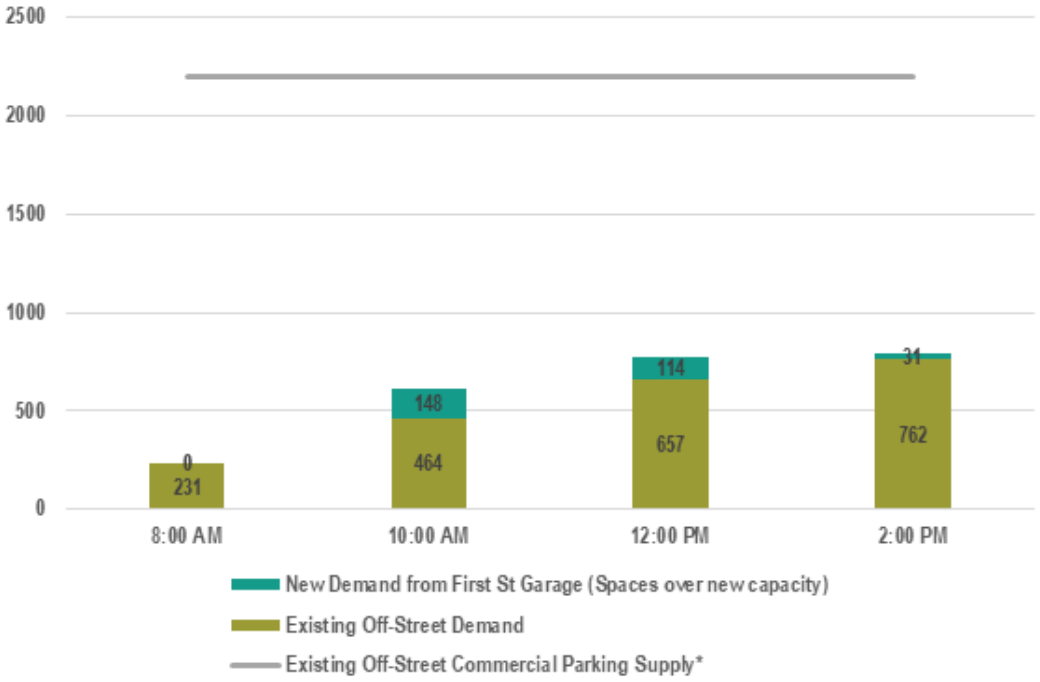
Scenario 3: *Impact of "surplus demand" parkers on future off-street commercial parking supply, assuming the CambridgeSide mall upper garage is redeveloped and no longer a parking facility, and assuming 80% of 420 parking access passes are used each hour.*

This scenario analyzes parking supply and demand in the First Street study area with the assumption that "surplus demand" parkers from the garage will seek parking in the future off-street commercial parking supply, which assumes:

- The CambridgeSide mall upper garage (795 spaces) is redeveloped and no longer a parking facility.
- 326 additional spaces are available at the Royal Sonesta.
- 34 additional spaces are available at the CambridgeSide mall lower garage.

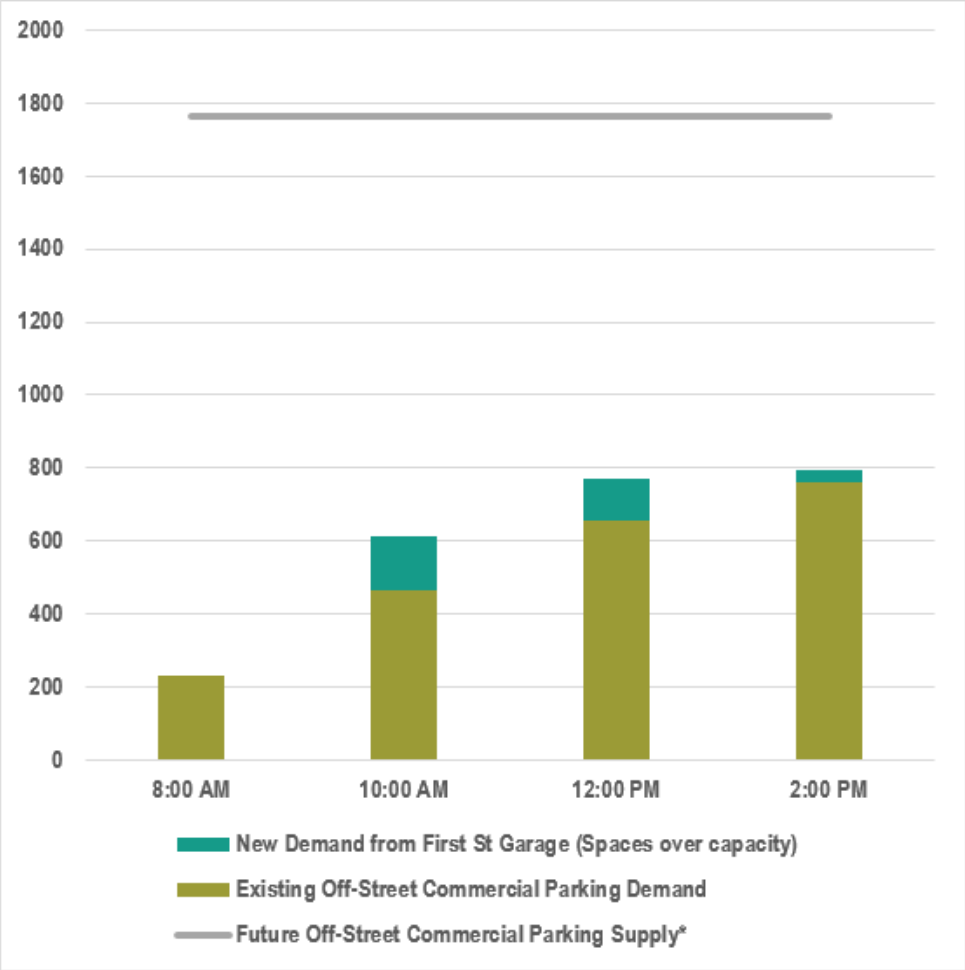
This reduces the off-street commercial parking supply from Scenario 2 from 2,200 to 1,765. As seen in **Figure 20**, the off-street commercial parking supply is sufficient to accommodate existing parking demand and new demand from the First Street Garage, even without the CambridgeSide mall upper garage. Even if the additional 326 parking spaces at the Royal Sonesta and 34 spaces at the CambridgeSide mall lower garage are excluded from the additional future supply estimate of 1,765 (resulting in 1,405 parking supply), the overall off-street parking supply is still significantly greater than anticipated demand from existing off-street parking lots and new demand from the First Street Garage (see footnote to Figure 20 for more details on the status of this parking).

FIGURE 19: SCENARIO 2 - EXISTING OFF-STREET COMMERCIAL PARKING SUPPLY + DEMAND FROM FIRST STREET GARAGE



*Includes off-street commercial parking at 201 Cambridge Street, 198 Third Street, Marlowe Hotel, 2 Canal Park, CambridgeSide mall upper and lower garages.

FIGURE 20: SCENARIO 3 - FUTURE OFF-STREET COMMERCIAL PARKING SUPPLY + DEMAND FROM FIRST ST GARAGE, WITHOUT CAMBRIDGESIDE MALL UPPER GARAGE PARKING



*Includes off-street commercial parking at 201 Cambridge St, 198 Third St, Marlowe Hotel, Royal Sonesta, 2 Canal Park, CambridgeSide Mall lower garage. 795 spaces in CambridgeSide upper garage not included.
The 326 additional spaces at the Royal Sonesta and 34 additional spaces at the CambridgeSide mall lo-garage were factored into the existing off-street commercial supply to address the variation in off-street parking supply readily available for consultant staff to access to inventory, and spaces included in a scoping letter for CambridgeSide. The utilization of the 326 spaces at the Royal Sonesta is unknown and the 34 additional spaces at the CambridgeSide mall lower garage are currently used for storage, resulting in 0% utilization.
New demand based on assuming 80% of 420 parking passes fully utilized at all time periods.

Scenario 4: *IImpact of 420 parking access passes on future off-street and existing on-street commercial parking supply, with assumption that all of CambridgeSide mall parking is unavailable.*

This scenario was developed in response to public comments during the Community Open House to evaluate future parking impacts without the parking facilities at the CambridgeSide mall. Based on the current status of the mall's redevelopment plans, this scenario appears highly unlikely to occur, but it represents the potential worst case scenario in terms of parking supply. To evaluate this future condition, it was first assumed:

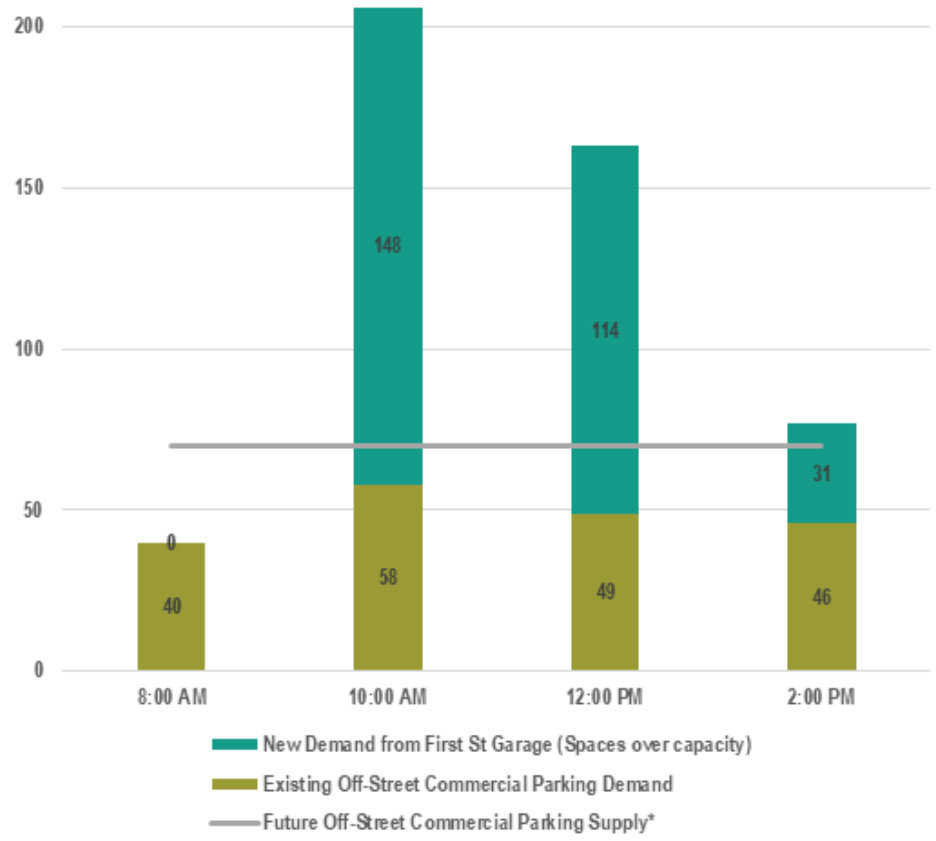
- All parking associated with the CambridgeSide mall, totaling 2,490 spaces, will only be available to on-site users and not the general public.
- All other existing off-street commercial parking facilities, totaling 70 spaces, will remain.

With these assumptions, the supply of available commercial parking for "surplus demand" parkers from the First Street Garage is decreased from 1,765 in Scenario 3 to 70 in Scenario 4.

As seen in **Figure 21**, the off-street commercial parking supply is sufficient to accommodate existing and new demand for a representative day in February 2019 at 8:00 AM, but is not sufficient at 10:00 AM, 12:00 PM, and 2:00 PM. Parking demand exceeds supply at 10:00 AM by 136 spaces, at 12:00 PM by 93 spaces, and at 2:00 PM by 7 spaces.

To further analyze Scenario 4, the on-street commercial parking supply in the study area was included. This is comprised of meter, unregulated, and 2-hour parking, totaling 361 spaces. The majority of the excess parking demand shown in **Figure 21** can be accommodated by the on-street commercial parking supply, as shown in **Figure 22.** The on-

FIGURE 21: SCENARIO 4 - FUTURE OFF-STREET COMMERCIAL PARKING SUPPLY AND DEMAND + DEMAND FROM FIRST ST GARAGE, WITHOUT CAMBRIDGESIDE MALL PARKING

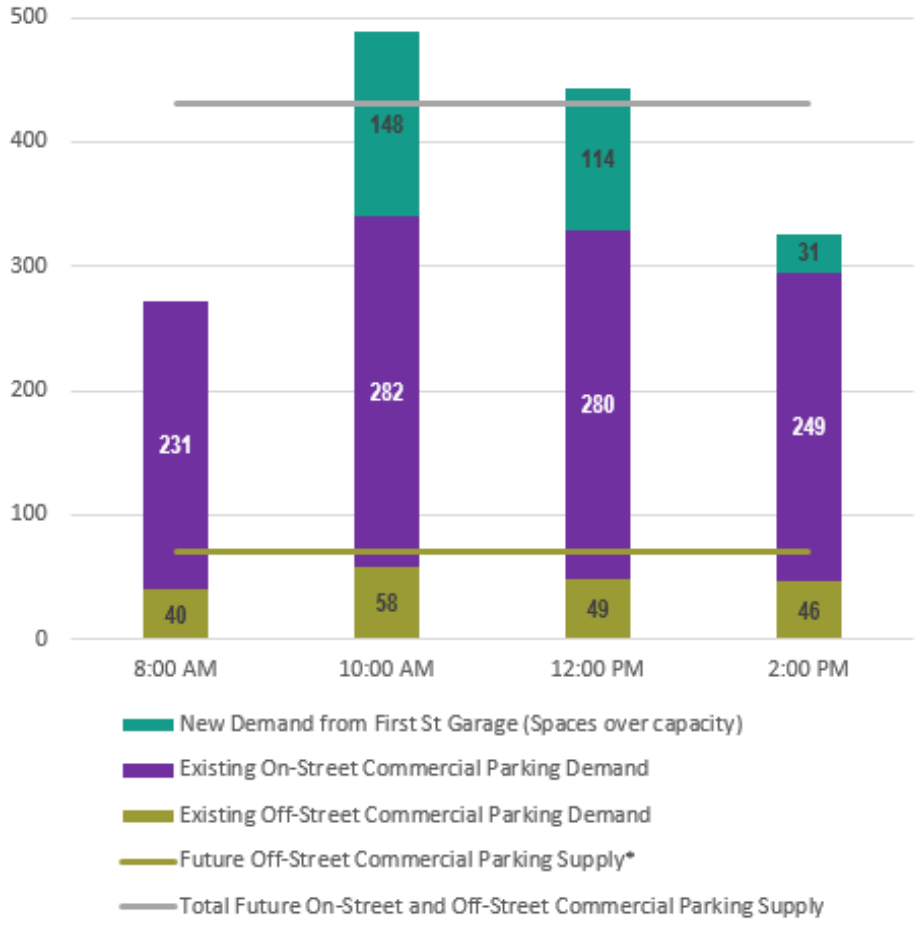


street and off- street commercial parking supplies are sufficient at 8:00 AM and 2:00 PM, but are not sufficient at 10:00 AM and 12:00 PM. Parking demand exceeds supply at 10:00 AM by 57 spaces and at 12:00 PM by 12 spaces.

For the demand to fit the available supply at these times, a maximum parking pass usage rate of the new 420 parking passes of 66% is required at 10:00 AM 77% at 12:00 PM. Based on current parking pass usage rates in the garage, which average 60% overall and 80% for offices in the area, as well as industry standards which range from 60-80%, this is a reasonable condition.

Making this on-street parking available to parking pass holders displaced from the First Street Garage would likely require some changes in on-street parking regulations, such as longer time limits and adjustments to pricing policies.

FIGURE 22: SCENARIO 4 - FUTURE OFF-STREET AND EXISTING ON-STREET COMMERCIAL PARKING SUPPLY AND DEMAND + DEMAND FROM FIRST ST GARAGE, WITHOUT CAMBRIDGESIDE MALL PARKING



*Includes off-street commercial parking at 201 Cambridge St, 198 Third St, 2 Canal Park. All 2490 spaces associated with CambridgeSide mall are not included.
**Total parking supply includes on-street meter, meter/permit, two-hour, and unregulated parking spaces.

Parking Analysis Conclusions

This study evaluated parking supply and demand in the First Street Garage and in the surrounding neighborhood to inform a potential Disposition by the City that would include the lease of 420 unassigned parking spaces via monthly parking passes in the Garage, as well as 9,000 square feet of ground floor retail space.

The key conclusions from this evaluation are as follows:

A. **Overall Parking Availability.** The study indicates that there is ample parking within the study area to accommodate not only the anticipated 336 new daily parkers (based on 80% utilization of the 420 parking passes), but also all 420 new parking pass holders, at all times of the day. Analysis of the existing off-street commercial parking supply in the study area shows that supply is significantly higher than demand, even if parking capacity at the CambridgeSide mall is reduced in the future due to any redevelopment of portions of that site.

The data used for the future scenarios provides a conservative analysis as it was based on collection dates in February of 2019, when parking utilization was higher than on the average day of the week and the average month of the year. On a typical day, demand would not be as high as shown in this analysis, and the availability of parking would therefore be higher.

B. **Availability of Parking for Cambridge Residents.** The City will continue to be able to make parking wpasses in the First Street Garage available to residents as is currently the practice. Since the data collection was done during the winter, that data represents the higher end of resident parking demand, given that more residents obtain parking permits during the winter months, and the analysis of the data confirms that it will be possible to preserve that access in the future.

C. **Availability of Parking During Snow Emergencies.** The City will continue to be able to make parking available at the Garage for residents during snow emergencies. During snow emergencies, the usage by office workers, retail visitors, and daily parkers is significantly lower than on a typical day, so there will still be several hundred parking spaces available in the Garage for residents who need to move their car off the street due to a declared snow emergency.

D. **On-Street Parking.** The study shows that leasing 420 unassigned parking spaces in the First Street Garage should not directly impact residential parking in the neighborhood, since the on-street residential parking spaces are generally not available to non-residents who may not be able to use the Garage. Should the City wish to make metered on-street parking available to non-residents who are displaced from the Garage, this could be done through changes to on-street parking regulations. These changes could include longer time limits and altered pricing structure by time of day, for example, to allow parking beyond the current two-hour limit, but potentially at a higher hourly cost that is more comparable to the cost of off-street parking.

E. **Urban Development Action Grant Commitments.** As a result of this study, the City has confirmed that it will be able to continue to meet its obligations under the Urban Development Action Grant (UDAG) that helped finance construction of the Garage. This includes monthly parking that must be available to specified local buildings, as well as space for daily parkers.

F. **Parking for Existing Customers.** The study shows that on a day when demand is higher than average, there may be a few hours of the day when the Garage will not be able to accommodate all existing customers. As noted above, the Garage will continue to be able to accommodate Cambridge resident parkers and meet the requirements of the UDAG, so this will only impact some “at-will” non-resident monthly pass holders, as well as some non-resident daily parkers. These non-resident parkers will therefore need to find parking elsewhere in the study area (either permanently or on a day-by-day basis) or use a sustainable transportation option instead. As noted above, there is expected to be ample off-street parking available in the surrounding area to accommodate those who are not able to use the Garage.

In recent years, the City has issued approximately 125 parking passes to non-residents who are on a waiting list (there is no waiting list for residents who request a parking pass), to enhance revenue and better serve local businesses. These passes have been issued with a clear understanding that they can be cancelled with limited notice, so these customers will not be surprised if they are not able to park at the First Street Garage at some point in the future.

G. **Customer Stability.** From a best practices fiscal and management perspective, it is to a parking garage owner's benefit to have a single, customer leasing a large number of parking spaces in a parking facility as compared to dozens—or even hundreds—of individual customers. This improves the predictability of revenue and the ability to project daily occupancy based on past trends, as well as improving collection of accounts receivable.

H. **Larger Transportation Trends.** As sustainable transportation options expand in the future as encouraged by City policies, and additional mixed-use development occurs nearby, additional mode shift is likely to occur to offset future parking demand. Larger trends in transportation and demographics are expected to reduce the demand for parking, such that the number of high demand days could decrease, and the resulting availability of parking in the First Street Garage will increase.

APPENDIX A

APPENDIX A

SUBJECT: First Street Garage Parking Utilization Study
Community Engagement Summary

DATE: April 29, 2019 – Final

In support of the First Street Area Parking Study conducted by the City of Cambridge, the City and consultant team engaged the public through:

A. An Open House to present the preliminary data collected to the public and receive feedback on the study from the community to inform the final report; and
B. A survey available online and in hard-copy format at the Open House to get feedback on perceptions of parking in the First Street area.

A. Community Open House

On Tuesday, March 26, 2019, the City of Cambridge held an Open House for the community regarding the First Street Area Parking Planning Study at the Kennedy-Longfellow School from 6:00 p.m. – 8:00 p.m. Approximately 100 people attended the Open House including City of Cambridge City Manager, Louis DePasquale, the Deputy City Manager, Lisa Peterson, the Director of Communication and Community Relations, Lee Gianetti, and the Office Manager, Maryellen Carvello. City staff from the Traffic, Parking and Transportation (TP+T) Department and the Community Development Department (CDD) included Joe Barr, Susanne Rasmussen, Brooke McKenna, Najah Casimir, Adam Shulman, Stephanie Groll, Alec Stein, Stephanie McAuliffe, Khalil Mogassabi, Gardy Laurent, and Kimberly Crowe.

The purpose of the Open House was to explain the reasons for performing the study and the methodology used, and to share the data that was collected. Six informational boards were on display throughout the meeting, and contained the following information:

1. Project background
2. Overall parking study methodology
3. First Street Parking Garage user data
4. Off-street and on-street parking inventory in the First Street area
5. First Street area parking utilization data for weekday usage
6. First Street area parking utilization data for Saturday usage

The Open House notice, handout and display boards are available at the following City of Cambridge website: https://www.cambridgema.gov/FirstStreetGarage

City staff from the Traffic, Parking & Transportation (TP+T), Community Development (CDD) Departments, or from the Kleinfelder/McMahon consultant team were available at each board to answer questions and collect feedback from the attendees as they circulated through. Similar comments were heard by staff and consultants at all board stations. Below is a list summarizing

the comments and feedback collected during the Open House, some of which were made by multiple people:

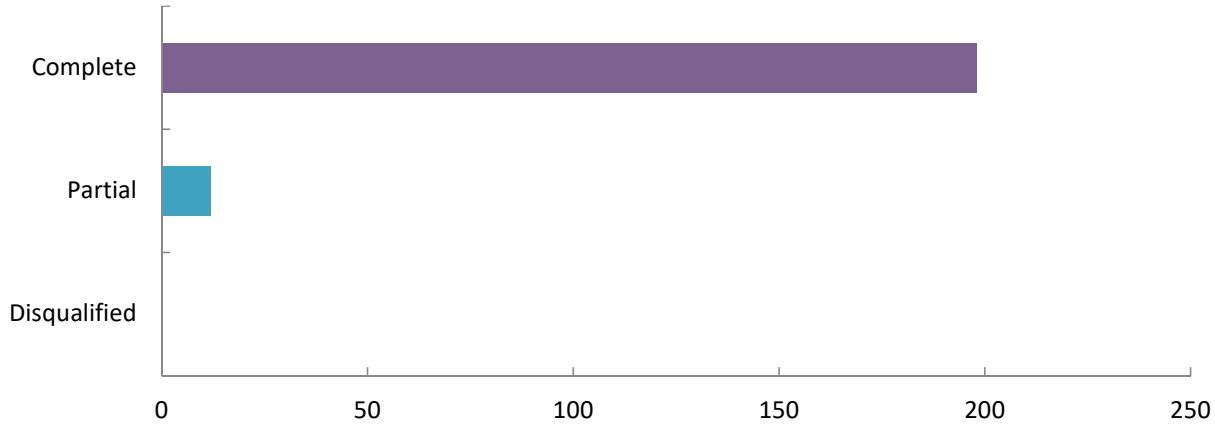
- The study area limits cut off East Cambridge residential neighborhoods west of the First Street Garage. Suggest extending limits to Fifth Street to capture parking data and potential impacts to parking in these neighborhoods.
- Courthouse parking use dropped when the courthouse relocated, and residents filled the newly available parking. The project is not really taking anything away. When the courthouse was active, the spaces were not available to residents and there was no issue. Why is there an issue now? Need to move on with the courthouse redevelopment to increase tax revenue.
- Has the City considered implementing zoned parking in East Cambridge area to prohibit non-East Cambridge residents from parking there? Most non-East Cambridge residents park in the area during the weekday to be closer to Boston and/or the Lechmere Station.
- Has the study considered the CambridgeSide project impacts on the First Street Garage demand? Redevelopment of the mall may influence more people to park in the First Street Garage.
- Suggestion to increase the number of days of data collection and collect during other months of the year.
- Thorndike and Third Street seems to be more heavily utilized than what the data is showing. Data appears to be an inaccurate representation of parking usage on these streets.
- Suggestion to make Third Street and other surrounding streets in the neighborhood a snow emergency route so plows can remove all snow to have the maximum number of parking spaces available.
- What is the parking utilization of the First Street Garage if the 420 spaces were gone? Does the analysis consider future demand?
- Has anyone considered providing a shuttle bus service to Cambridge Health Alliance (CHA) and/or developer to provide more parking spaces in the First Street Garage? Suggestion to end lease agreement with CHA and require CHA to find their own parking independent of First Street garage.
- Not surprised that off-street parking is less than 60% at peak time. Supportive of project.
- First Street Garage rates are much lower than the market trends. Has the City considered increasing the rate?
- Garage is mostly used during snowstorms, so residents don’t have to shovel off their cars.
- What happened to the spaces the Courthouse employees used before they relocated?

- There is a resident entitlement issue with the First Street Garage. Supports new development in the area and would not like to see the City plan to accommodate more parking.
- Is it possible to know how frequently the First Street Garage passes are used?
- Concerns raised over the exterior appearance of the First Street Garage. Suggestion to renovate it, and the area along the sidewalk.

B. Survey

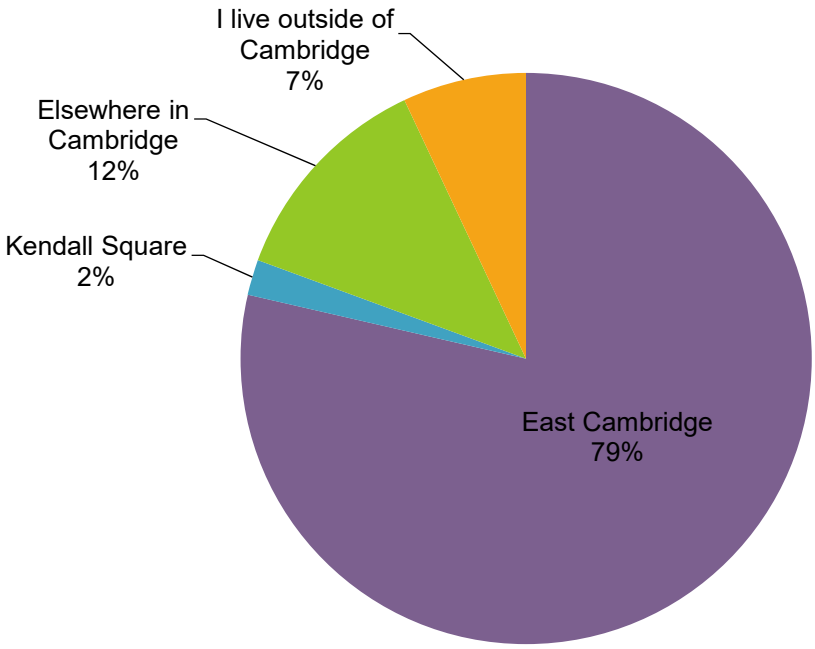
The City of Cambridge conducted a parking planning survey of the First Street area. The survey was intended to invite responses from anyone who had ever parked a car, sport utility vehicle (SUV), minivan, or other passenger motor vehicle, in the First Street area. The online survey was open to the public from Monday, March 18 to Monday, April 1, 2019. Hard copy surveys were available during the Open House on the evening of Tuesday, March 26, 2019 and a total of 20 were collected at the meeting. 178 online responses were collected during the survey period. In total, 198 total surveys were completed, and 12 online surveys were partially completed, as shown below. All survey responses are incorporated in the survey data below.

Response Statistics

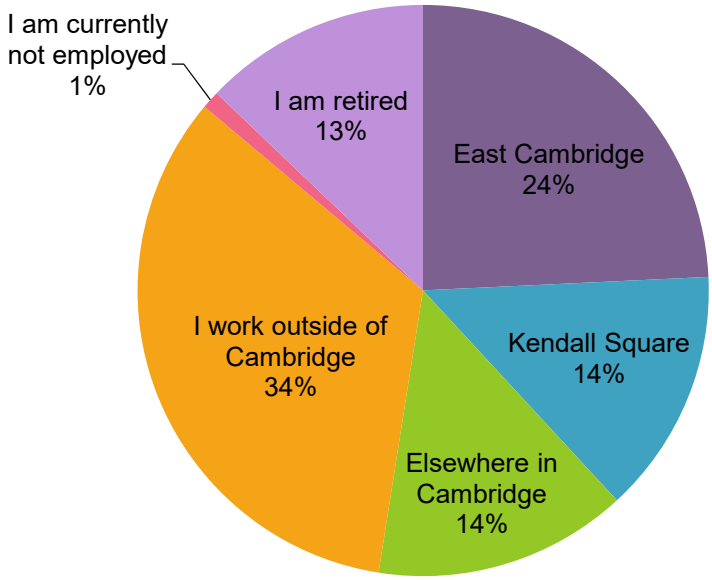


	Count	Percent
Complete	198	94%
Partial	12	6%
Disqualified	0	0%
Totals	210	-

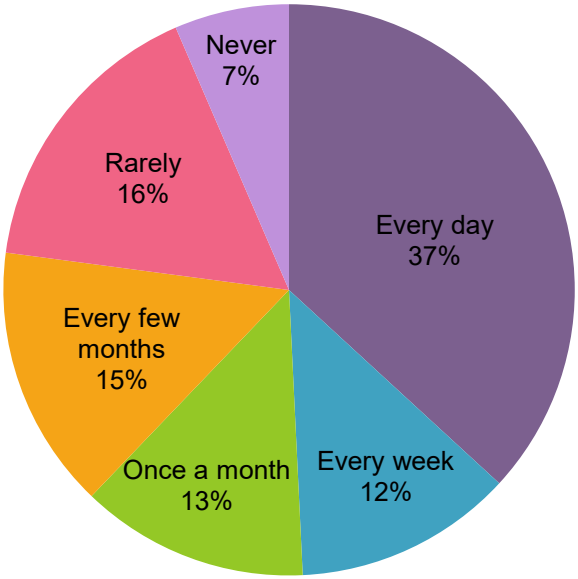
1. **Where do you live?**



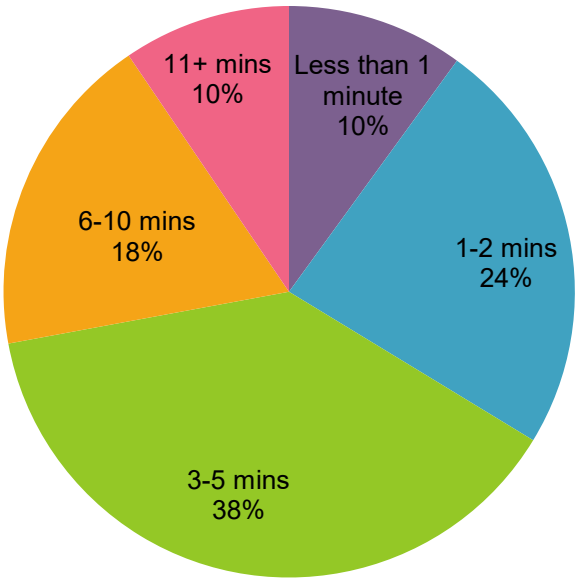
2. **Where do you work?**



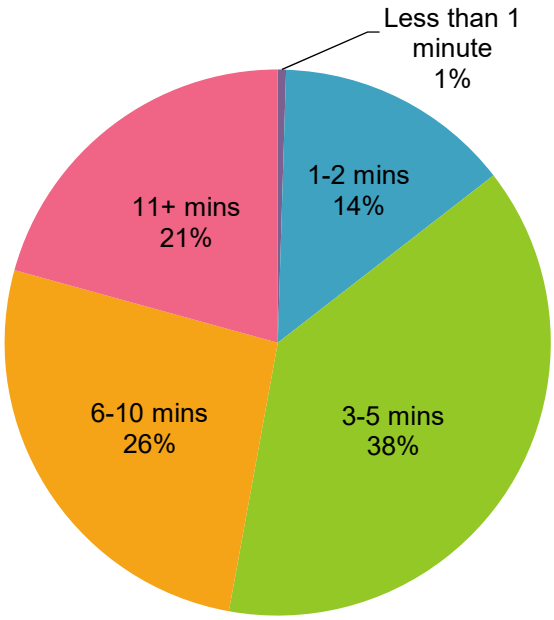
3. **How frequently do you park (a passenger motor vehicle) in the First Street area?**



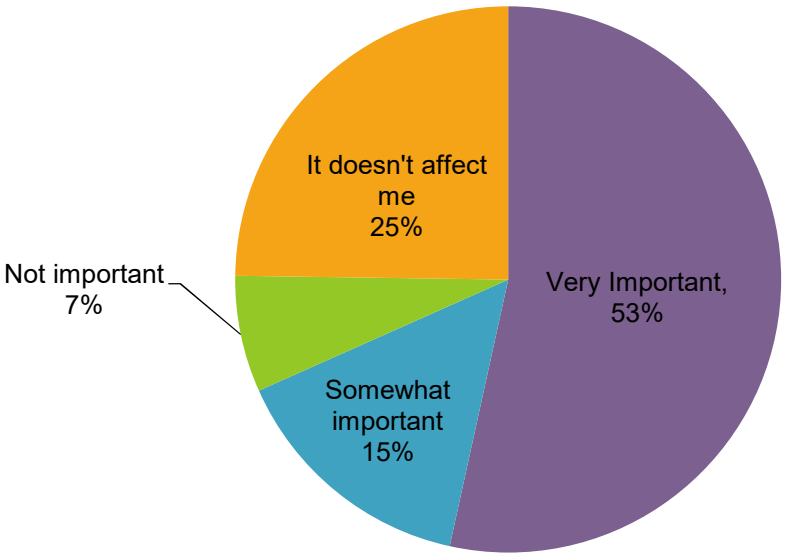
4. **The last time you parked in the First Street Area, how long did it take to reach your destination?**



5. **After parking in the First Street area, what is the maximum amount of time you are willing to spend walking to your destination?**



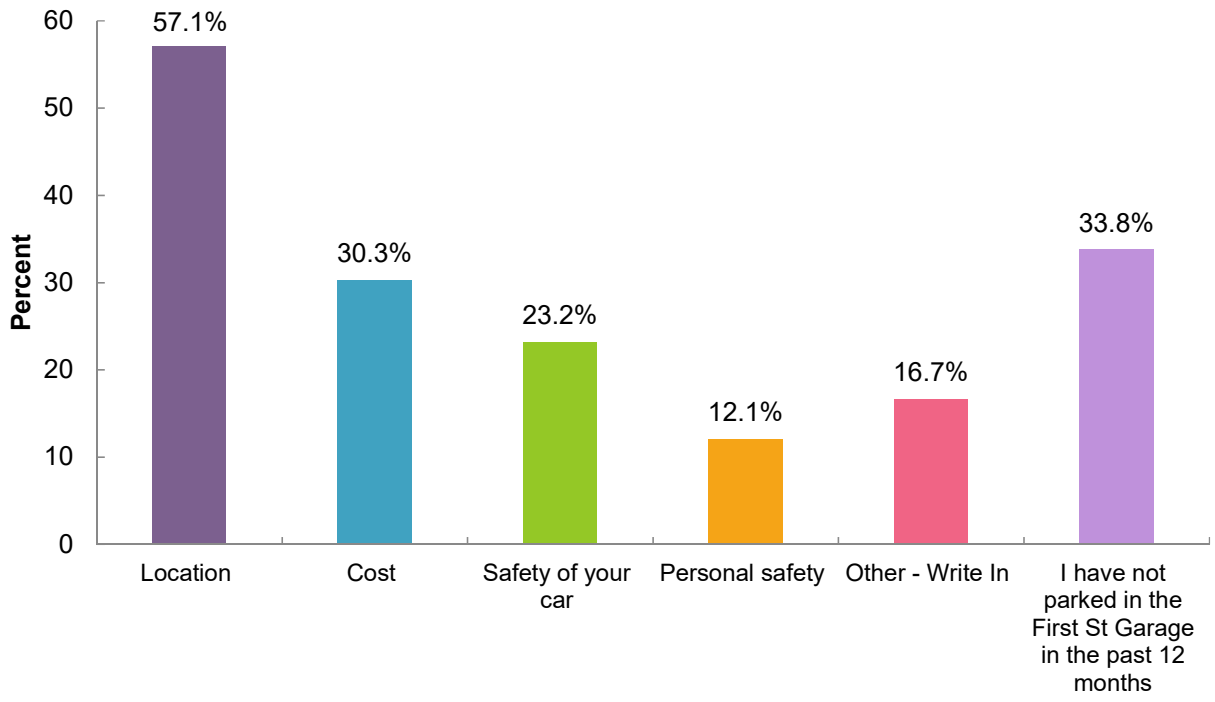
6. **How important is off-street parking in the First Street area to you during a snow emergency (when on-street parking is prohibited on Snow Emergency Routes)?**



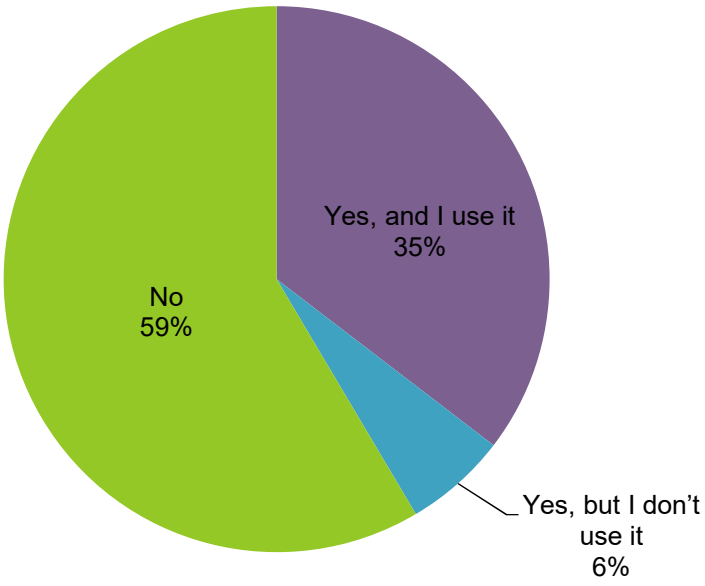
7. **What kinds of impacts do parking availability and parking costs in the First Street area have on your decision to drive to the area? (Check one answer for each)**

	Positive		Negative		Does not impact my decision		Responses
	Count	%	Count	%	Count	%	Count
Parking availability	72	38%	43	23%	74	39%	189
Parking costs	41	22%	54	29%	91	49%	186

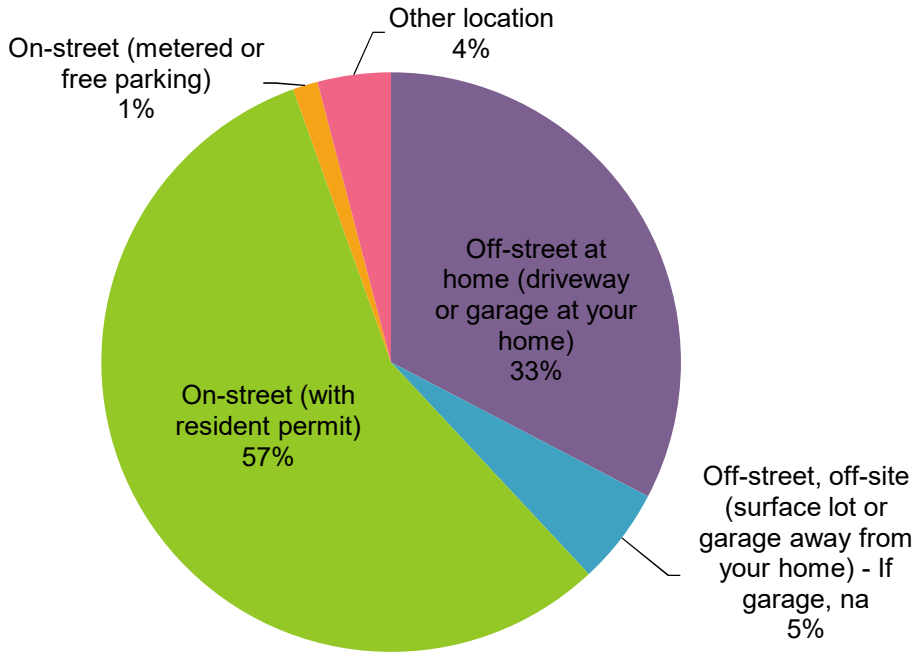
8. **If you've parked in the First Street Garage in the past 12 months, which of the following factors lead you to park there? (Check all that apply)**



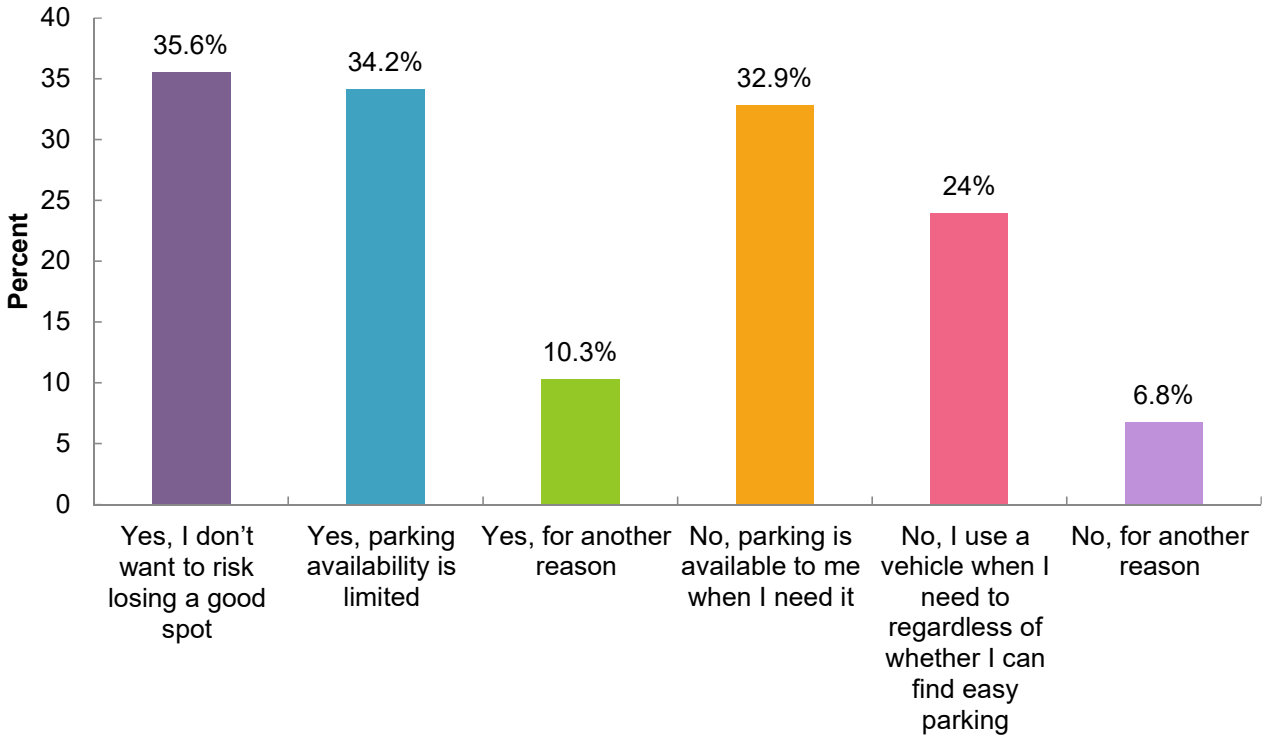
9. Do you currently live in a building that provides parking?



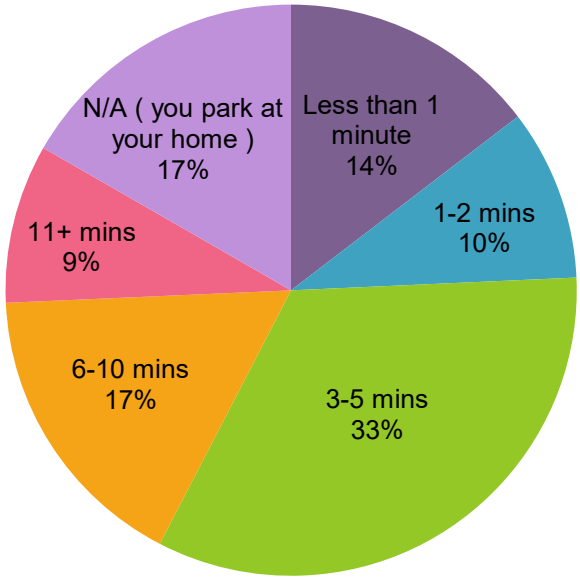
10. Where do you normally park at home?



11. Do you avoid using your personal motor vehicle because of parking availability near your home? (Please check all that apply)



12. How long does it typically take you to find a parking spot near your home?



Write In Responses

Question 8 – 'Other' Responses:

- It is the only place you can park without a residential permit for more than 2 hours.
- We don't have parking where we live in East Camb -- so we need to park there
- I have used ZipCars
- DO NOT TAKE IT AWAY
- I have monthly pass.
- Construction in my area
- Don't need to clean off car in snow storms
- Don't need to clean off car in snow storms
- Winter months for snow
- lack of available street parking
- I park in the garage during the winter.
- Snow emergencies or not finding parking nearby
- Lack of on-street parking
- Snow emergency
- reduces search for on street parking
- snow
- My business is located in E Cambridge and my business requires me to regularly (1-2 days week) drive, and park for 1/2-1 full day. The 1st St Garage is my best option. My business needs this parking.
- Weather emergency
- time saved
- ease of access
- discount
- My job requires that I (and most everyone in my office) drive to multiple jobsite during the day via car. The parking garage is a necessity to us
- I live in East Cambridge and park my car there i have a monthly pass
- I live on Berkshire. No street parking there thanks to King Open School Project. Frequently Must park in First Street Garage or be towed.
- Have monthly parking permit
- Snow
- Snow emergency. Inability to find a street spot (once or twice on street cleaning days)
- Elevators nearby/ took a friend shopping who used crutches
- snow on-street
- As a homeowner in East Cambridge, I rely on this garage to park during the winter months, for family when they come to town, for guests who want to visit/shop in East Cambridge. I was also planning to recommend this garage to my guests to park at for my wedding at the Multicultural Arts Center.
- ZipCar
- especially in winter

Question 10 – Off-street, Off-site Responses

- 1ST STREET GARAGE
- I have a Lot U parking spot
- First Street Garage
- First street garage
- 10 Rogers Street
- First St. garage, in winter
- First Street Garage
- Lot U

Question 10 – Other Location Responses

- there is no space where I live so I need to park in this garage
- Don't own a car. On-street (with visitor's permit) for short-term (1-2 day) rental cars
- Attached underground garage
- Neighbor
- 8 Street
- Just to reiterate: I have a resident permit. But about 80% of the time there is no street parking within a 7 block radius of my apartment building due to the King Open School Construction Project. I frequently take Lyft in order to avoid losing a parking spot.

Summary of Reponses from East Cambridge

- Of the respondents who indicated they live in East Cambridge, 21% work in East Cambridge (32 of 154).
- 41% of East Cambridge resident respondents said that they park in the First Street area 'Every Day' (63 out of 154 respondents) while 16% answered 'Rarely' (24 out of 154 respondents)
- 46% of respondents who indicated they work in East Cambridge responded that they park in the First Street area 'Every Day' (22 out of 48 respondents) while 13% answered 'Rarely' (6 out of 48 respondents)
- 36% (55 out of 154 respondents) of East Cambridge resident respondents said it took '3-5 minutes' to reach their destination the last time they parked in the First Street area. 23% (36 out of 154 respondents) answered '1-2 minutes,' and 18% (28 out of 154 respondents) answered '6-10 minutes.'
- Of the East Cambridge resident responses, 31% (48 out of 154 respondents) say it typically takes them '3-5 minutes' to find a parking spot near their home, while 16% (24 out of 154 respondents) responded '6-10 minutes,' 16% (24 out of 154 respondents) responded, 'N/A (you park at home),' and 14% (21 out of 154 respondents) responded 'Less than 1 minute.'

- 58% (89 out of 154 respondents) of East Cambridge resident respondents said that off-street parking in the First Street area during a snow emergency is 'Very Important' to them and 21% (33 out of 154 respondents) say 'It doesn't affect me'

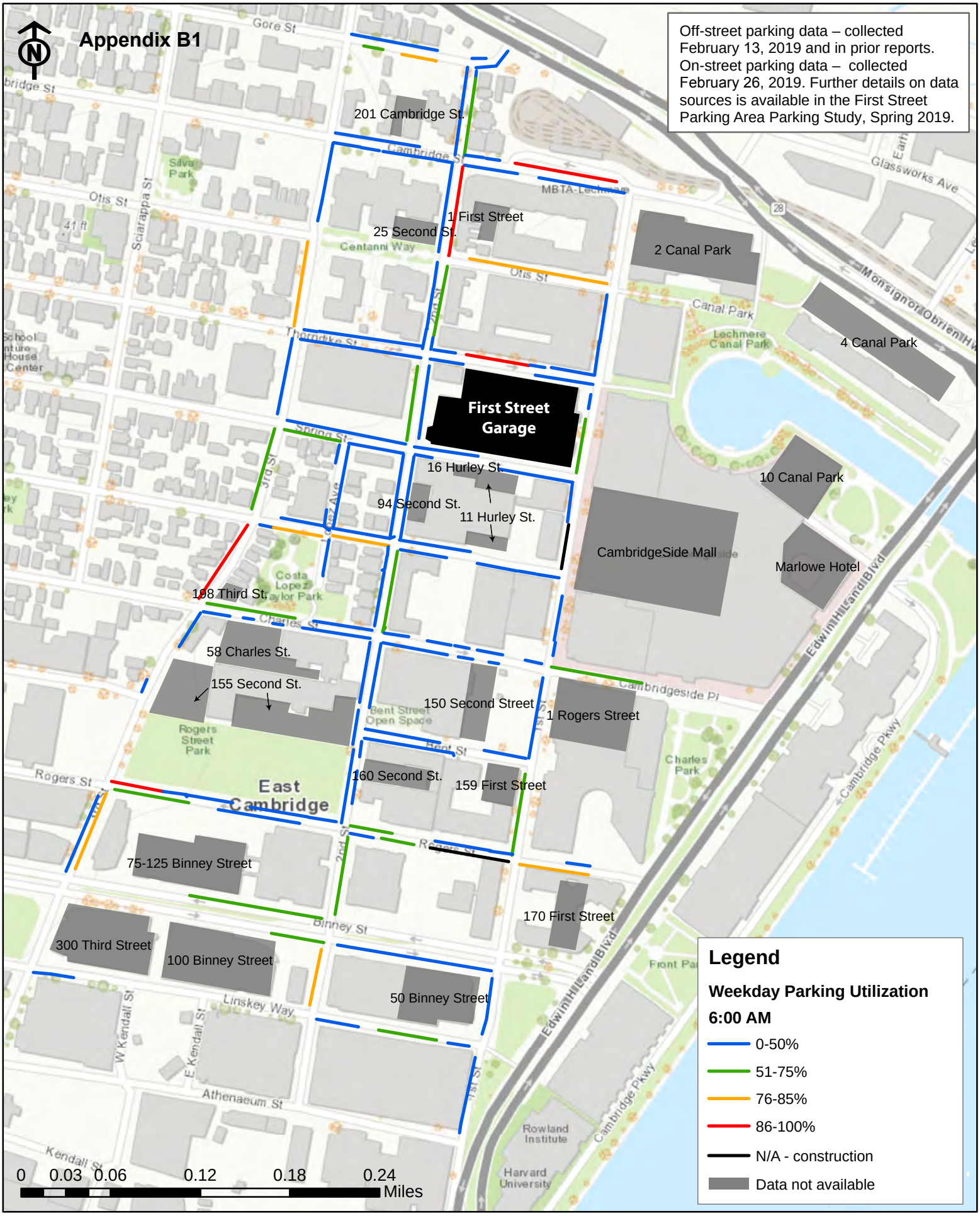
- Question 9 (Do you currently live in a building that provides parking?) break-down for East Cambridge Resident Respondents:

No	56%
Yes, but I don't use it	6%
Yes, and I use it	34%
No Response	4%

- Question 10 (Where do you normally park at home?) break-down for East Cambridge Resident Respondents:

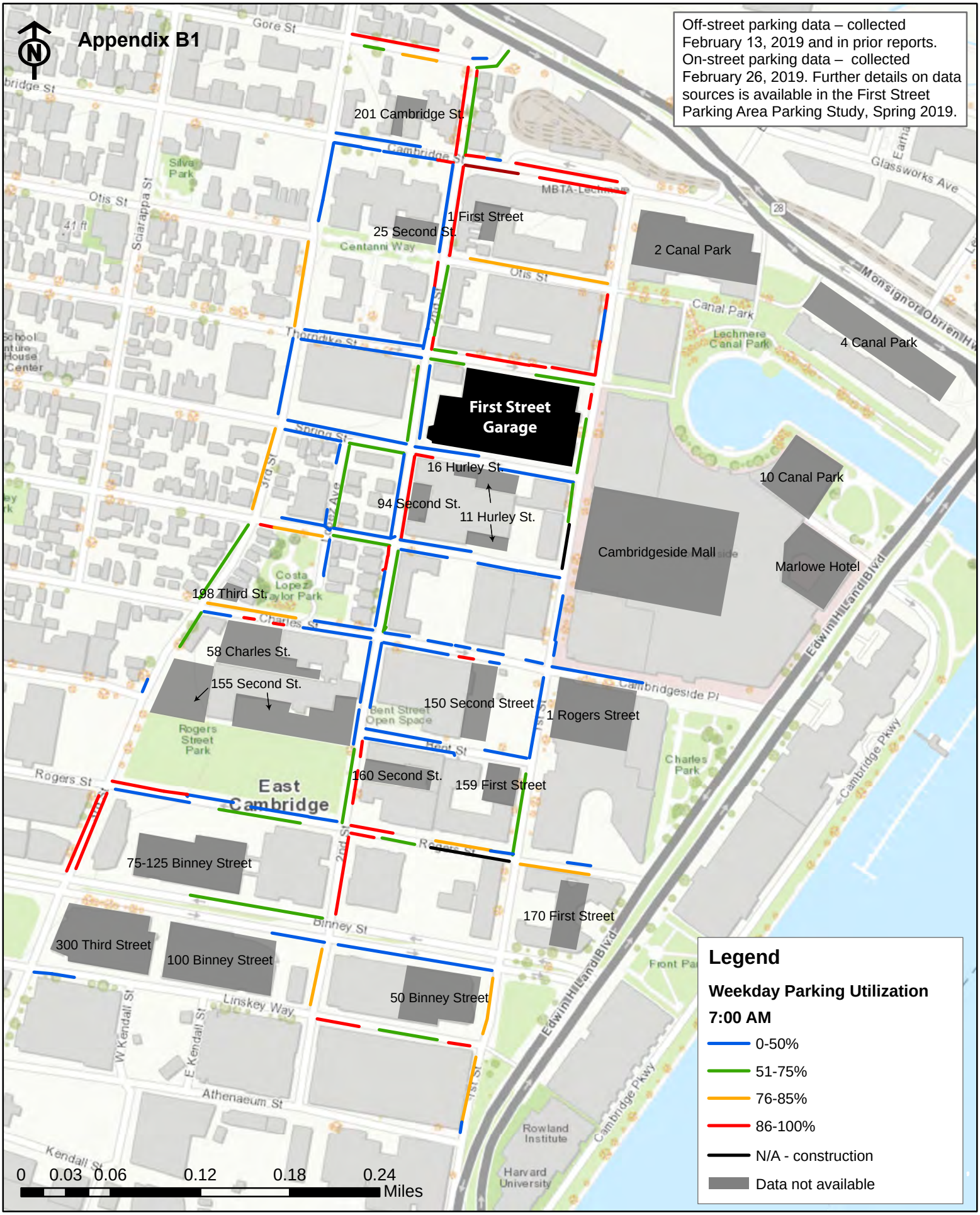
On-street (metered or free parking)	1%
On-street (with resident permit)	54%
Off-street, off-site	5%
Off-street at home	31%
Other Location	4%
No Response	5%

APPENDIX B



MCMAHON TRANSPORTATION ENGINEERS & PLANNERS

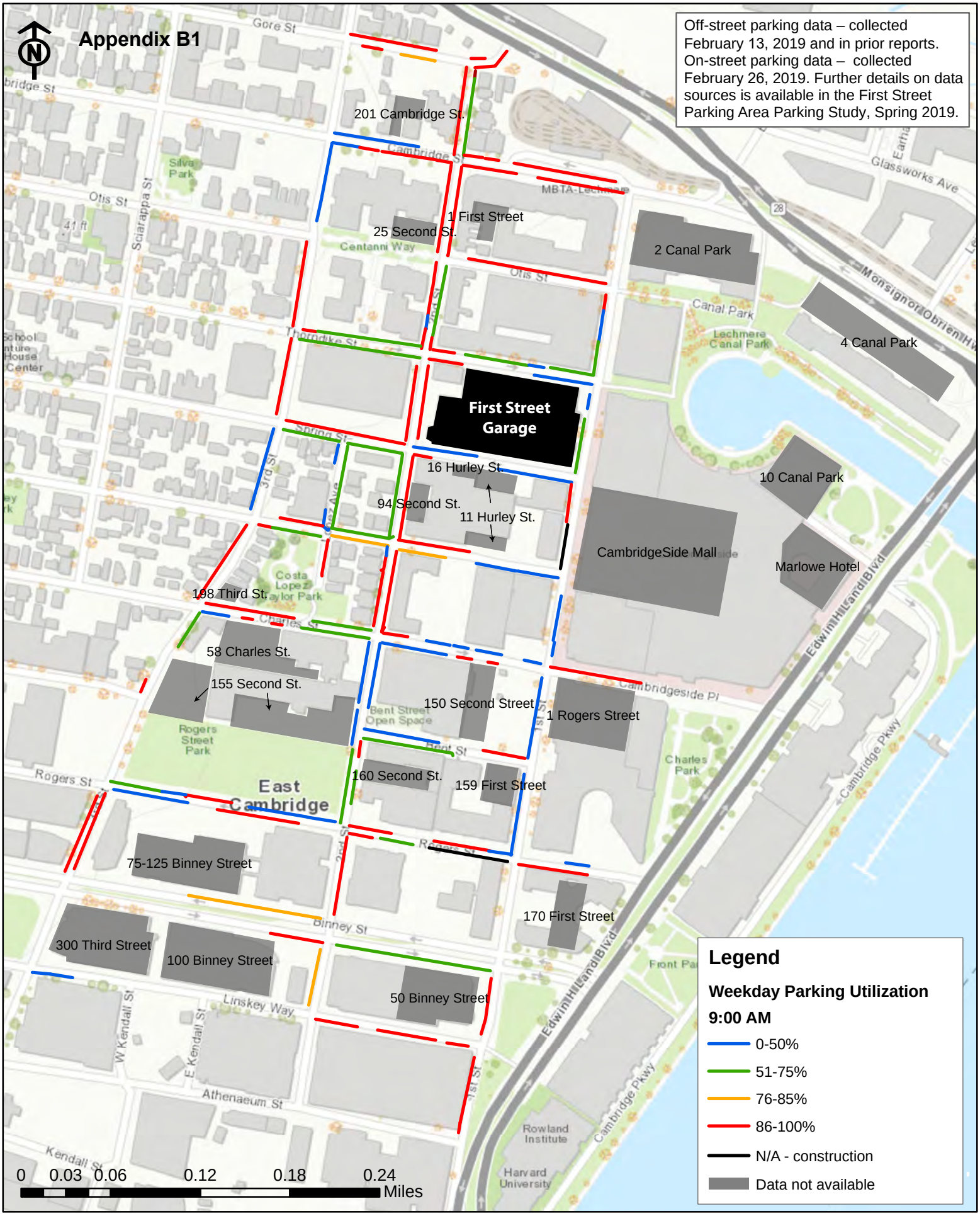
Weekday Parking Utilization - 6:00 AM
First Street Area Parking Study March 2019
Cambridge, MA



Weekday Parking Utilization - 7:00 AM
First Street Area Parking Study March 2019
Cambridge, MA

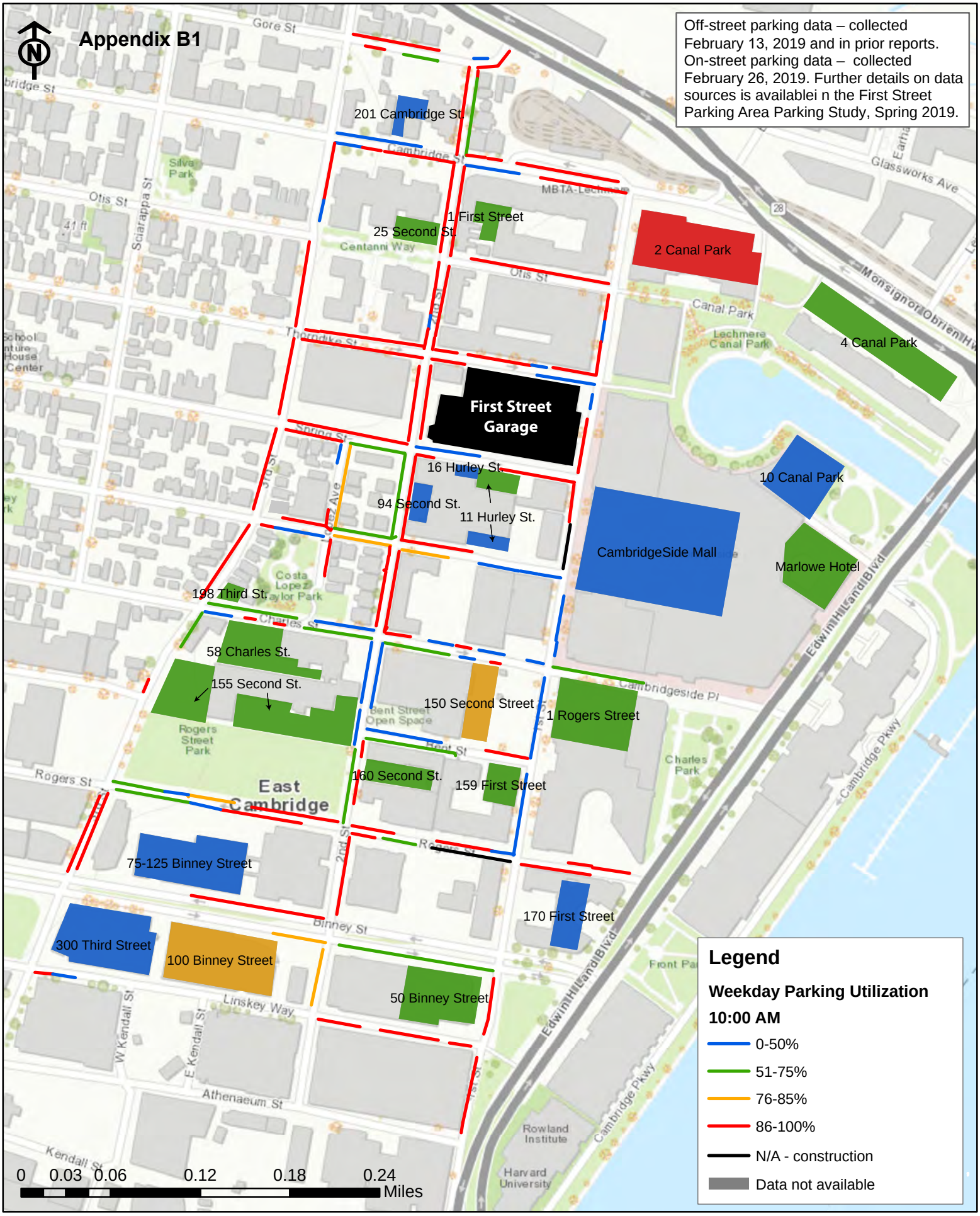
McMAHON TRANSPORTATION ENGINEERS & PLANNERS

Weekday Parking Utilization - 8:00 AM
First Street Area Parking Study March 2019
Cambridge, MA

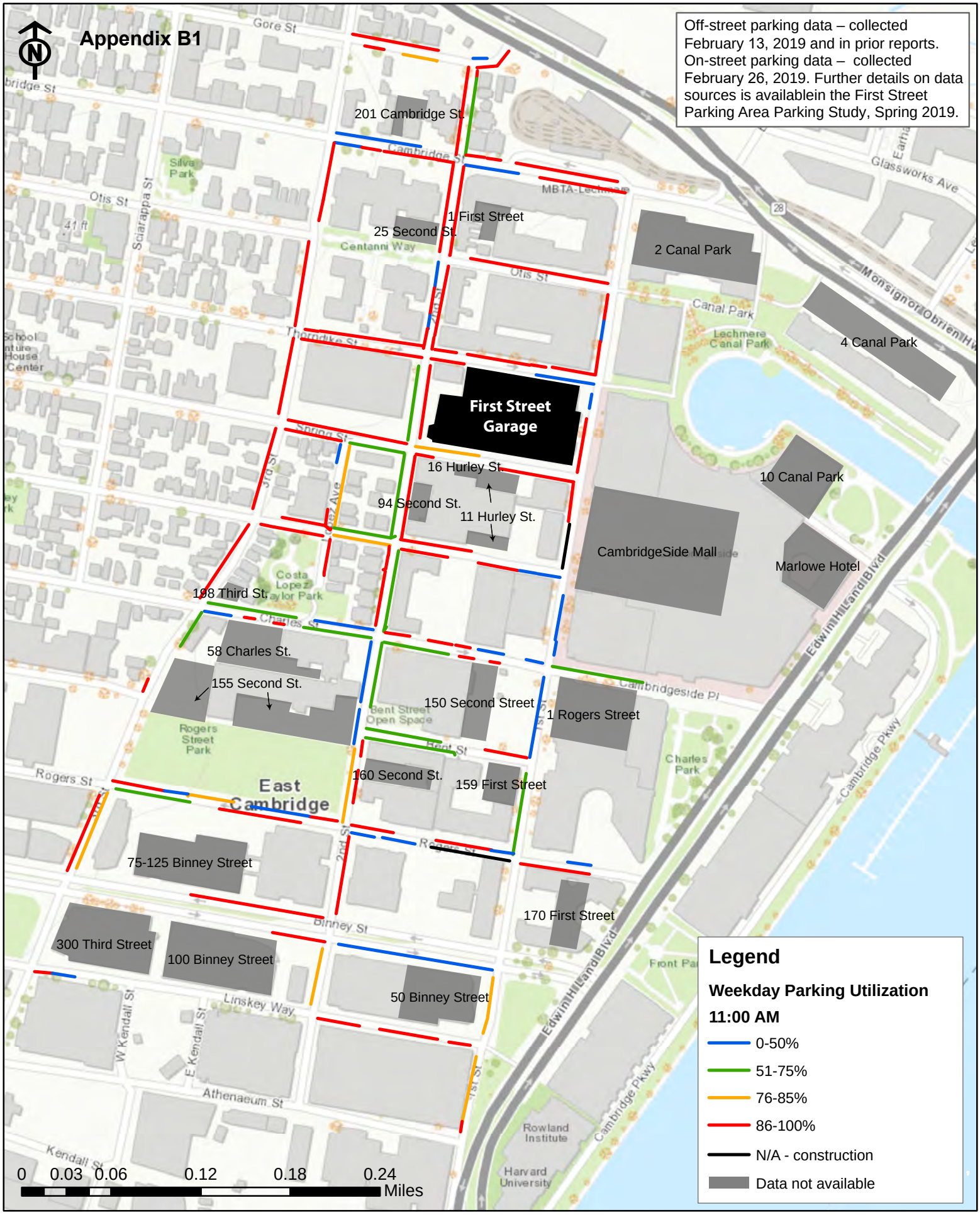


McMAHON TRANSPORTATION ENGINEERS & PLANNERS

Weekday Parking Utilization - 9:00 AM
First Street Area Parking Study March 2019
Cambridge, MA

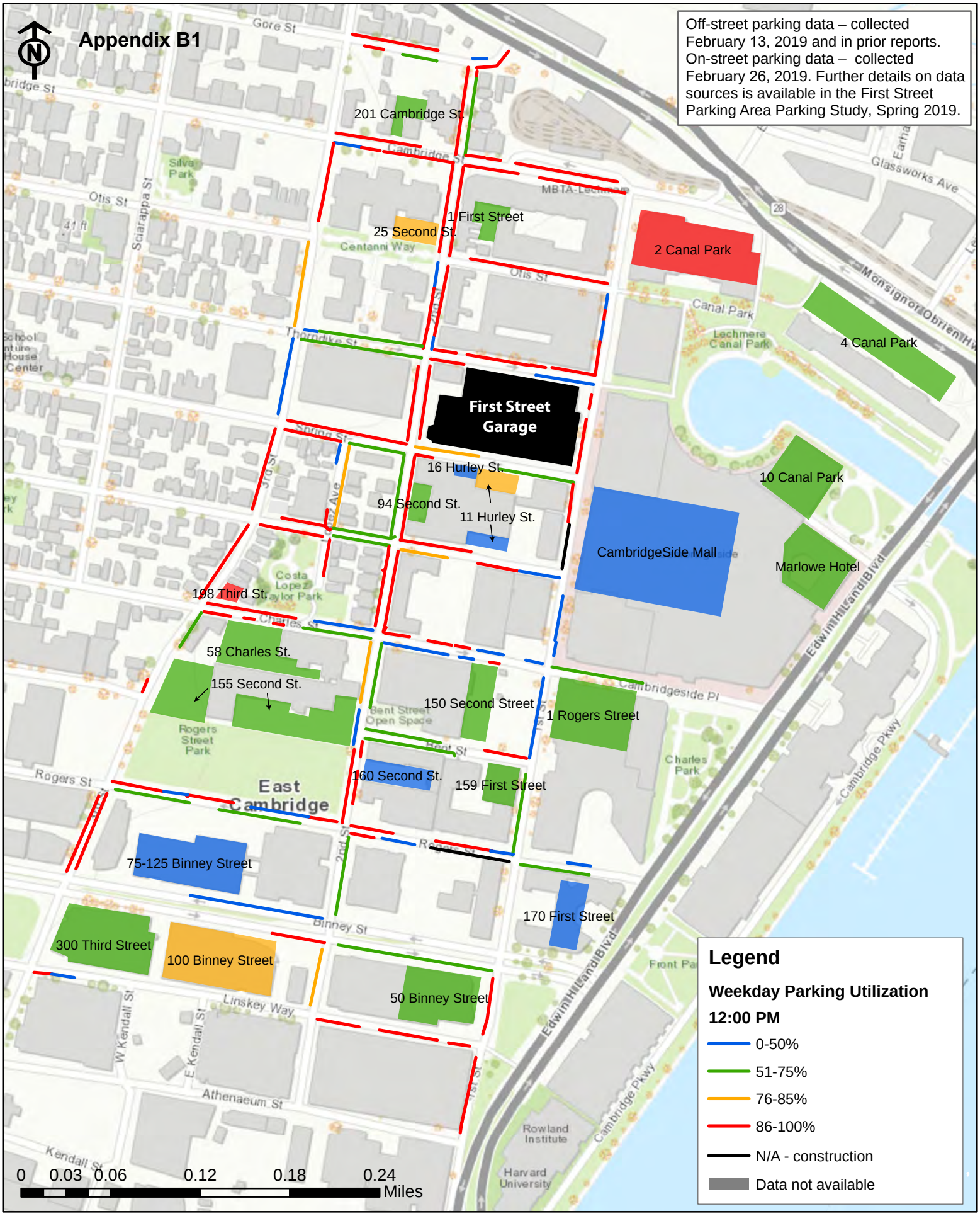


Weekday Parking Utilization - 10:00 AM
First Street Area Parking Study March 2019
Cambridge, MA

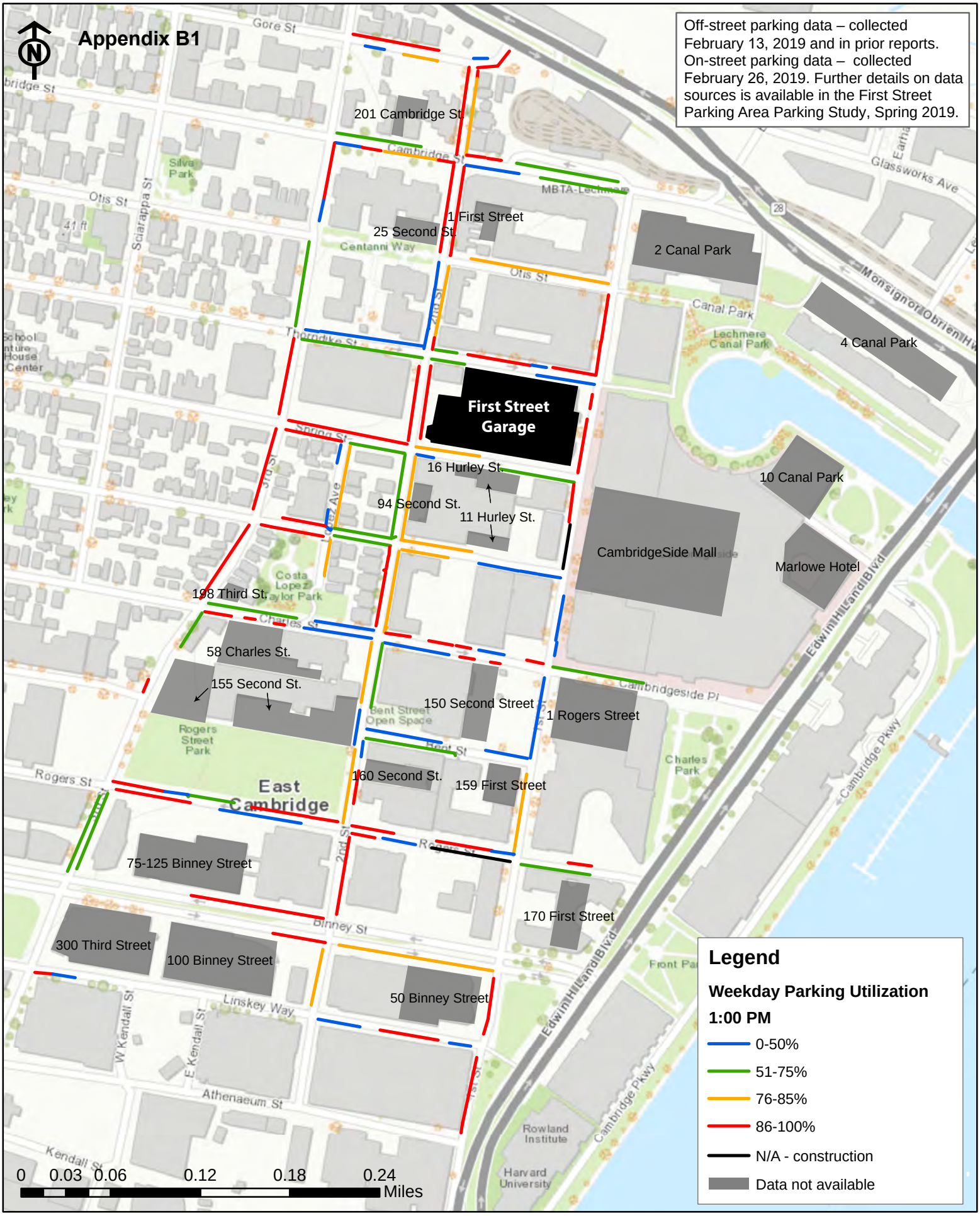


MCMAHON TRANSPORTATION ENGINEERS & PLANNERS

Weekday Parking Utilization - 11:00 AM
First Street Area Parking Study March 2019
Cambridge, MA



Weekday Parking Utilization - 12:00 PM
First Street Area Parking Study March 2019
Cambridge, MA

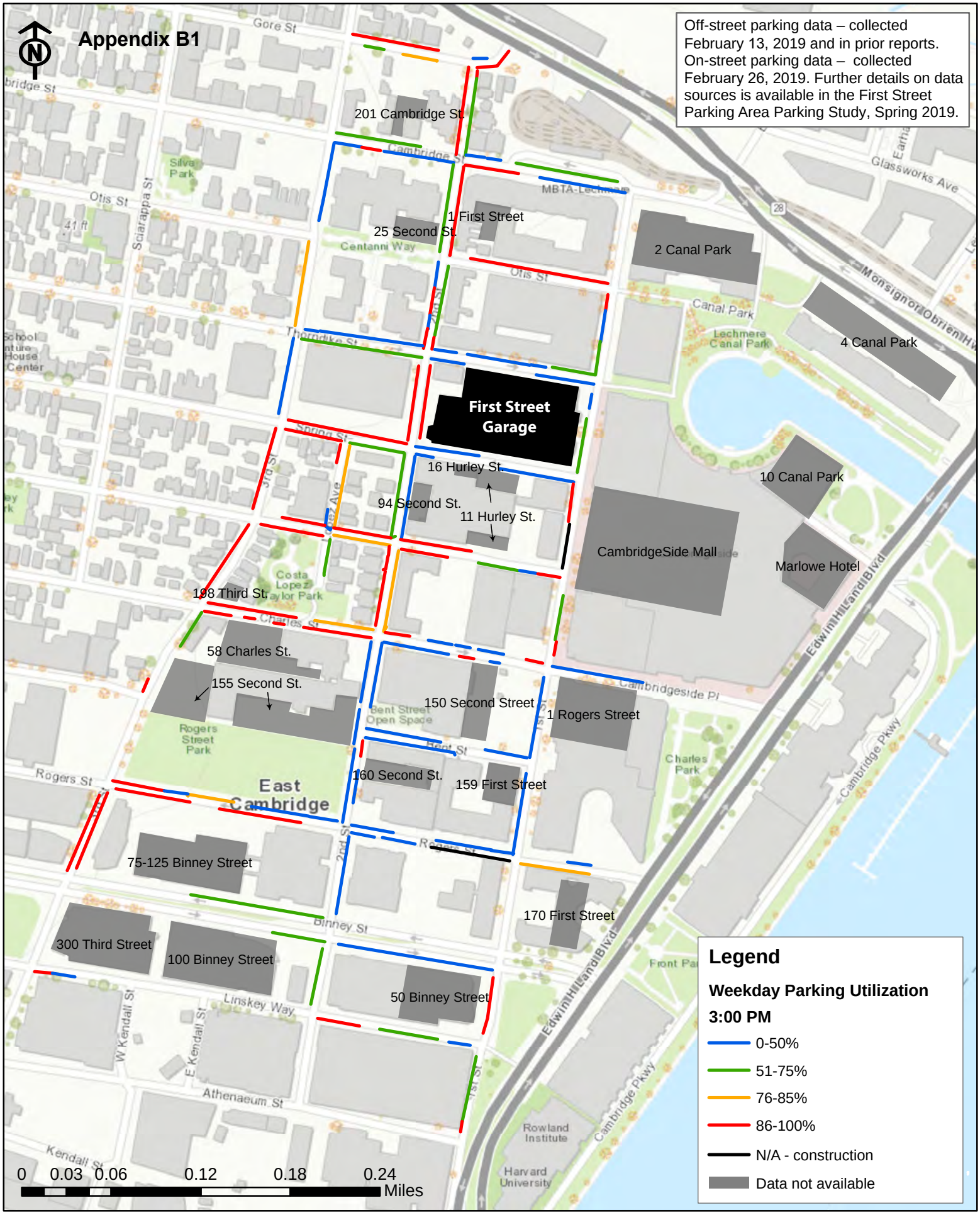


MCMAHON TRANSPORTATION ENGINEERS & PLANNERS

Weekday Parking Utilization - 1:00 PM
First Street Area Parking Study March 2019
Cambridge, MA

McMAHON TRANSPORTATION ENGINEERS & PLANNERS

Weekday Parking Utilization - 2:00 PM
First Street Area Parking Study March 2019
Cambridge, MA



MCMAHON TRANSPORTATION ENGINEERS & PLANNERS

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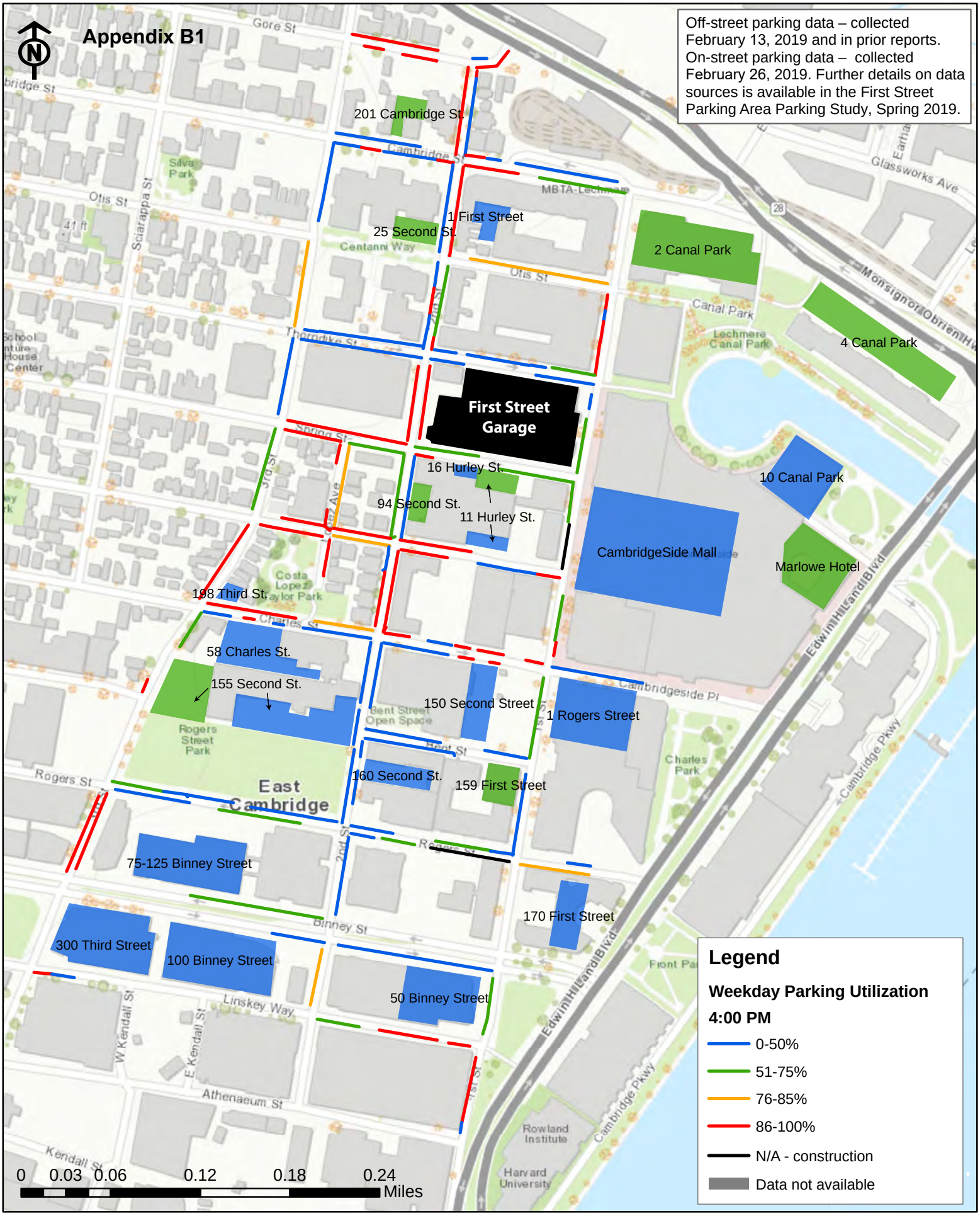
Cambridge, MA



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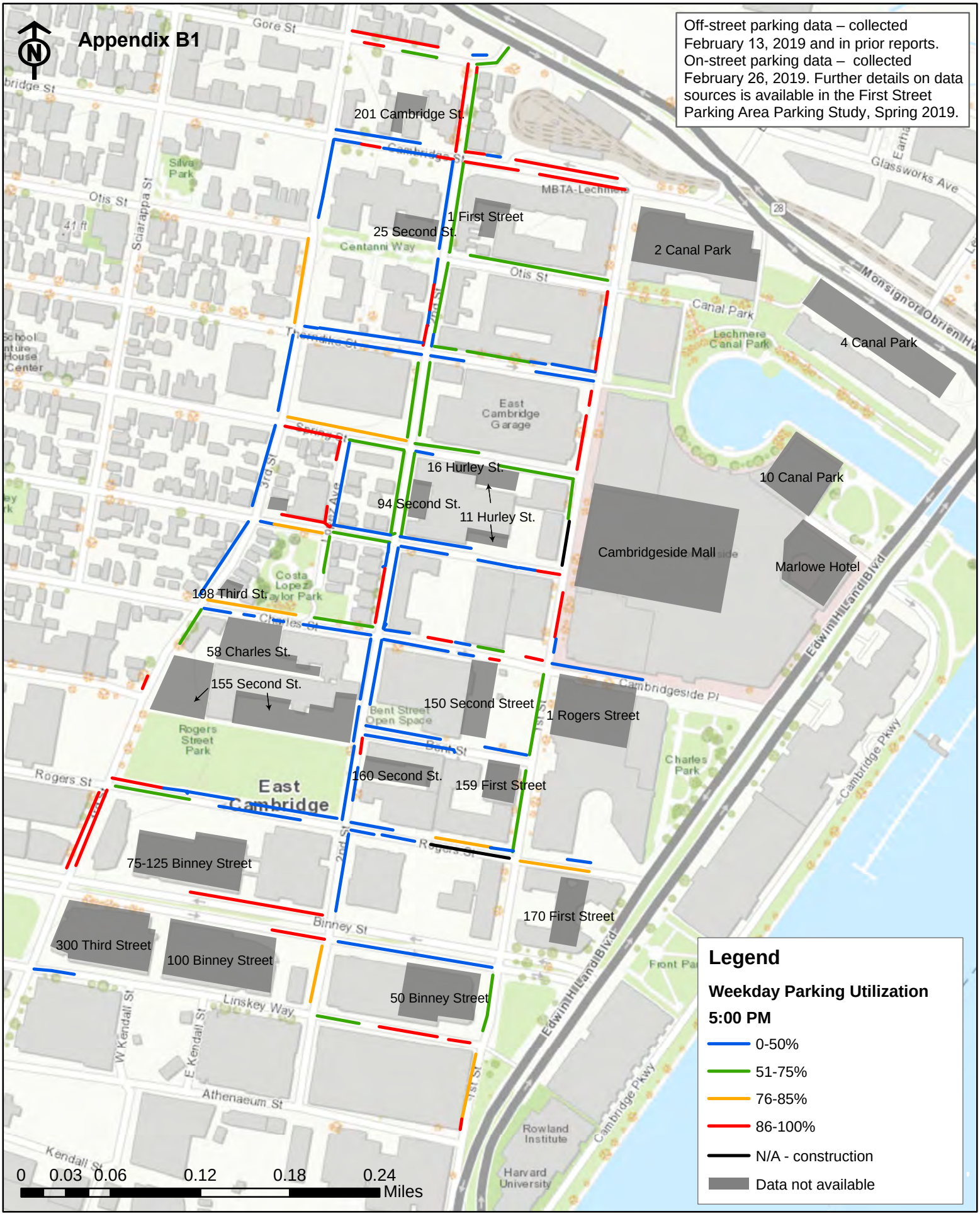
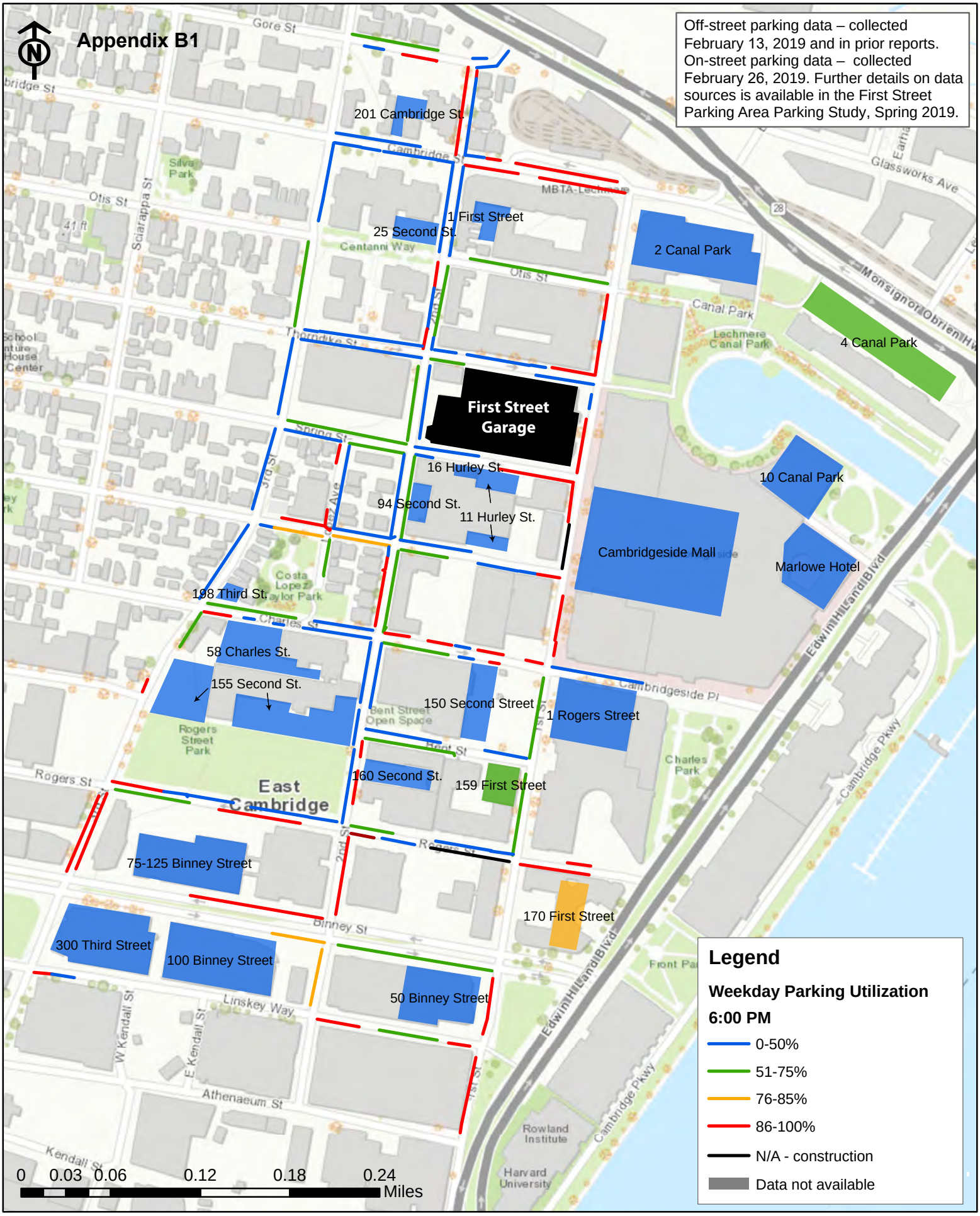
Cambridge, MA



McMAHON TRANSPORTATION ENGINEERS & PLANNERS

Weekday Parking Utilization - 5:00 PM
First Street Area Parking Study March 2019
Cambridge, MA



McMAHON TRANSPORTATION ENGINEERS & PLANNERS

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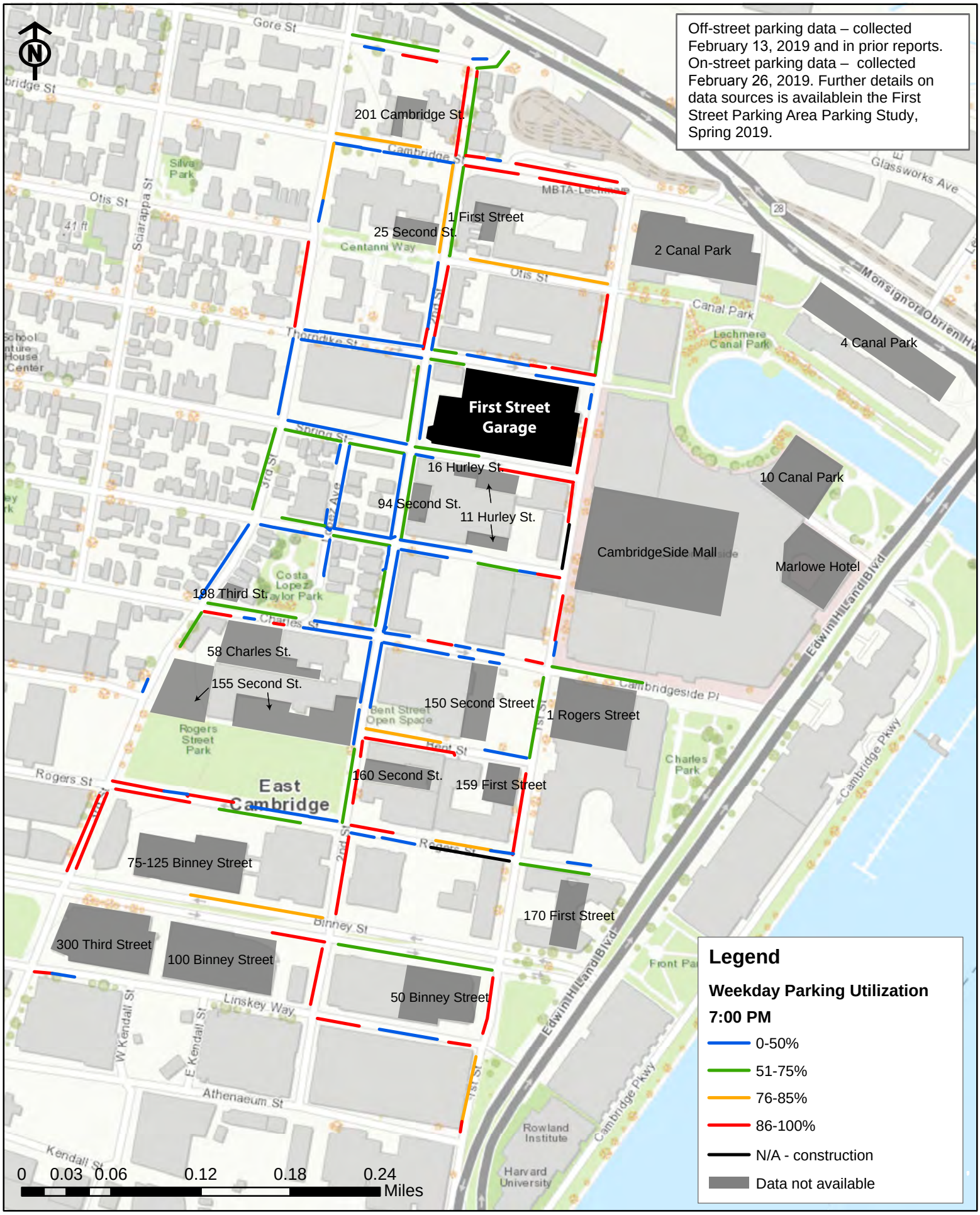
Cambridge, MA



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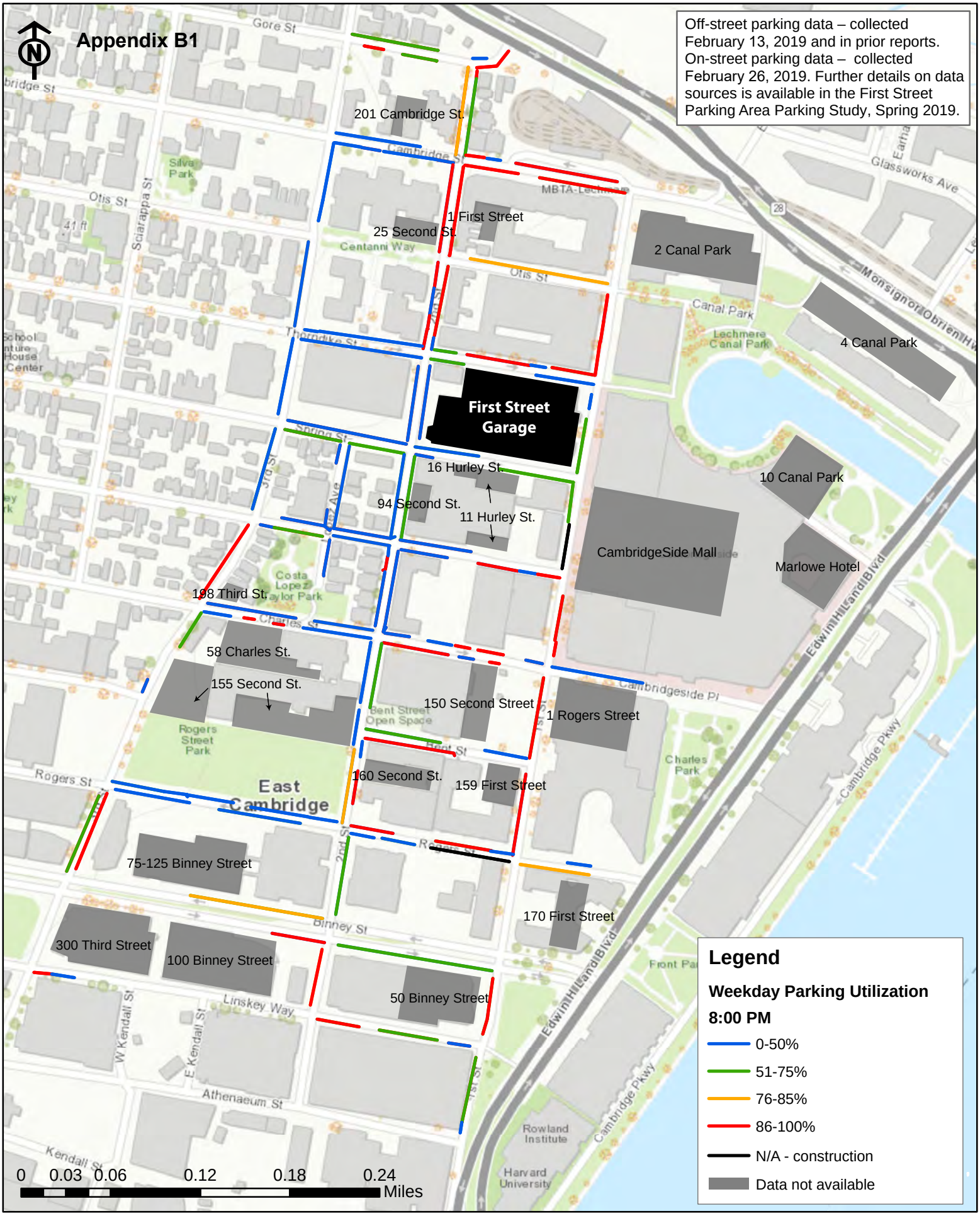
First Street Area Parking Study March 2019
Cambridge, MA



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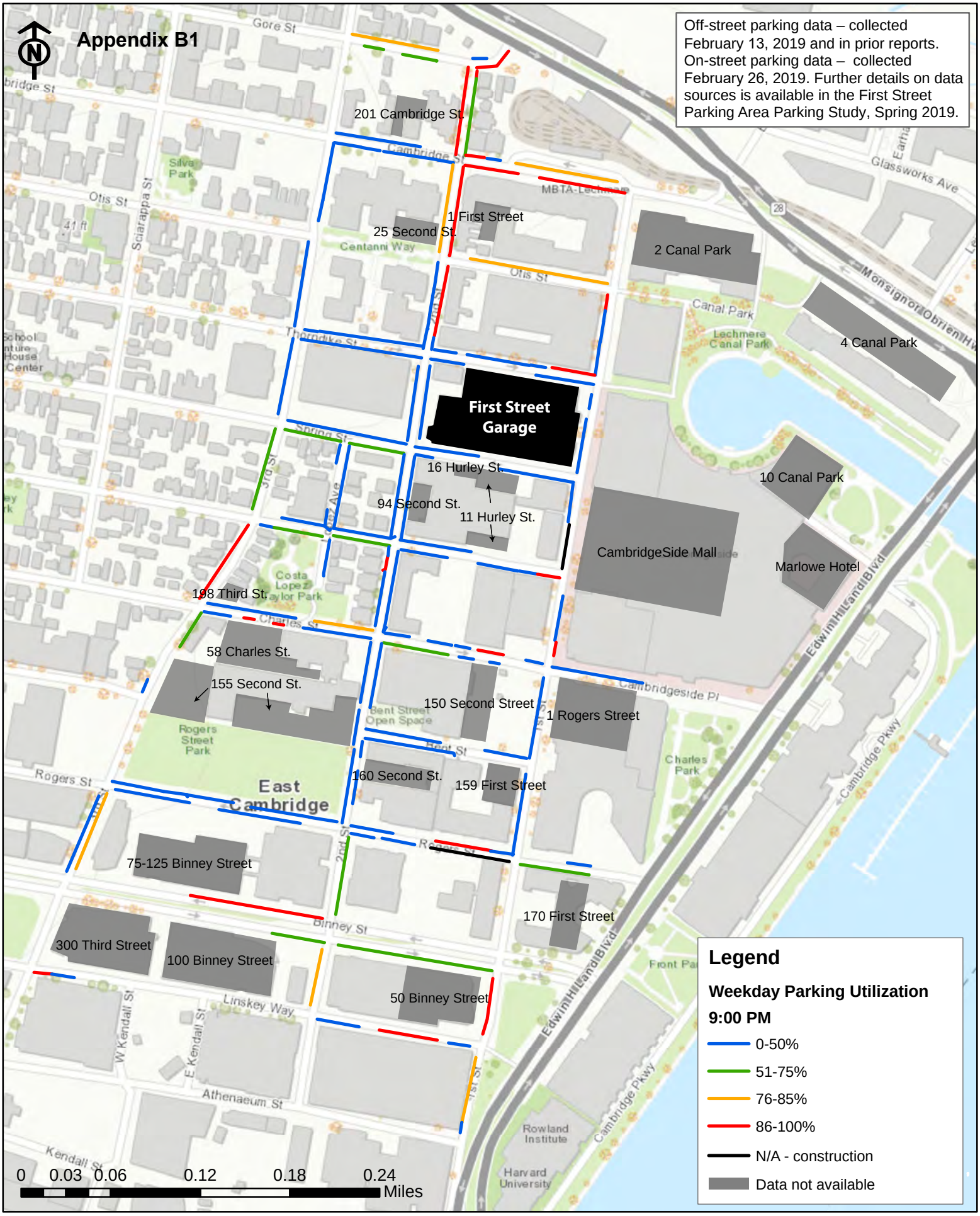
Cambridge, MA



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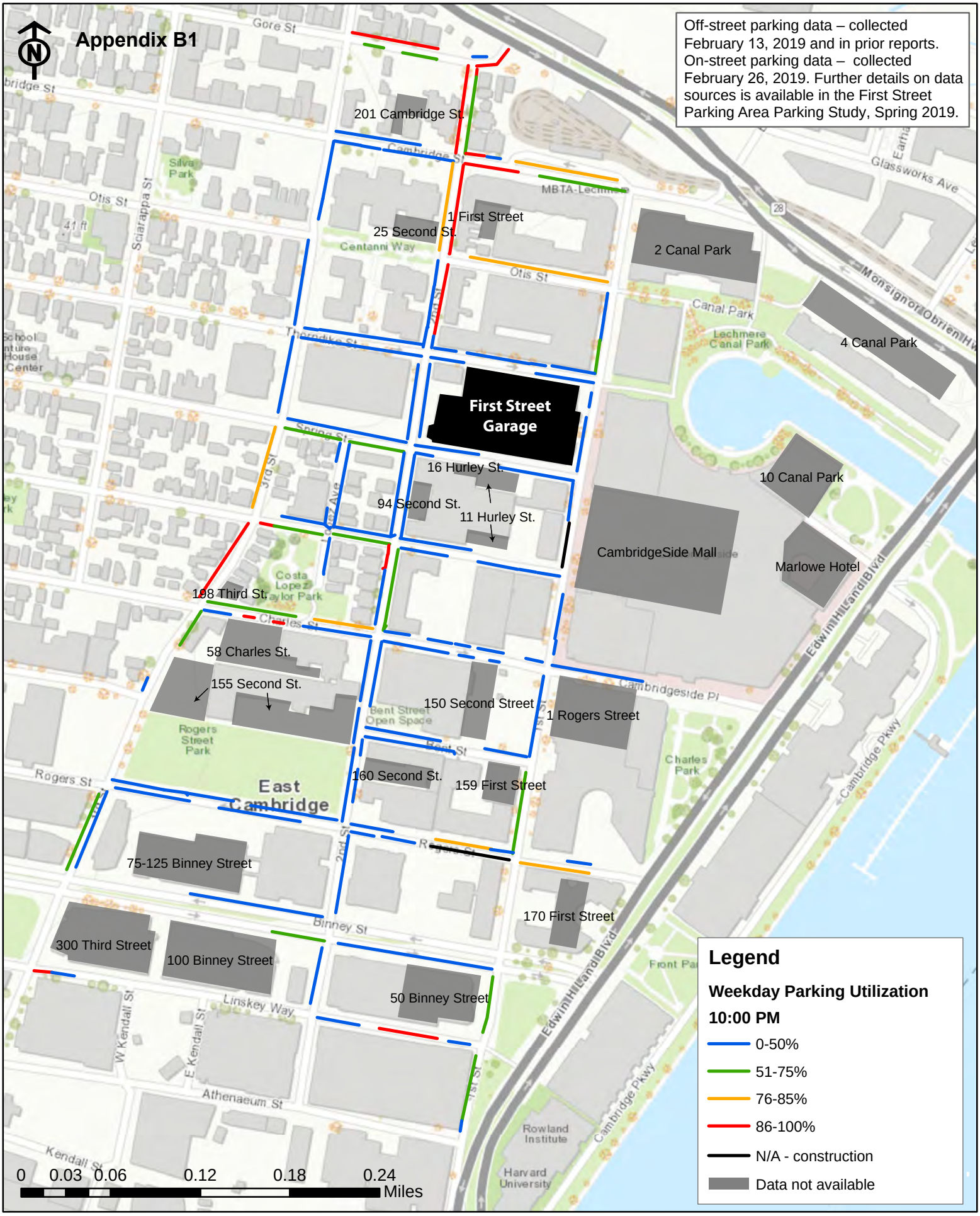
Cambridge, MA



McMAHON TRANSPORTATION ENGINEERS & PLANNERS

Weekday Parking Utilization - 10:00 PM
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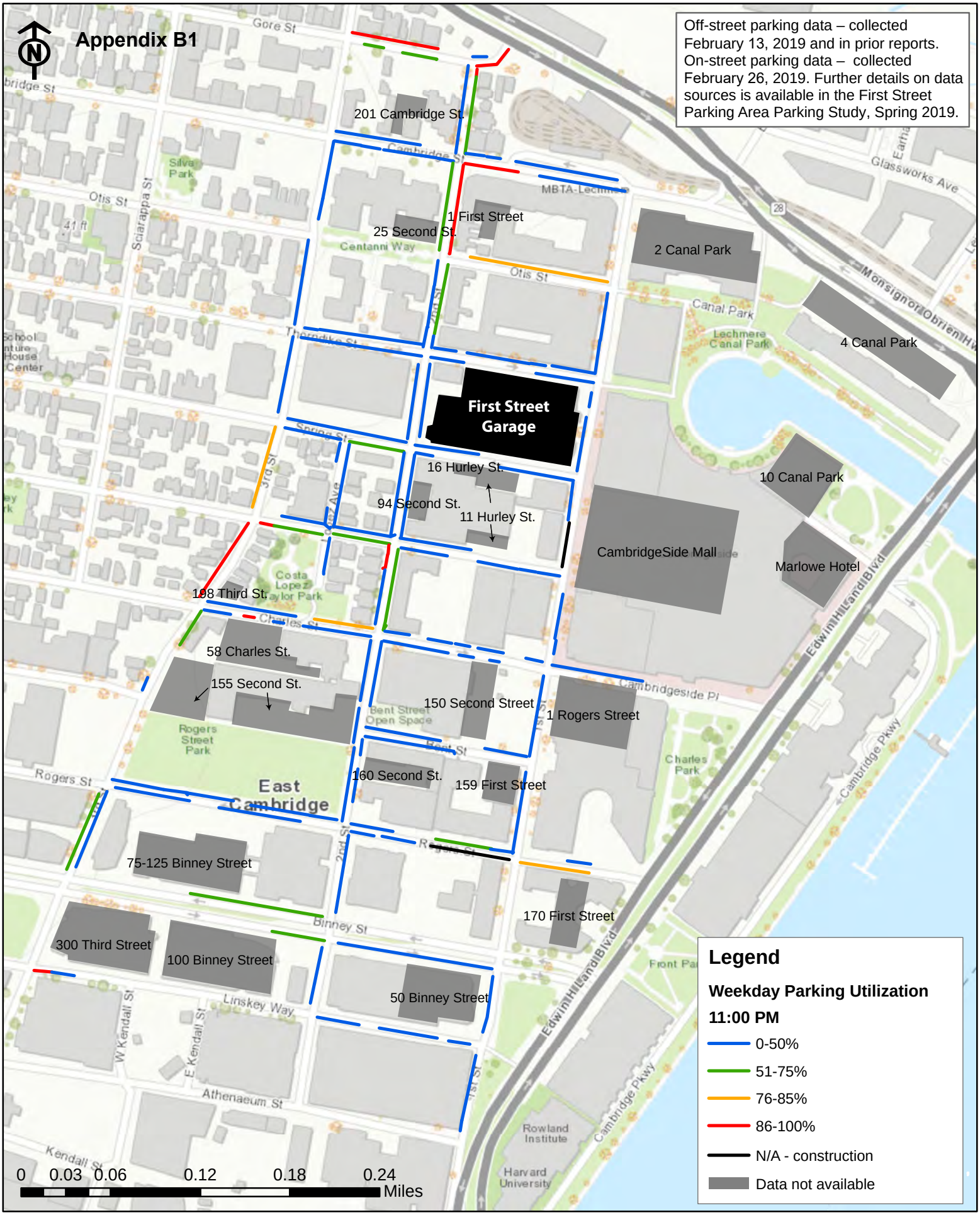
Cambridge, MA



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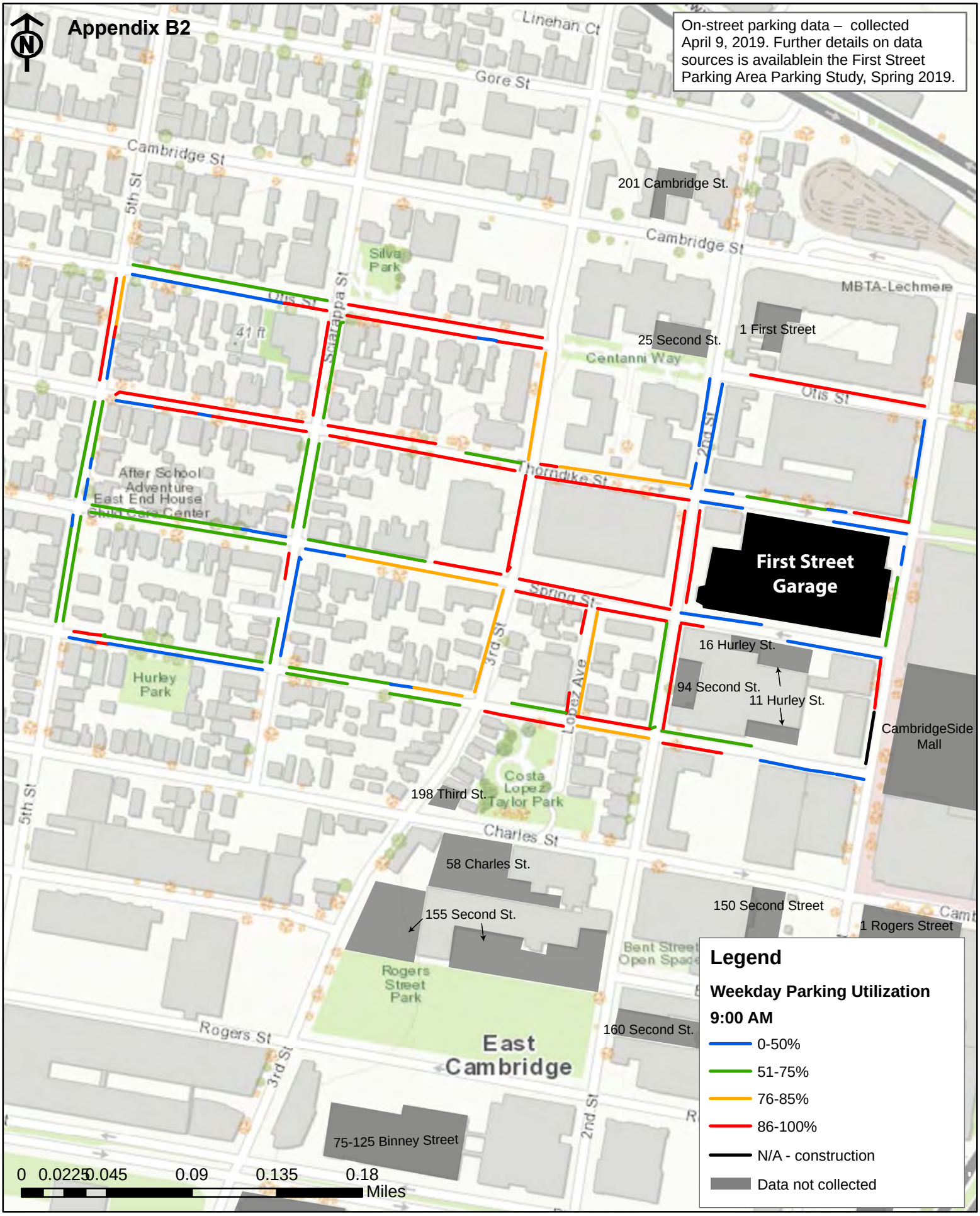
Cambridge, MA



MCMAHON TRANSPORTATION ENGINEERS & PLANNERS

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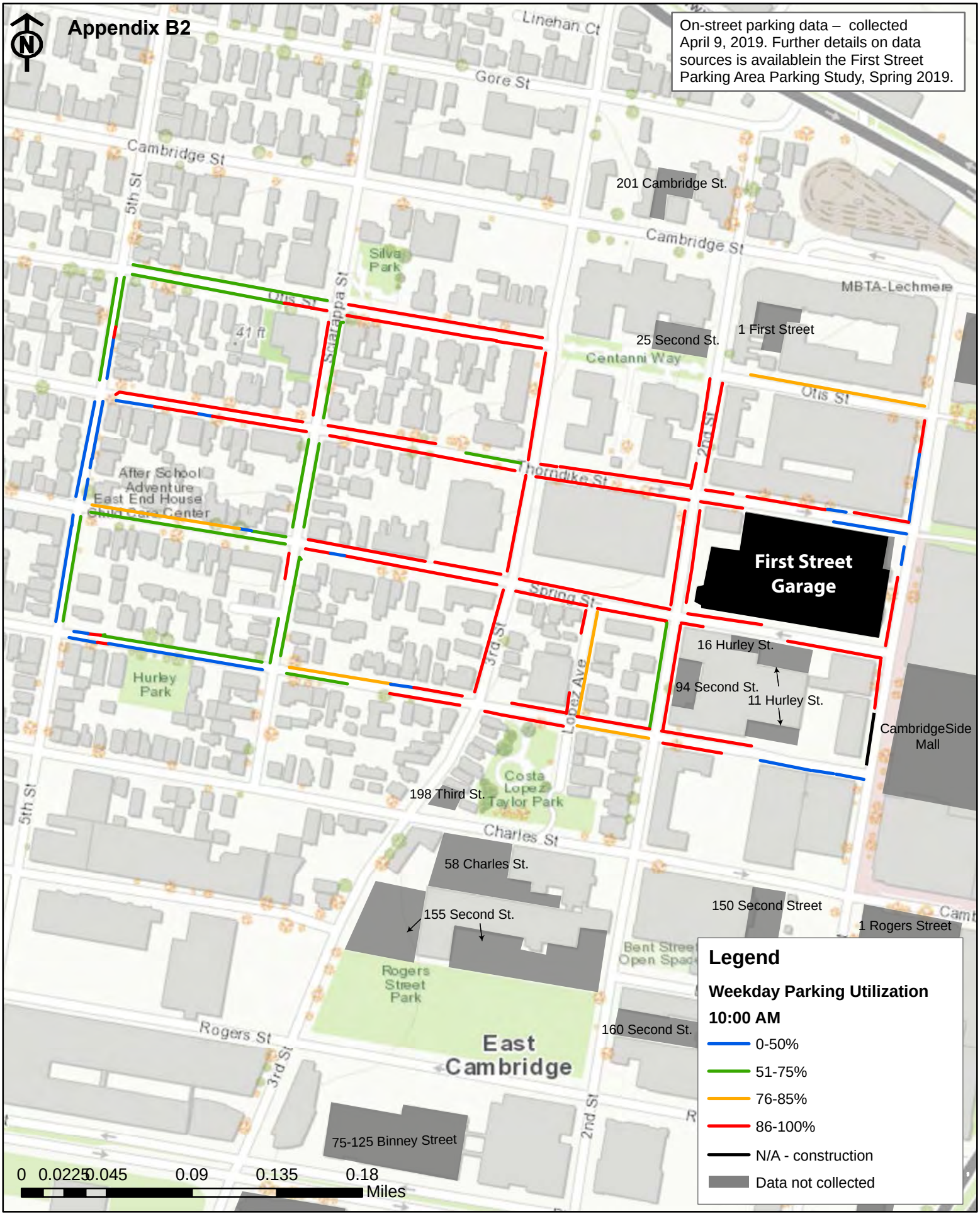
Cambridge, MA



MCMAHON TRANSPORTATION ENGINEERS & PLANNERS

Weekday Parking Utilization - 10:00 AM
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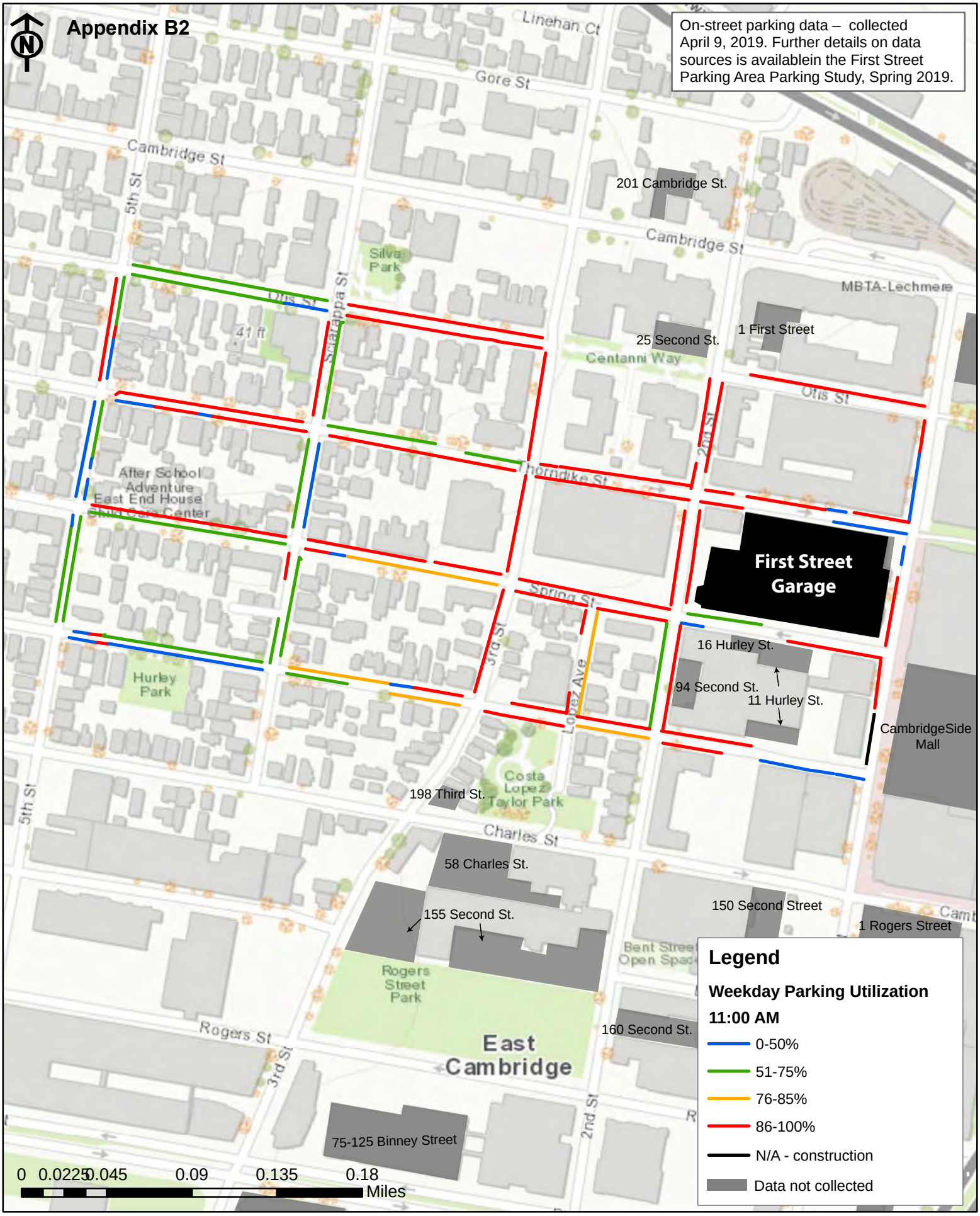
Cambridge, MA



MCMAHON TRANSPORTATION ENGINEERS & PLANNERS

Weekday Parking Utilization - 11:00 AM
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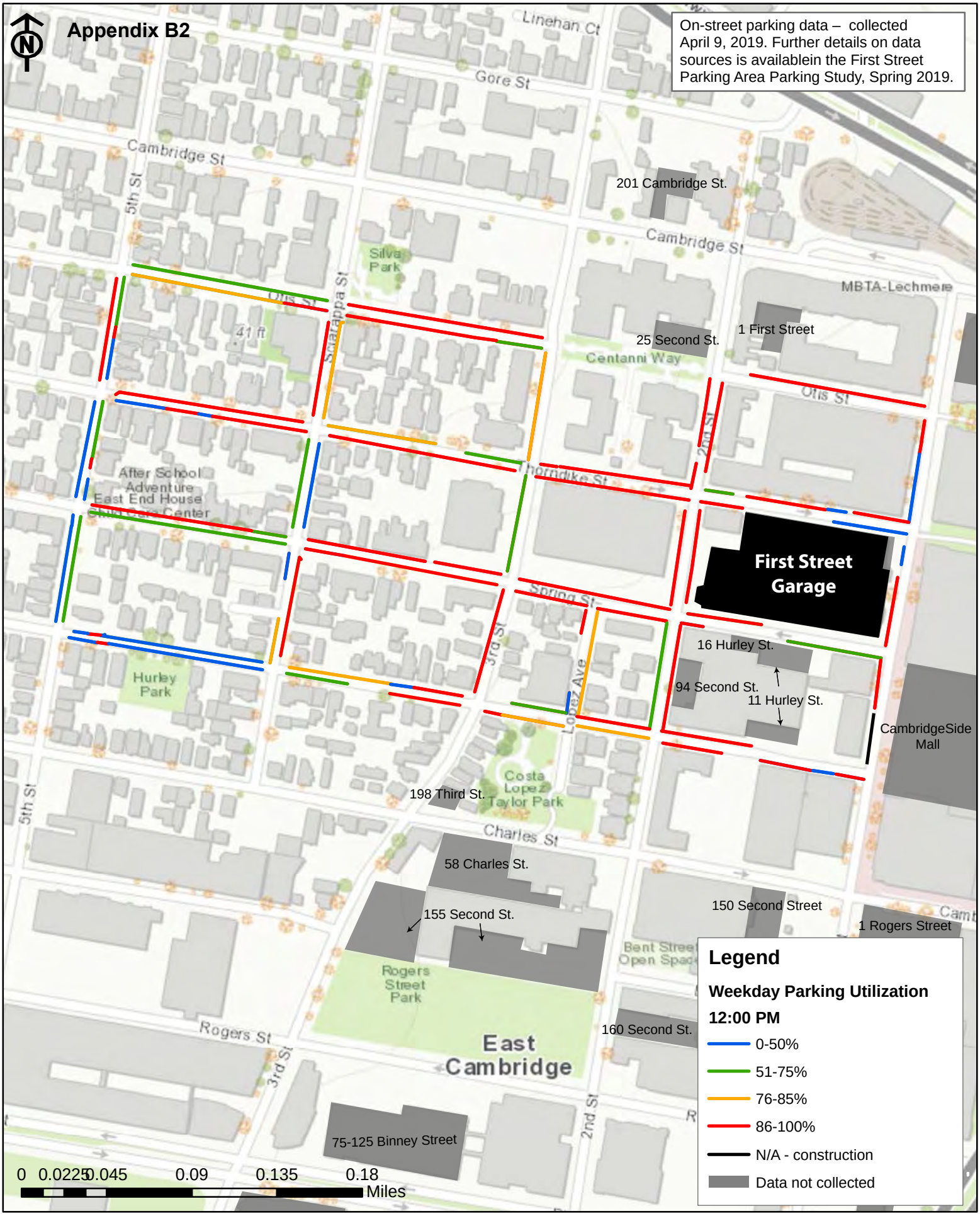
Cambridge, MA



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Weekday Parking Utilization - 12:00 PM
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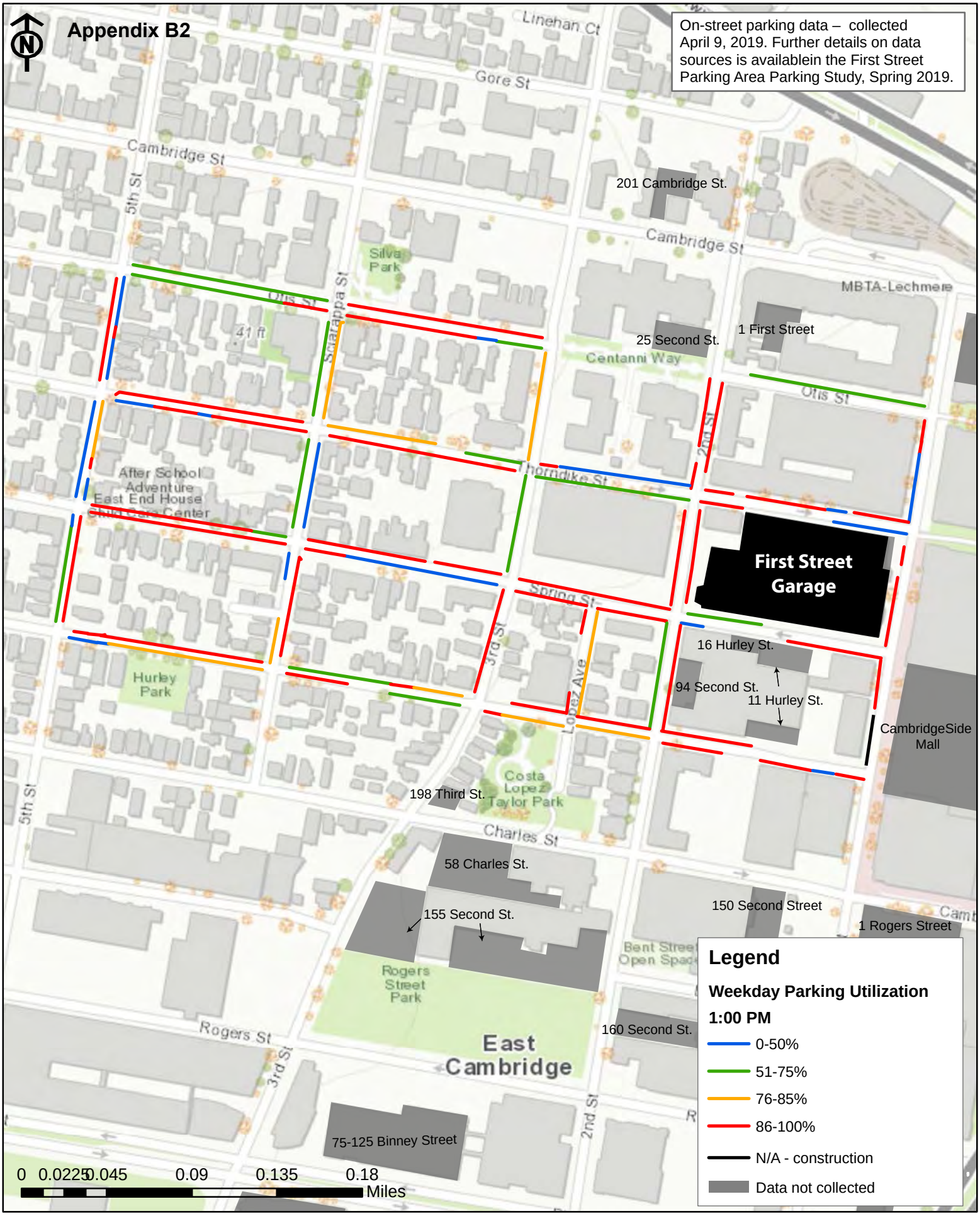

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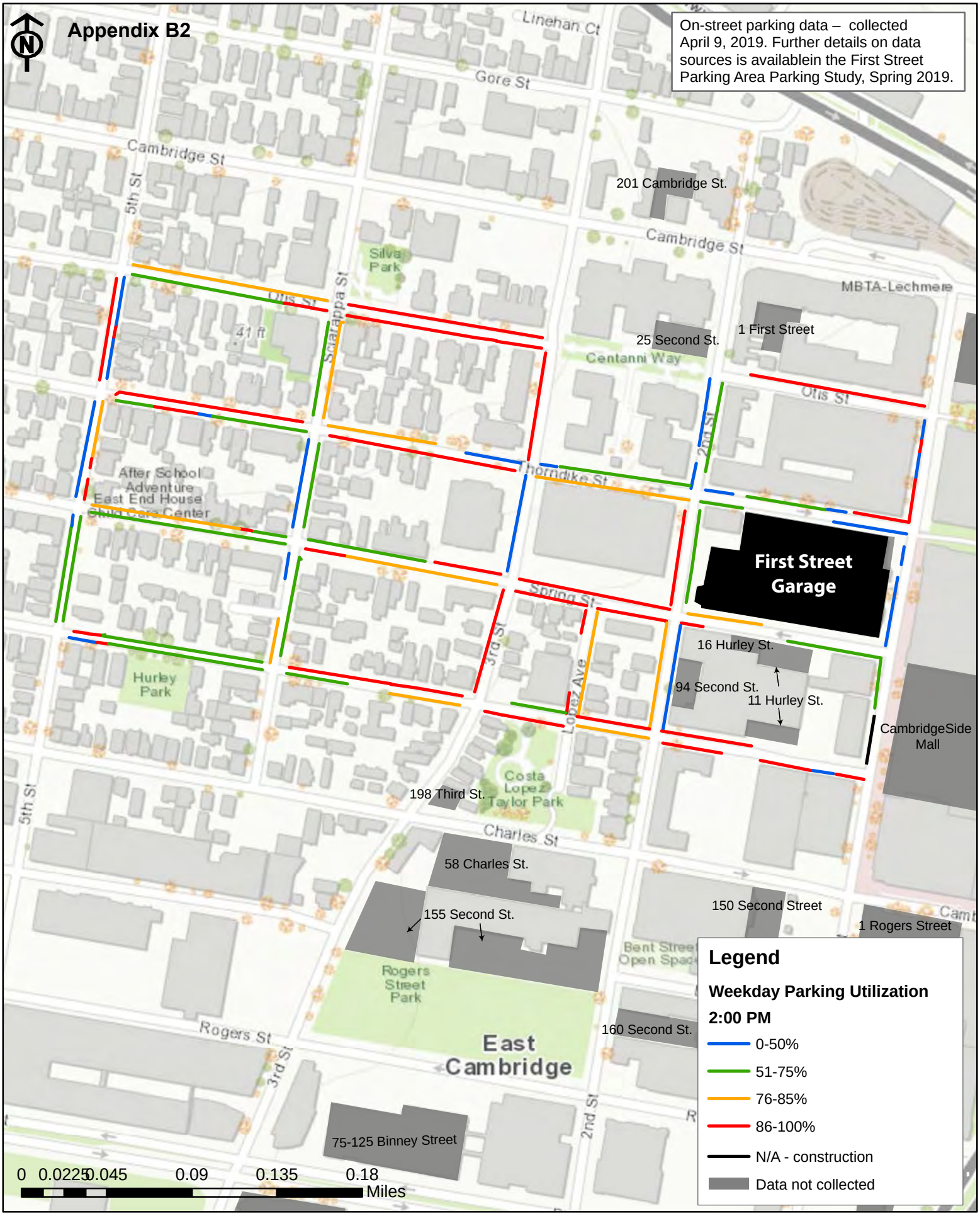

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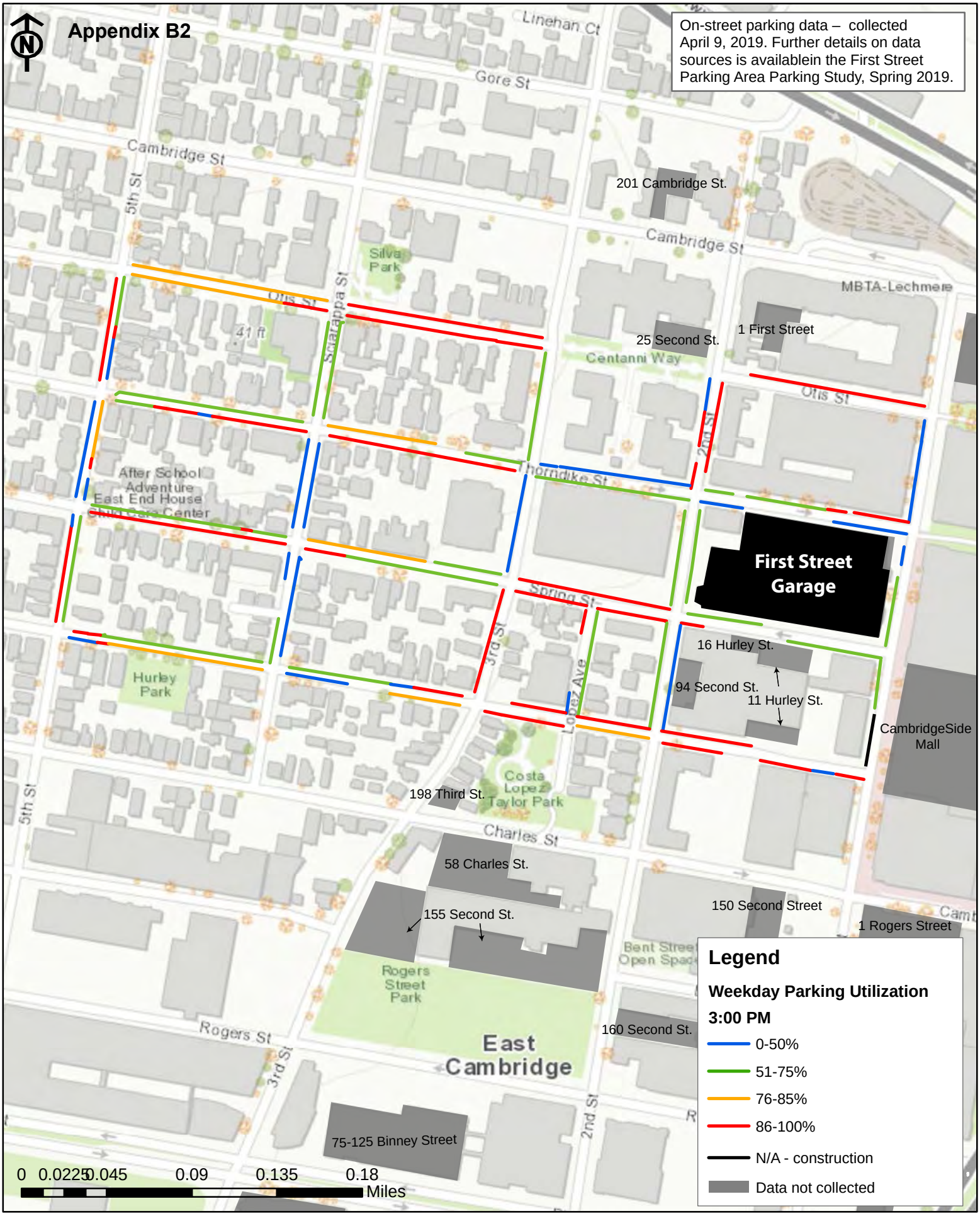

McMAHON TRANSPORTATION ENGINEERS & PLANNERS

Weekday Parking Utilization - 3:00 PM
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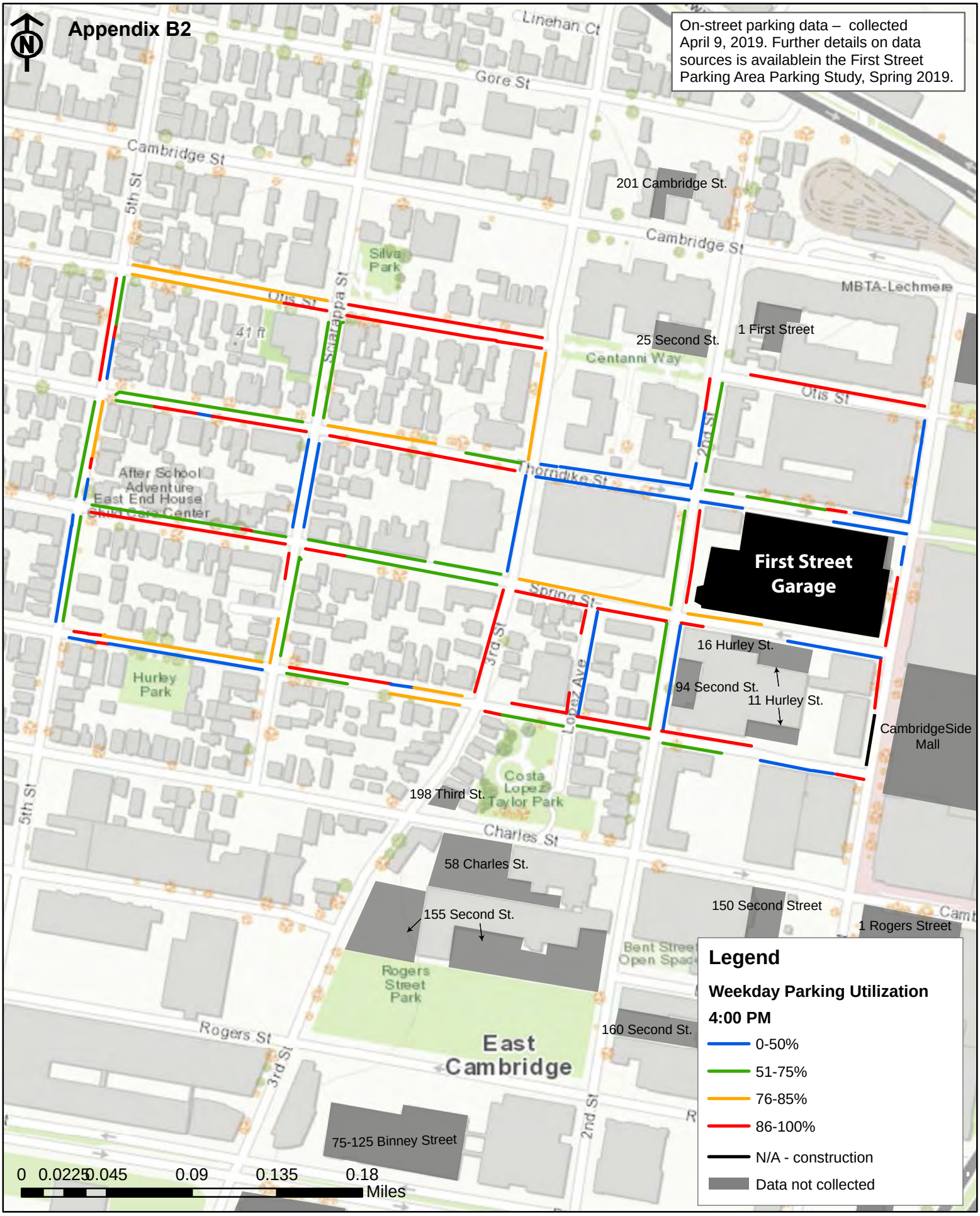

MCMAHON TRANSPORTATION ENGINEERS & PLANNERS

Weekday Parking Utilization - 4:00 PM
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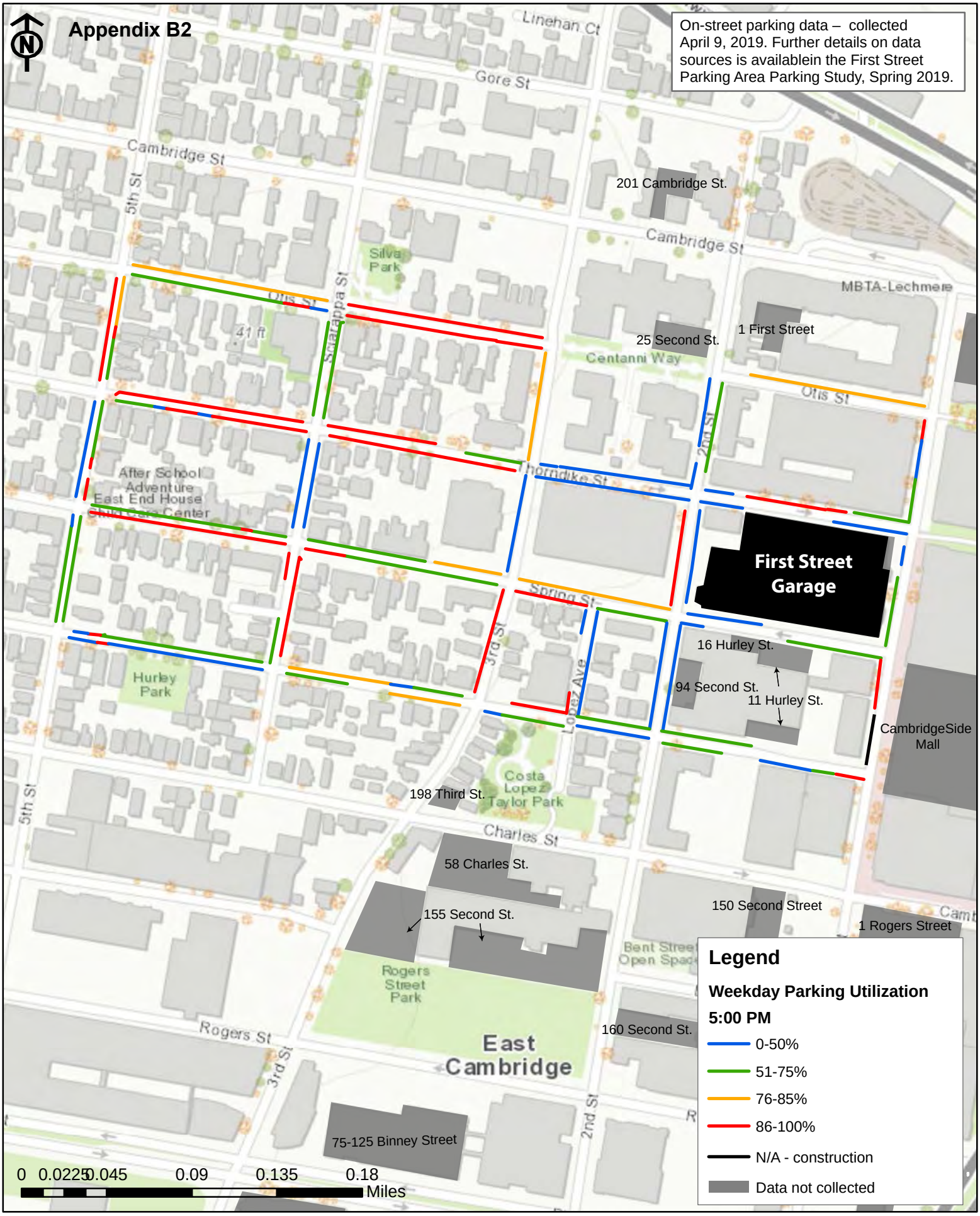
Cambridge, MA



MCMAHON TRANSPORTATION ENGINEERS & PLANNERS

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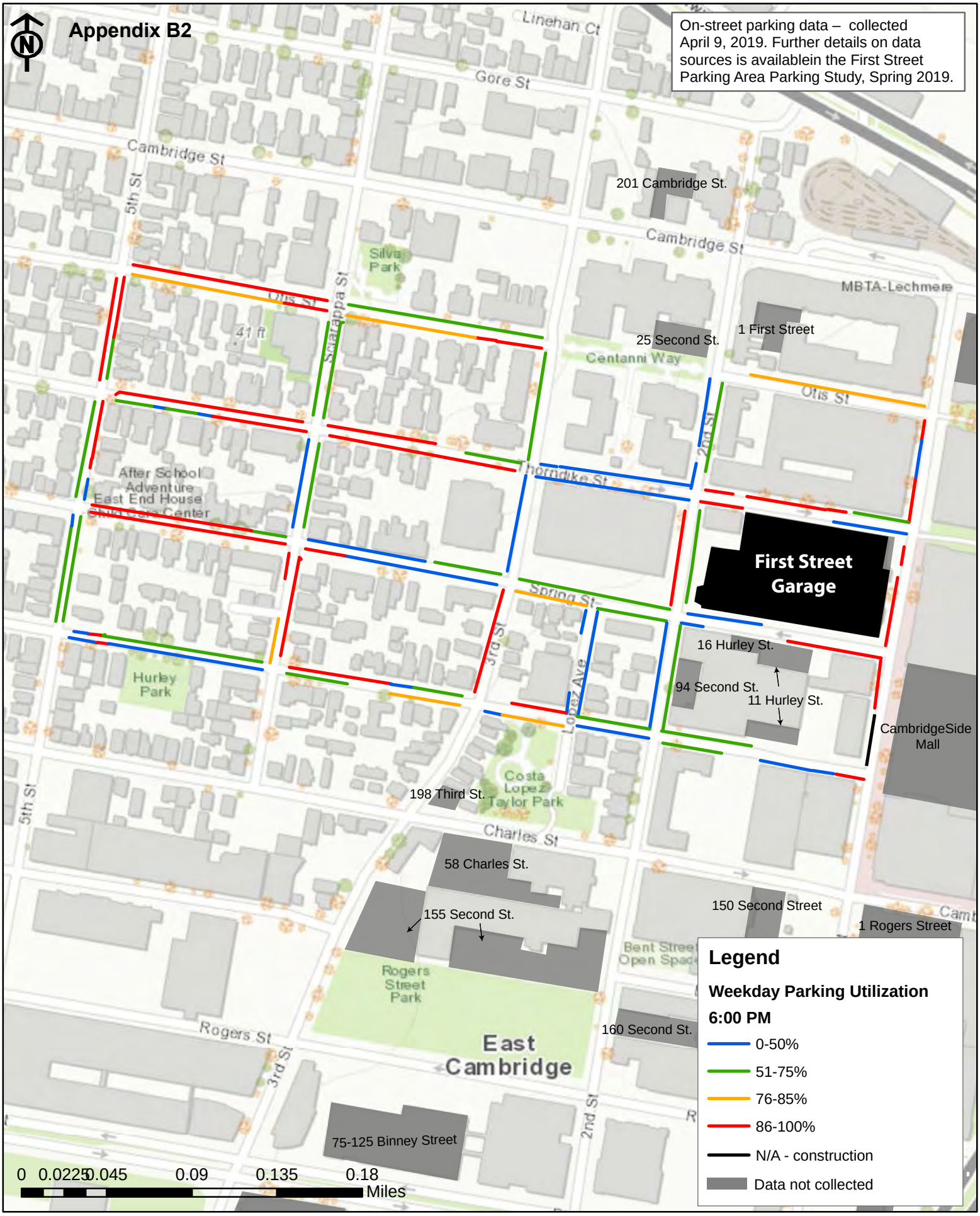
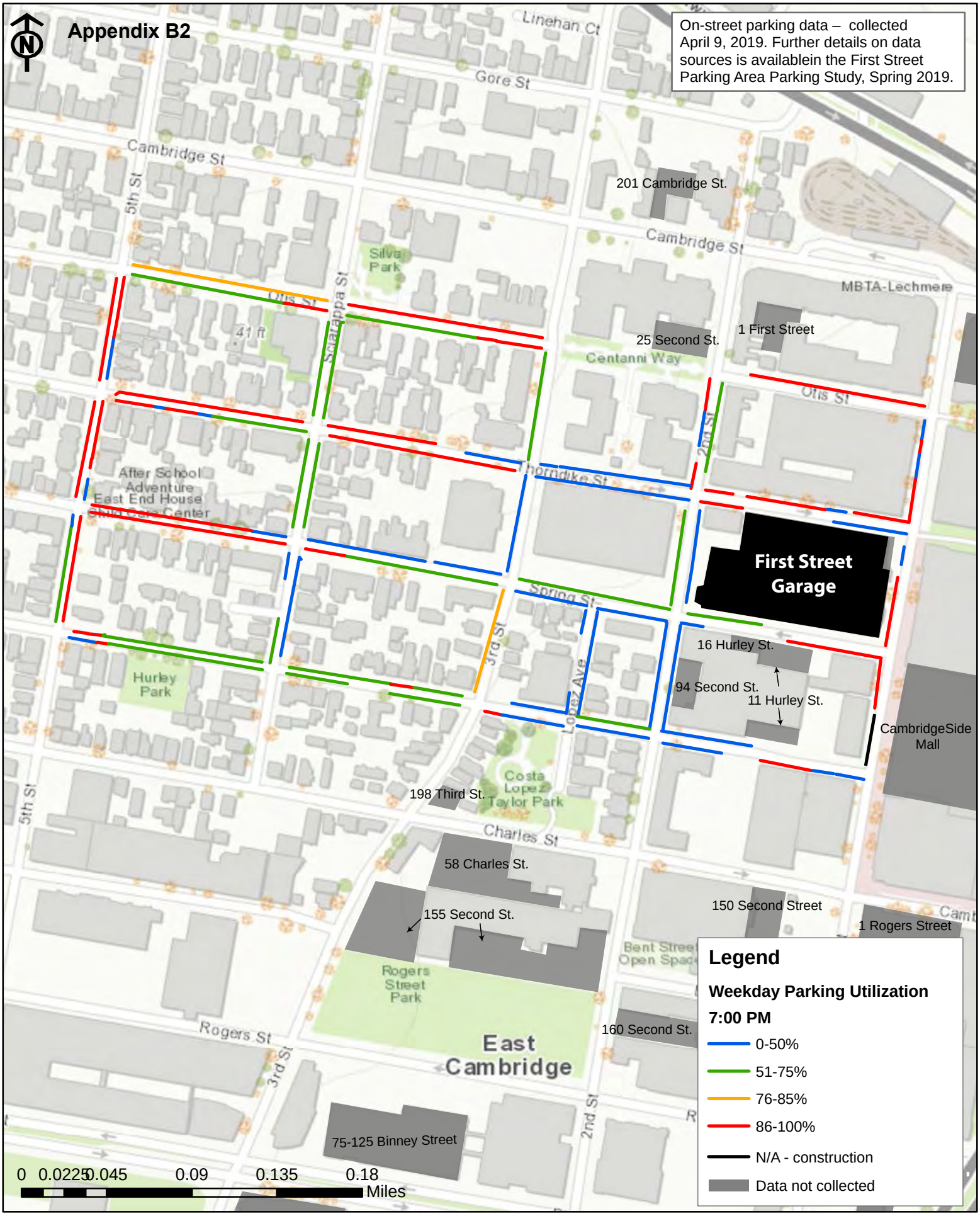
Cambridge, MA



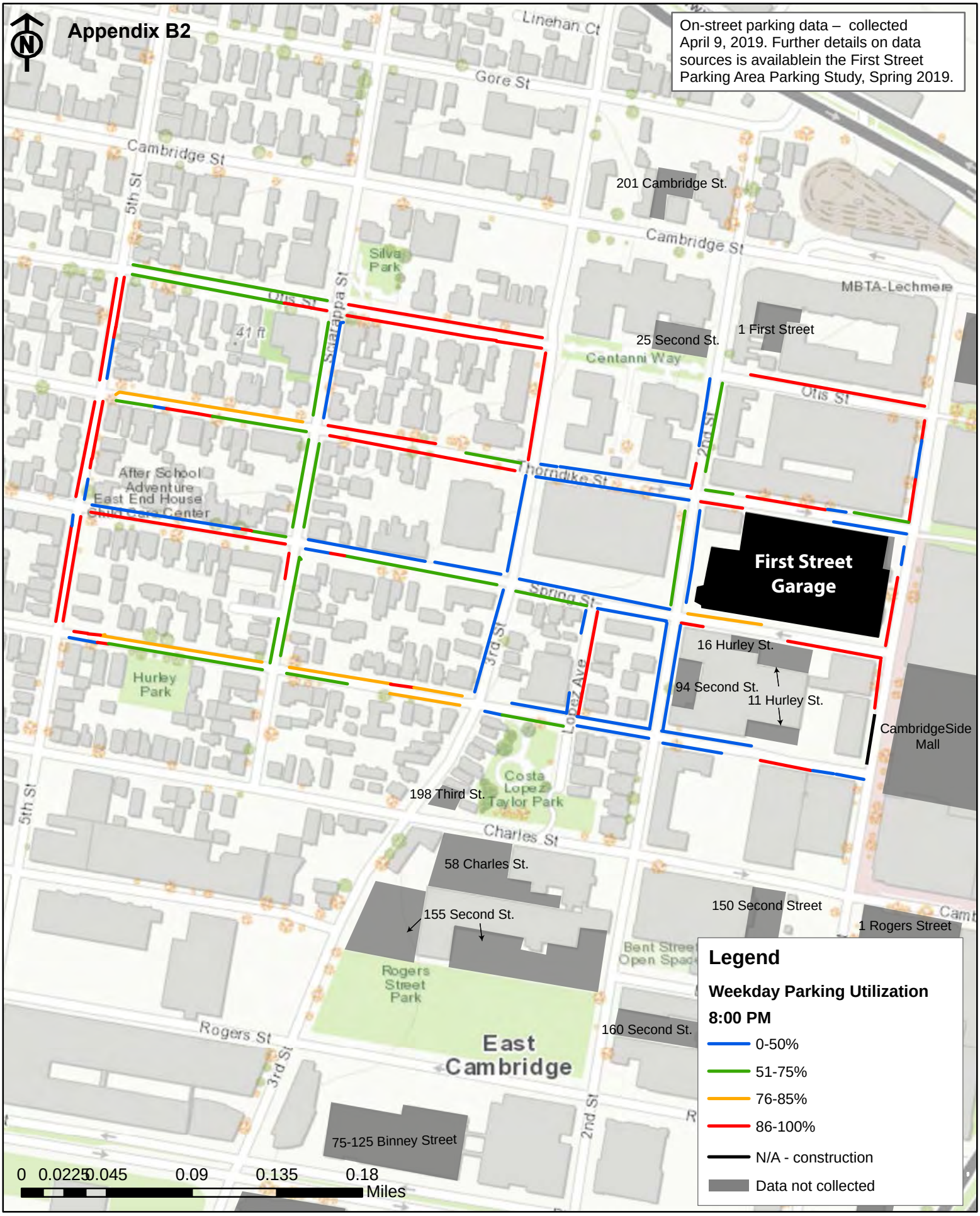
MCMAHON TRANSPORTATION ENGINEERS & PLANNERS

Weekday Parking Utilization - 6:00 PM
First Street Area Parking Study April 2019
Cambridge, MA



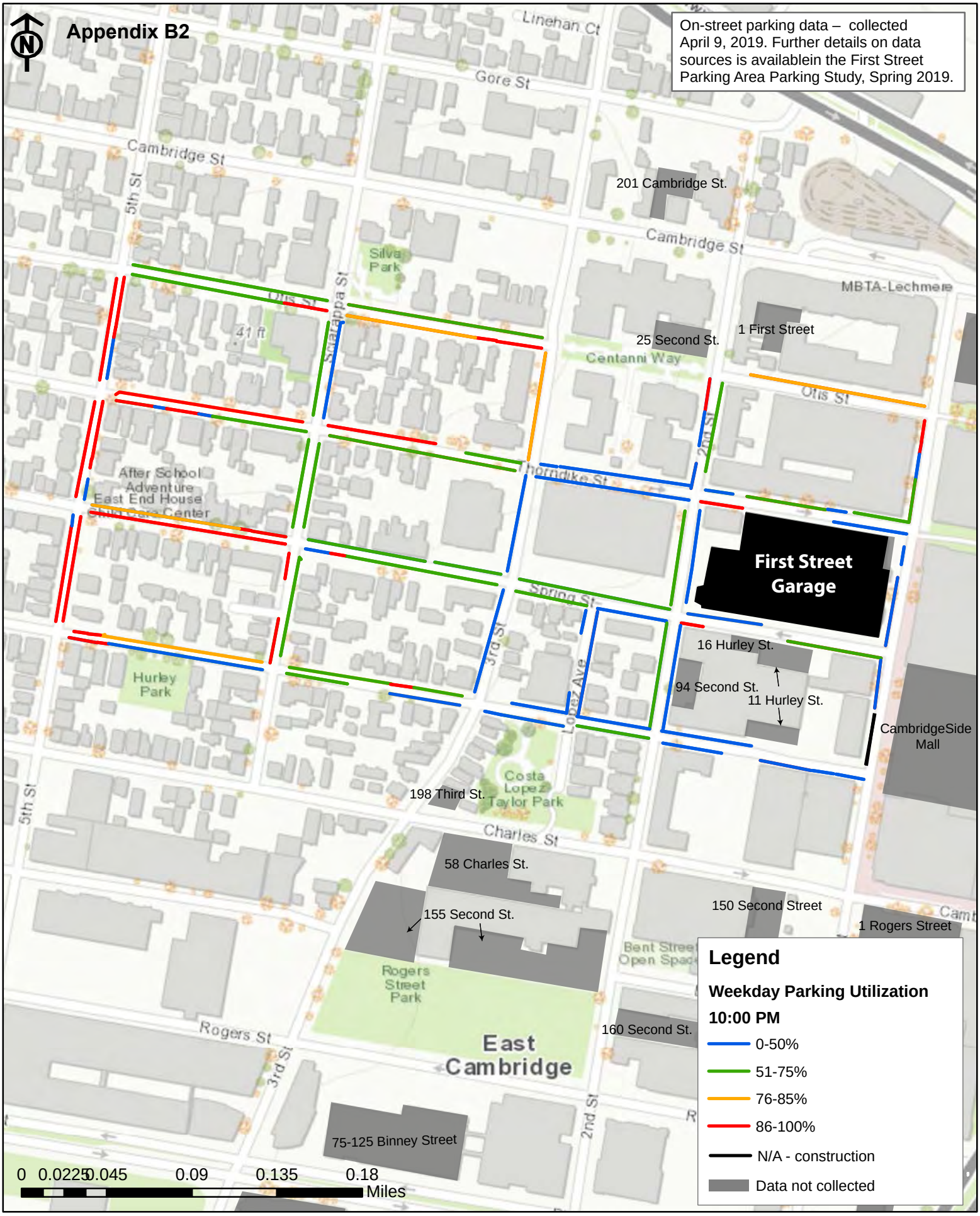
McMAHON TRANSPORTATION ENGINEERS & PLANNERS

Weekday Parking Utilization - 7:00 PM
First Street Area Parking Study April 2019
Cambridge, MA



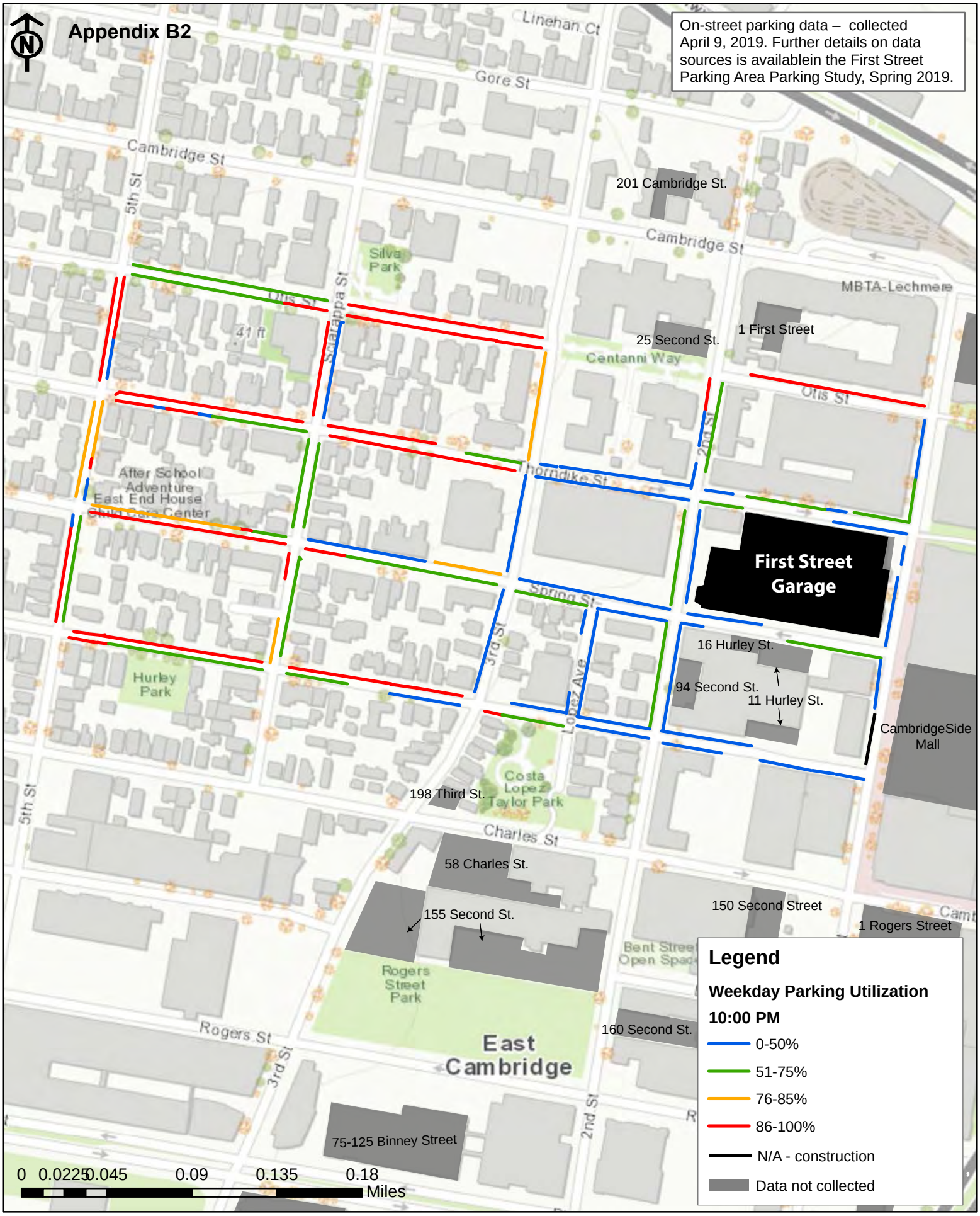
McMAHON TRANSPORTATION ENGINEERS & PLANNERS

Weekday Parking Utilization - 8:00 PM
First Street Area Parking Study April 2019
Cambridge, MA



McMAHON TRANSPORTATION ENGINEERS & PLANNERS

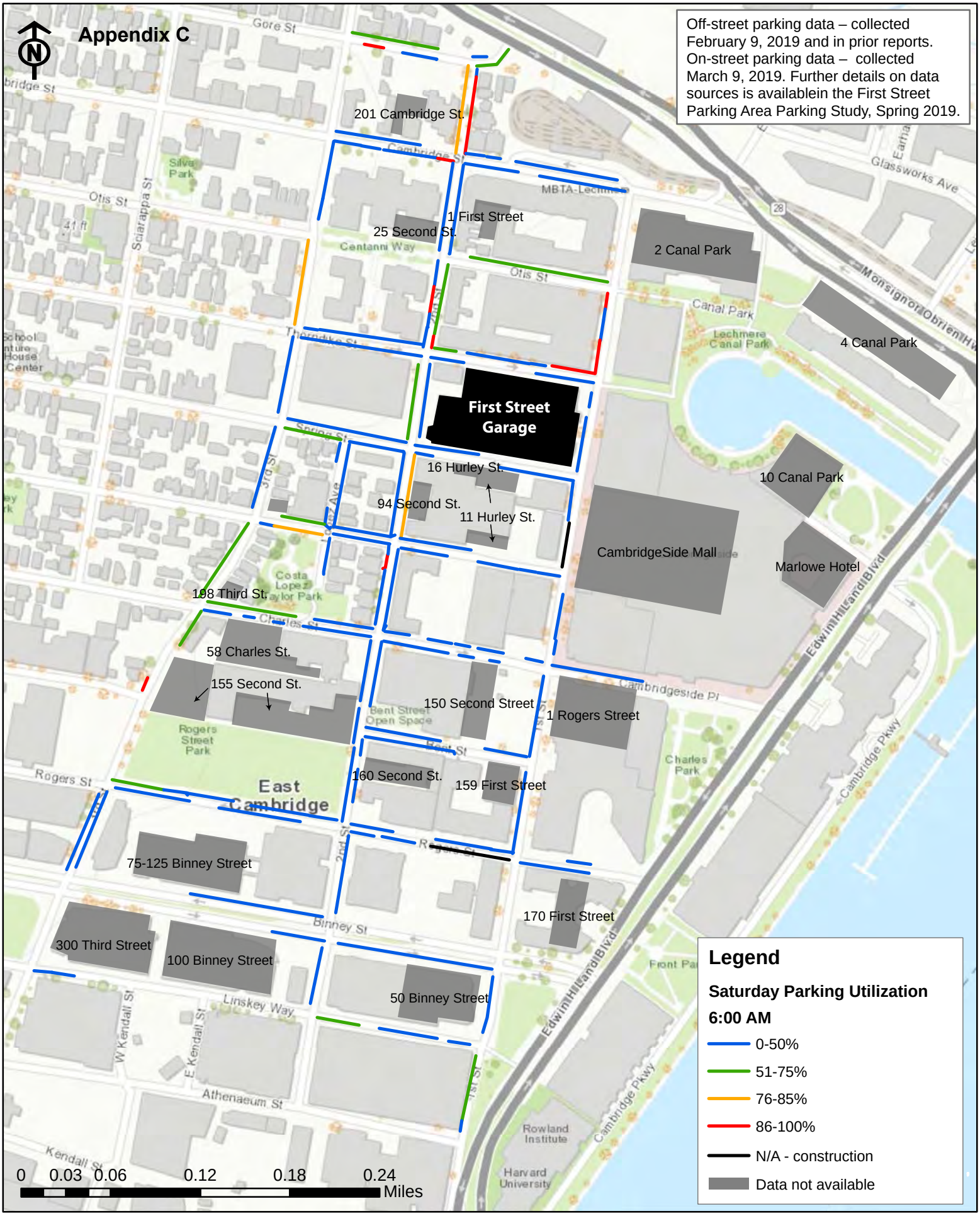
Weekday Parking Utilization - 9:00 PM
First Street Area Parking Study April 2019
Cambridge, MA



MCMAHON TRANSPORTATION ENGINEERS & PLANNERS

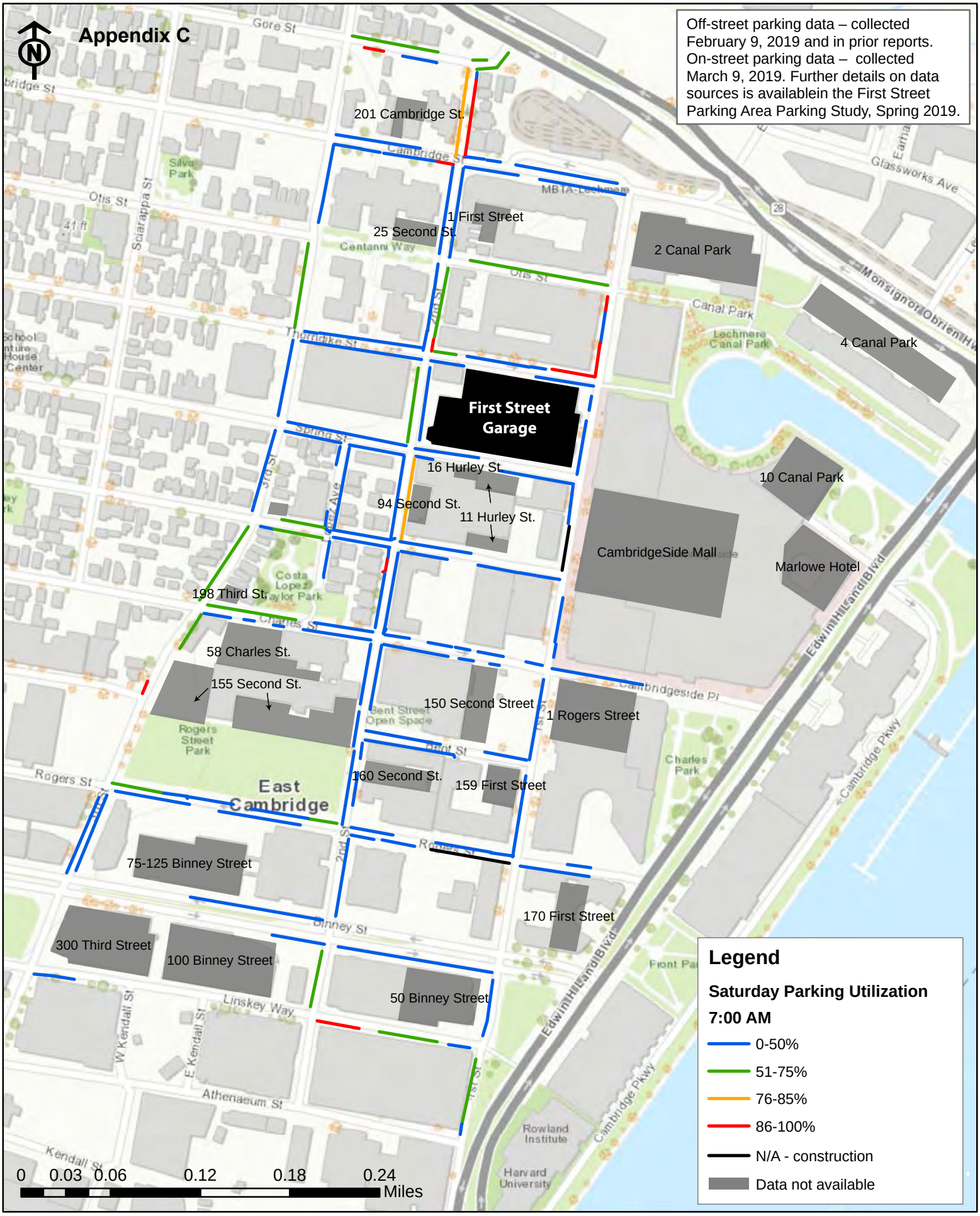
Weekday Parking Utilization - 10:00 PM
First Street Area Parking Study April 2019
Cambridge, MA

APPENDIX C



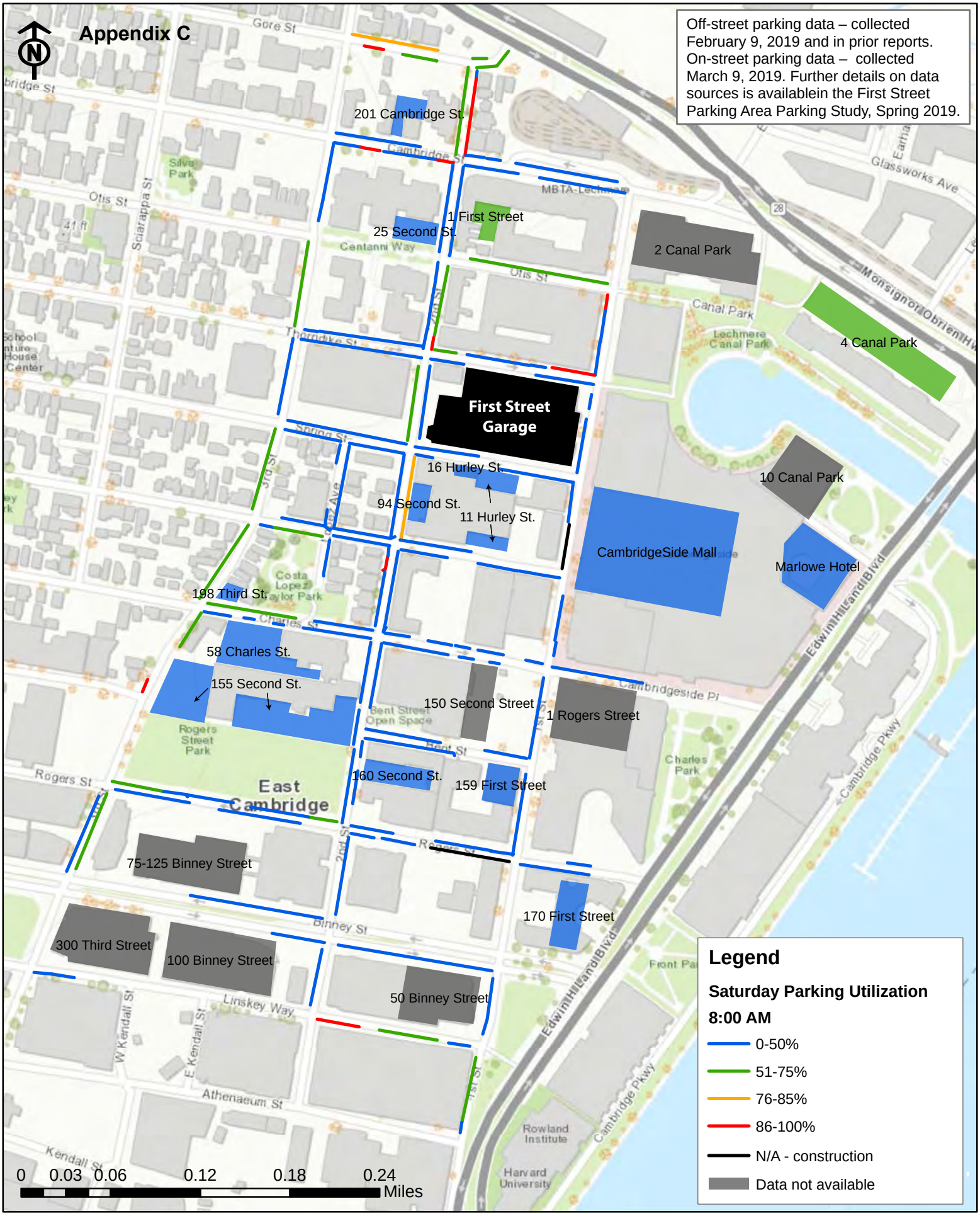
McMAHON TRANSPORTATION ENGINEERS & PLANNERS

Saturday Parking Utilization - 6:00 AM
First Street Area Parking Study March 2019
Cambridge, MA



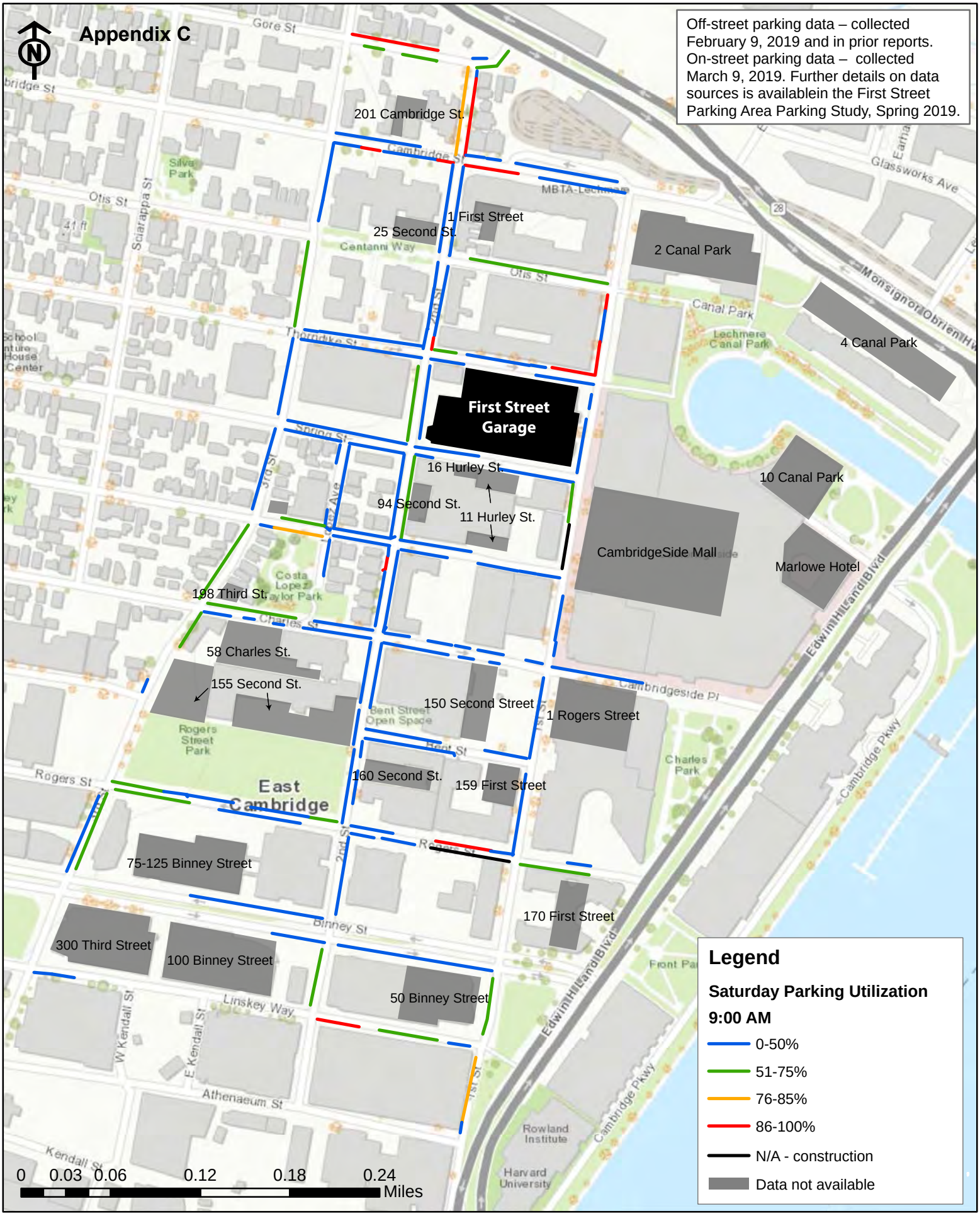
McMAHON TRANSPORTATION ENGINEERS & PLANNERS

Saturday Parking Utilization - 7:00 AM
First Street Area Parking Study March 2019
Cambridge, MA



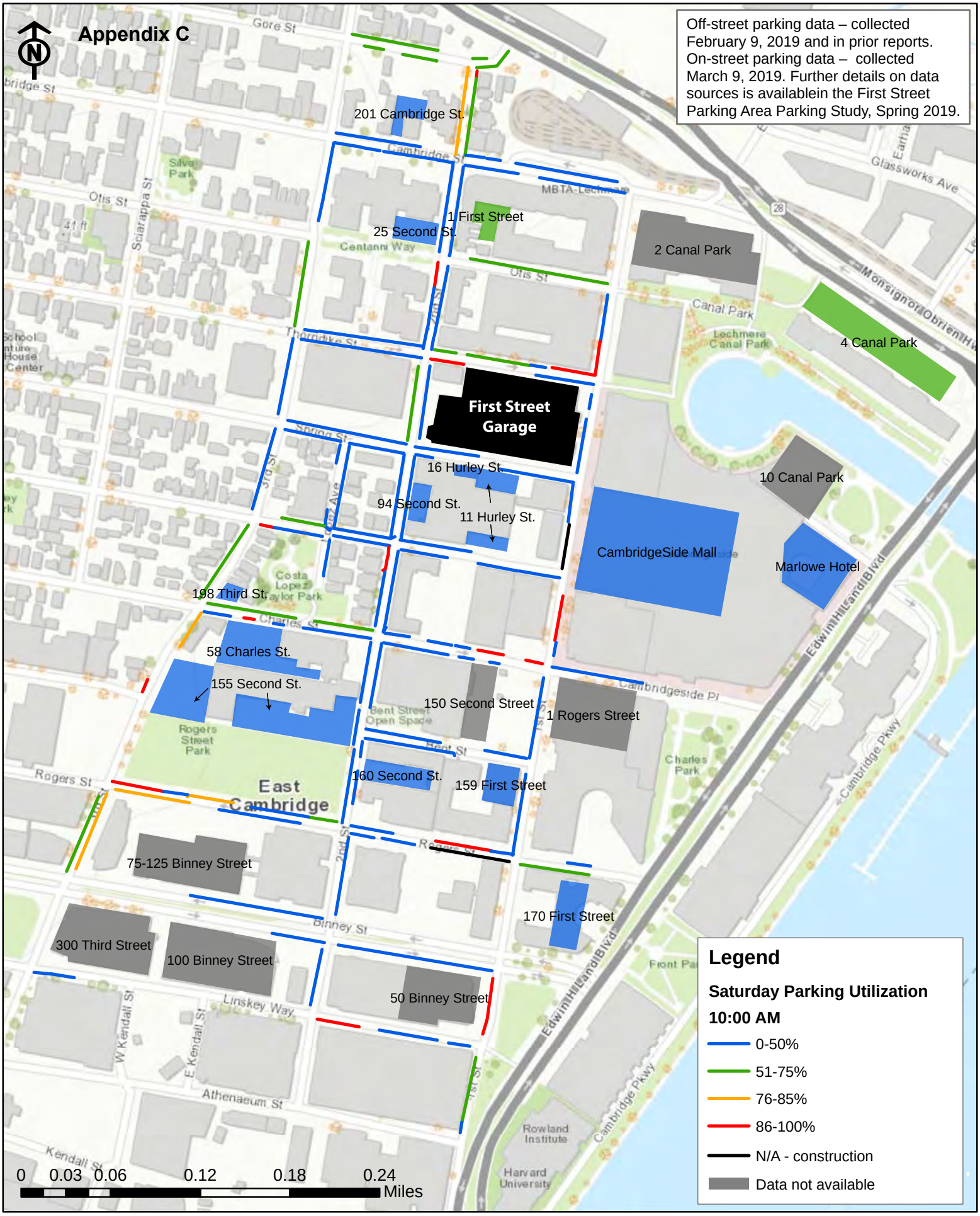
MCMAHON TRANSPORTATION ENGINEERS & PLANNERS

Saturday Parking Utilization - 8:00 AM
First Street Area Parking Study March 2019
Cambridge, MA



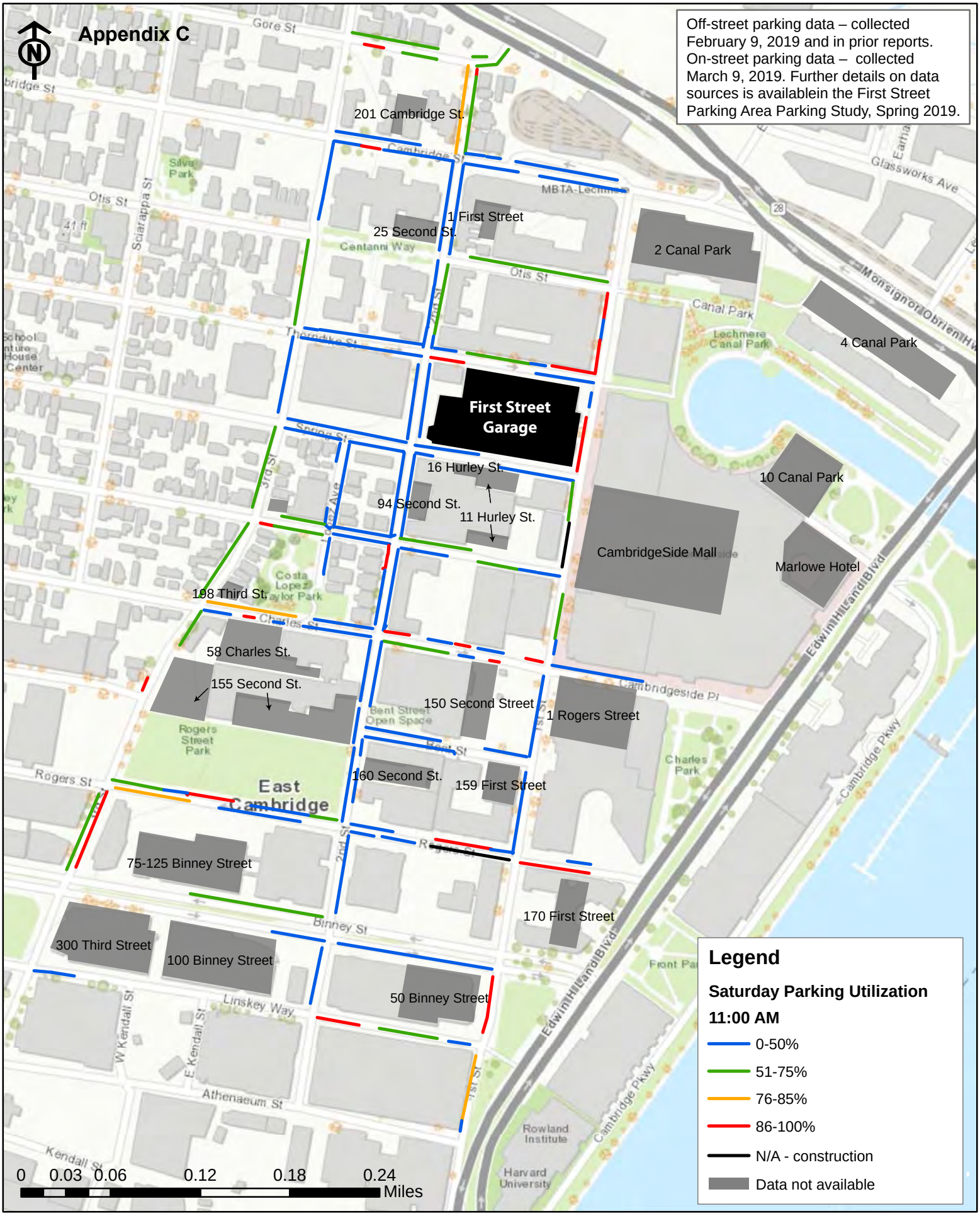
McMAHON TRANSPORTATION ENGINEERS & PLANNERS

Saturday Parking Utilization - 9:00 AM
First Street Area Parking Study March 2019
Cambridge, MA



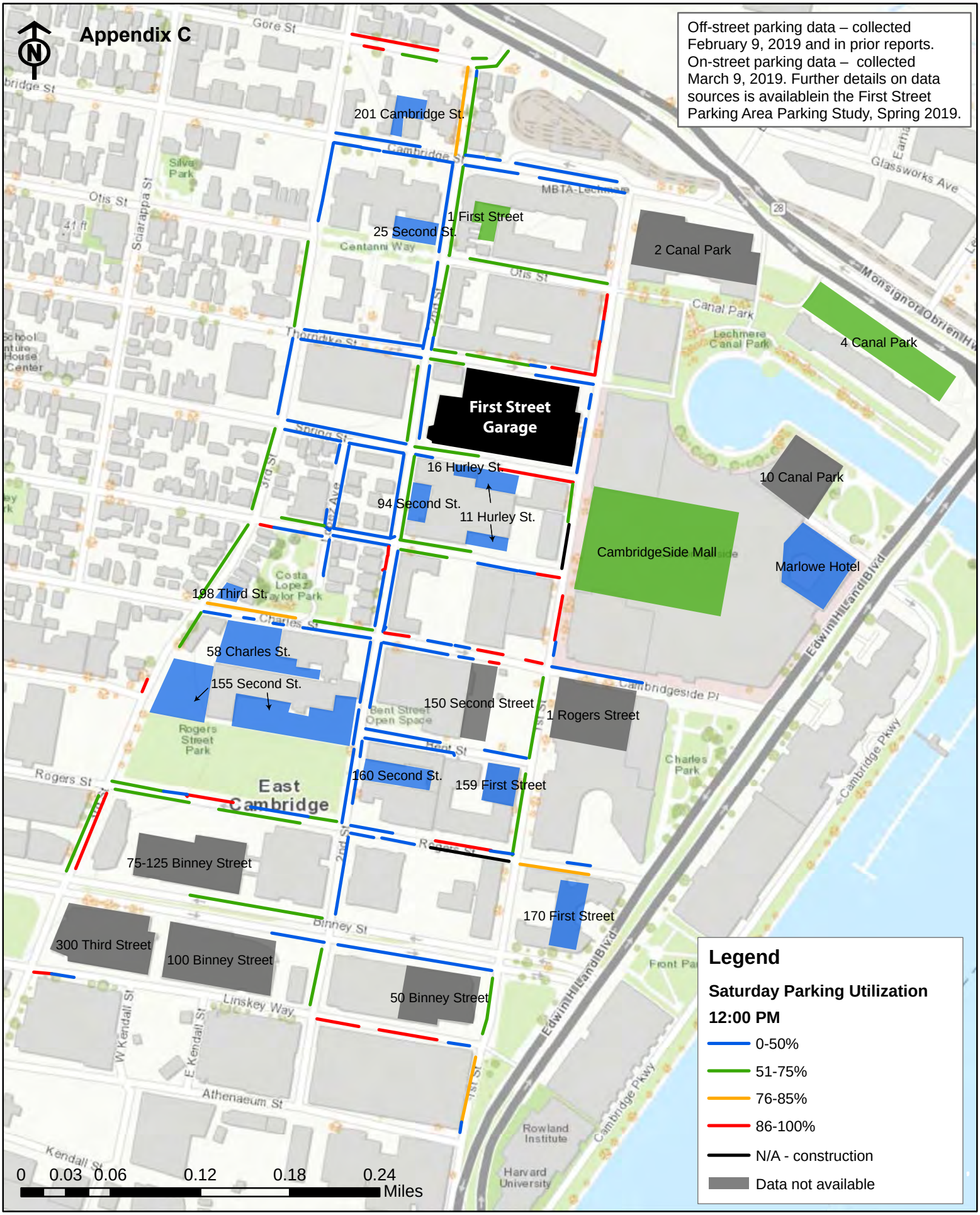
MCMAHON TRANSPORTATION ENGINEERS & PLANNERS

Saturday Parking Utilization - 10:00 AM
First Street Area Parking Study March 2019
Cambridge, MA

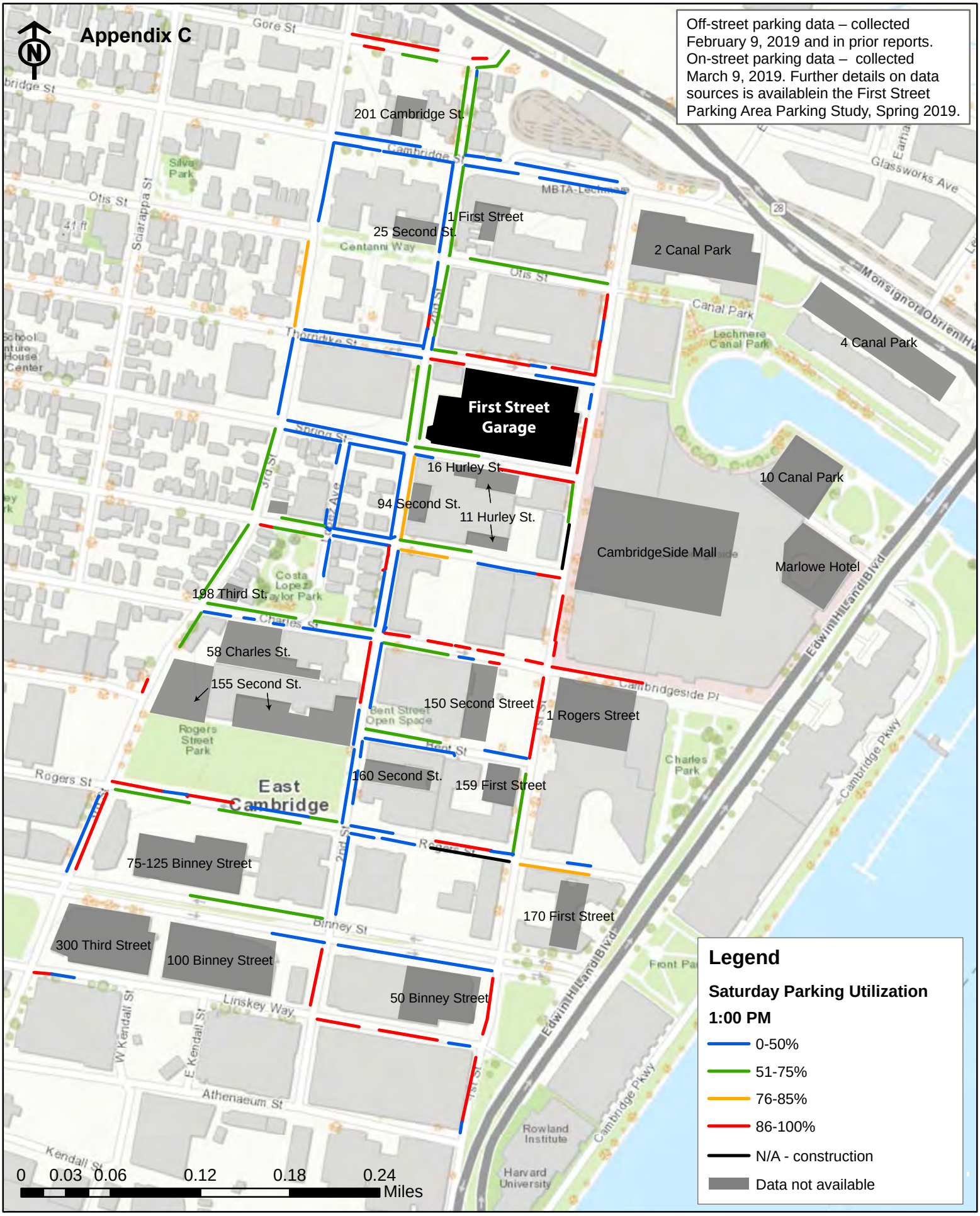


McMAHON TRANSPORTATION ENGINEERS & PLANNERS

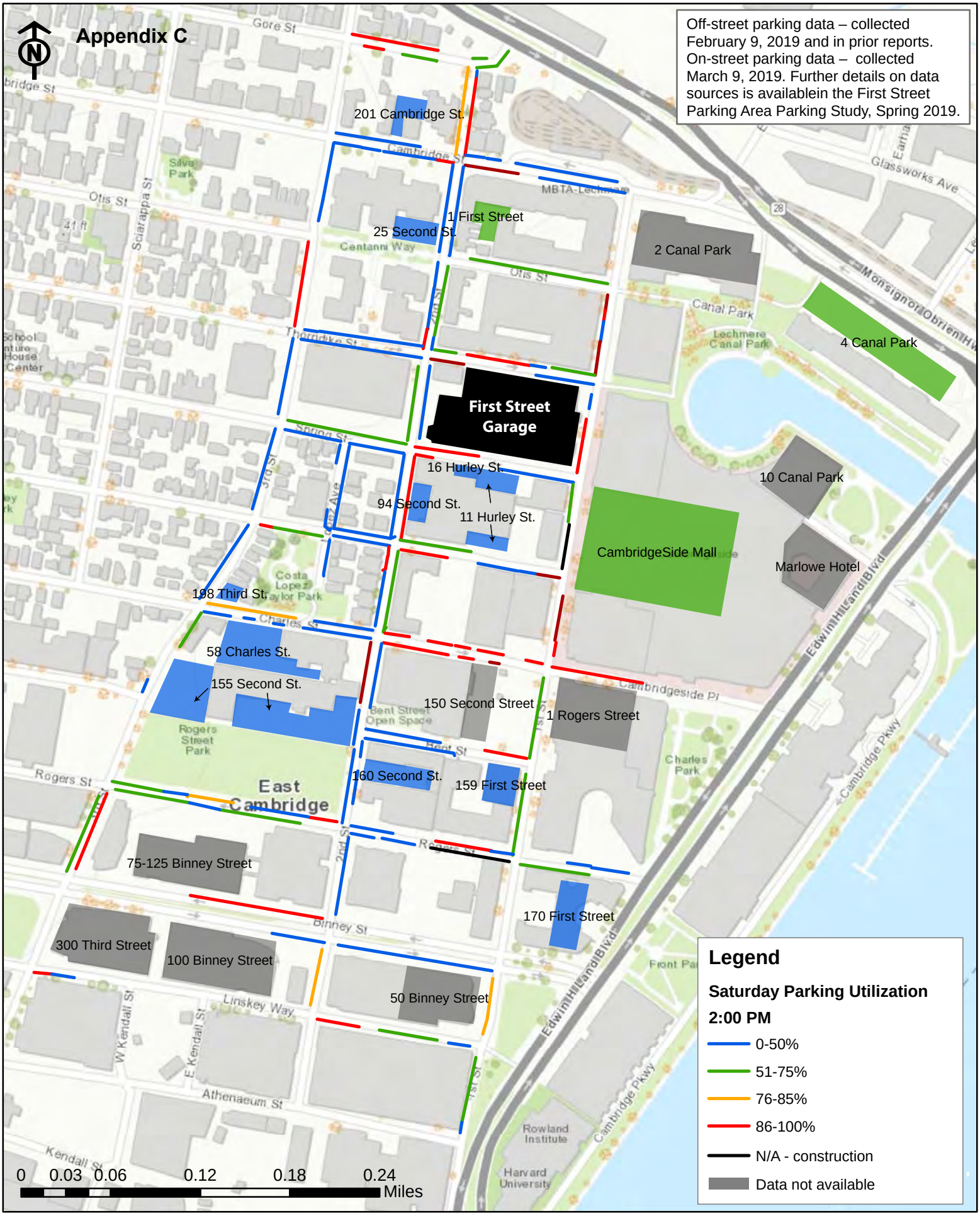
Saturday Parking Utilization - 11:00 AM
First Street Area Parking Study March 2019
Cambridge, MA



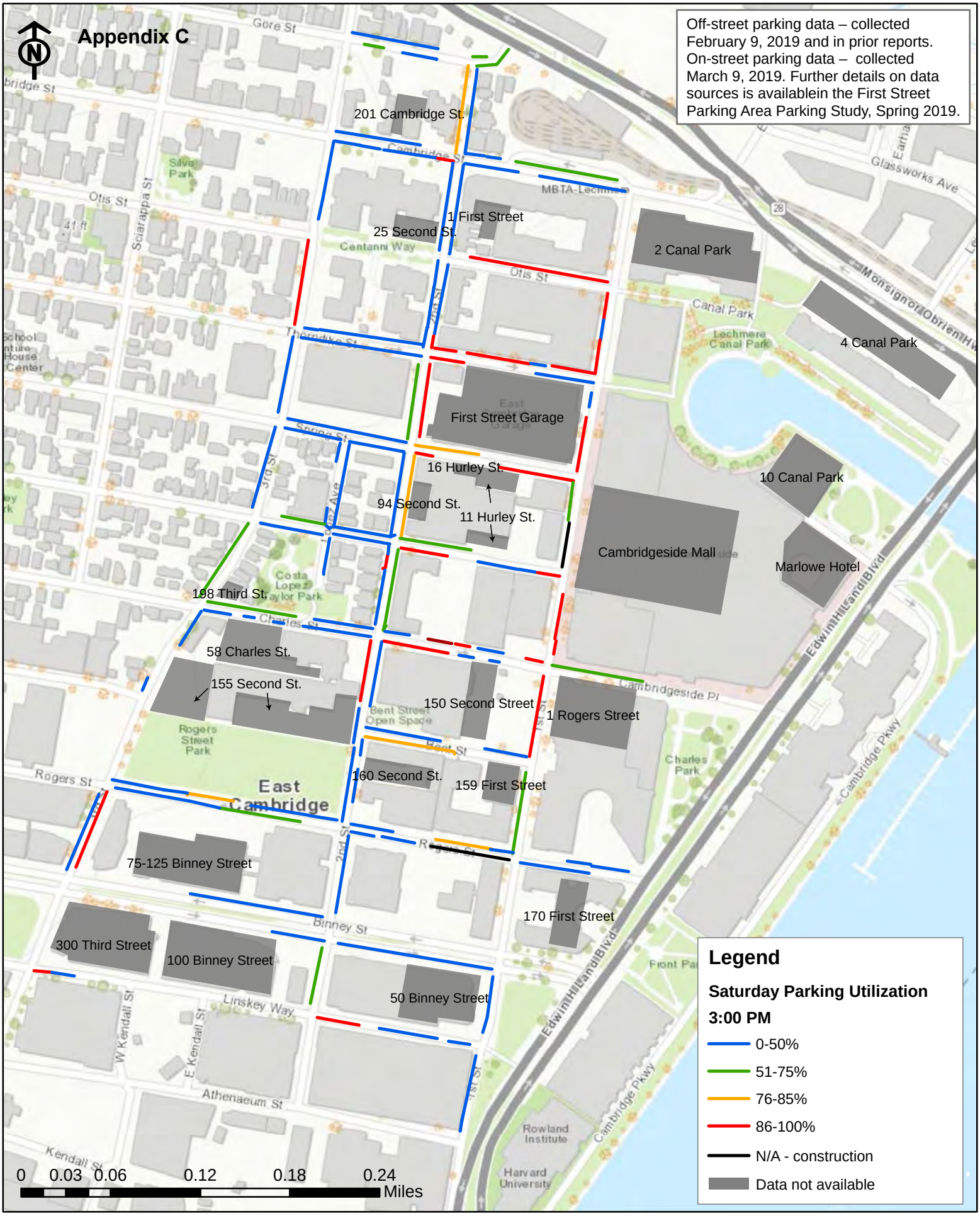
Saturday Parking Utilization - 12:00 PM
First Street Area Parking Study March 2019
Cambridge, MA



Saturday Parking Utilization - 1:00 PM
First Street Area Parking Study March 2019
Cambridge, MA



Saturday Parking Utilization - 2:00 PM
First Street Area Parking Study March 2019
Cambridge, MA



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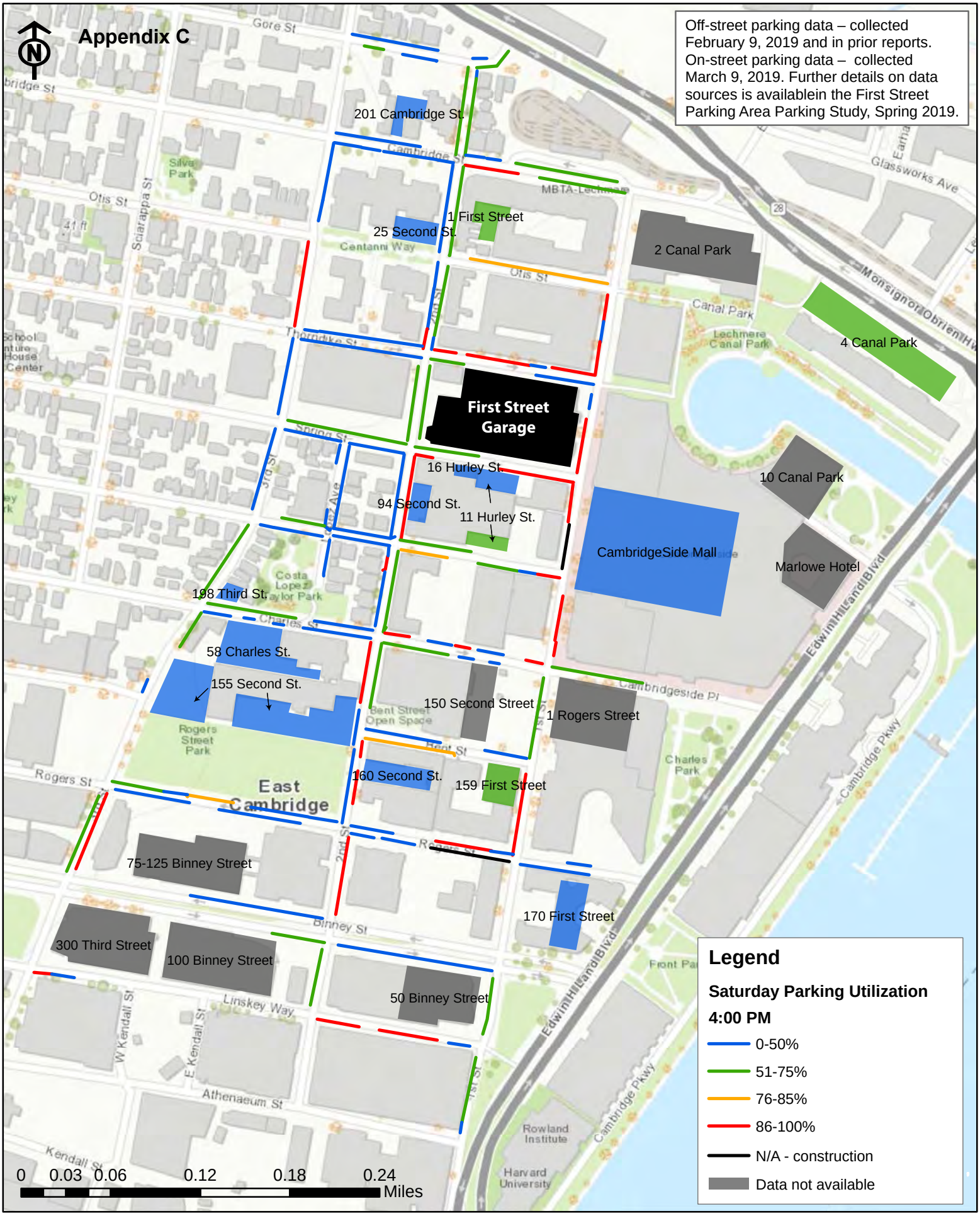
Saturday Parking Utilization - 3:00 PM
First Street Area Parking Study March 2019
Cambridge, MA



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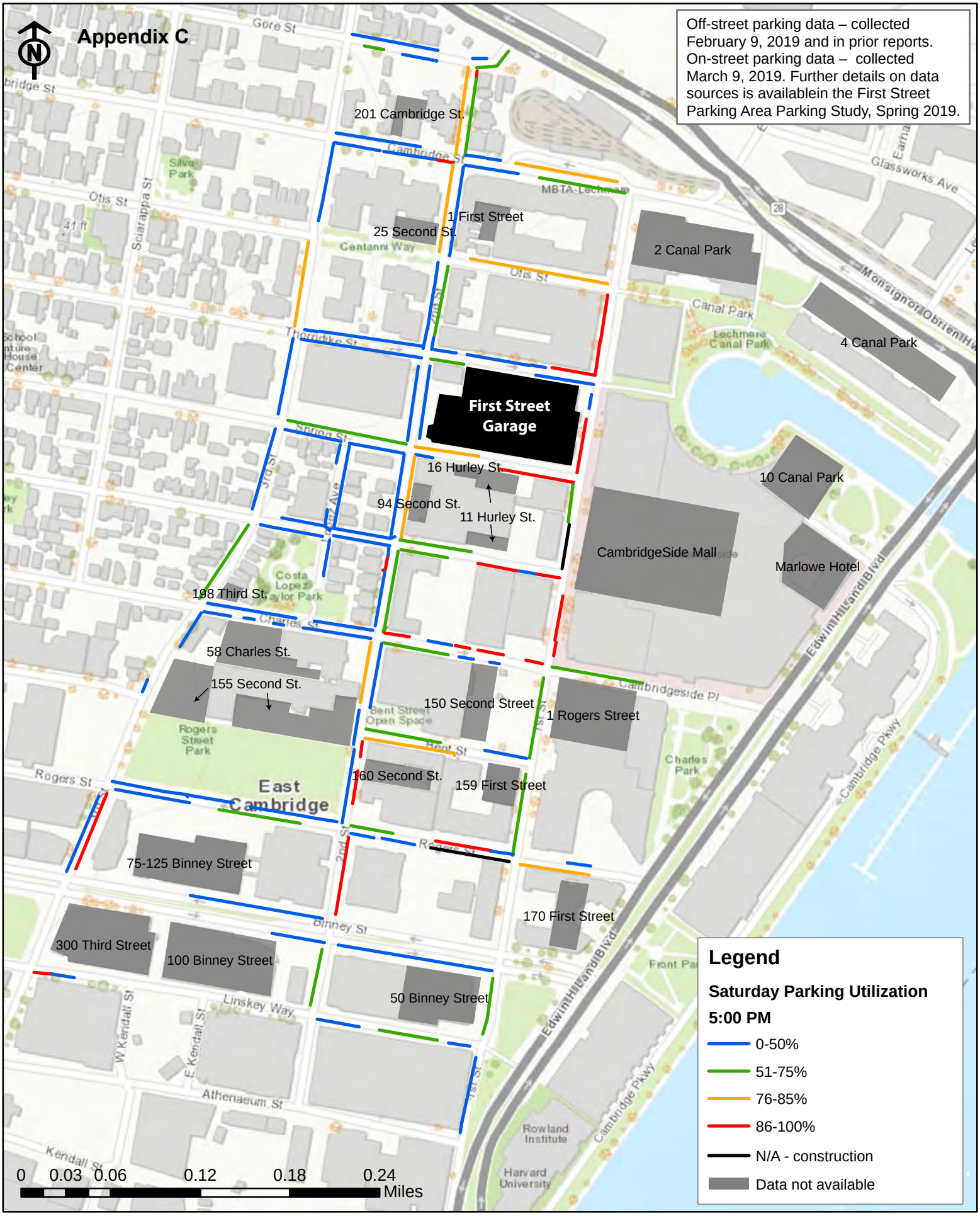
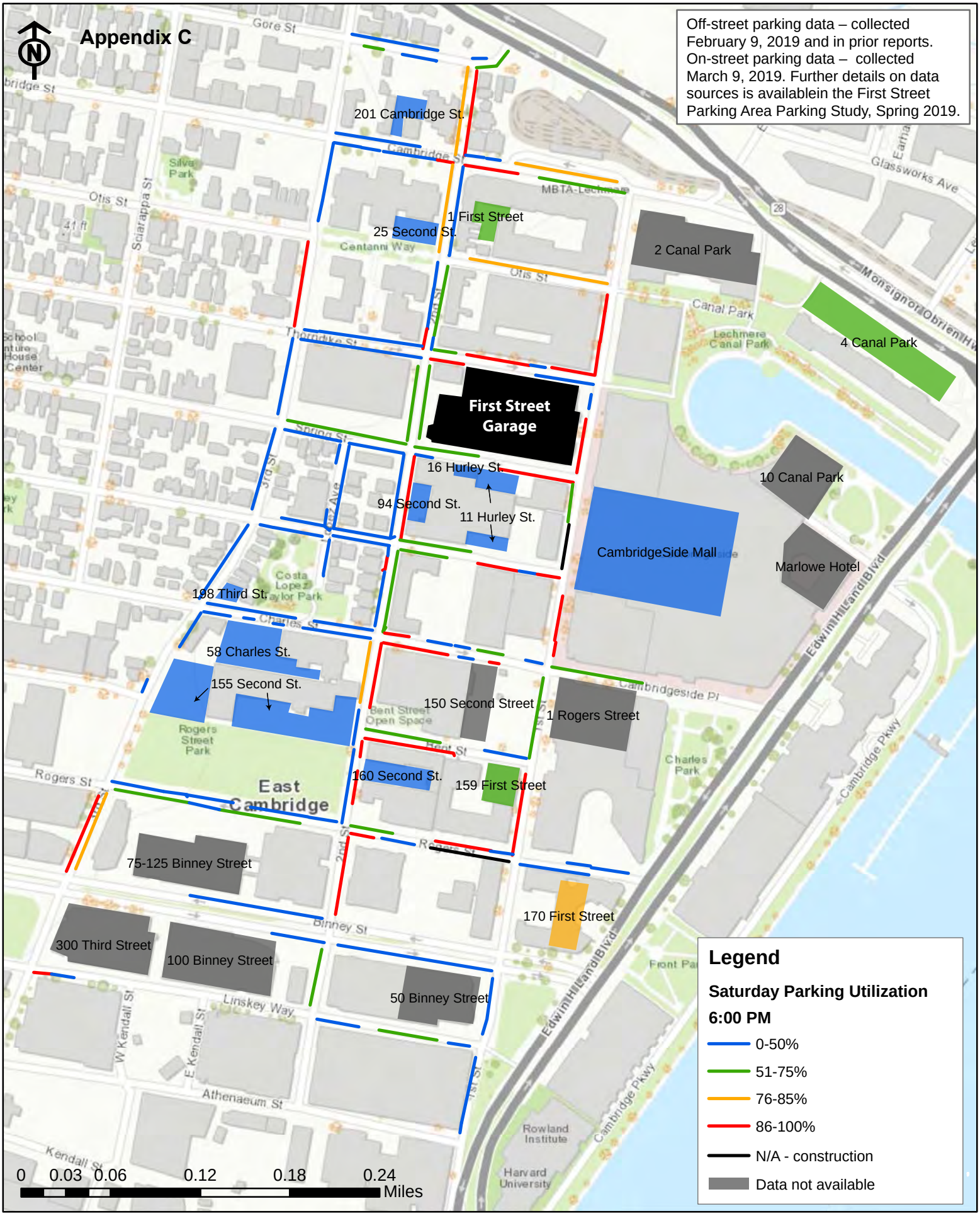
Saturday Parking Utilization - 4:00 PM
First Street Area Parking Study March 2019
Cambridge, MA



MCMAHON TRANSPORTATION ENGINEERS & PLANNERS

Saturday Parking Utilization - 5:00 PM
First Street Area Parking Study March 2019
Cambridge, MA



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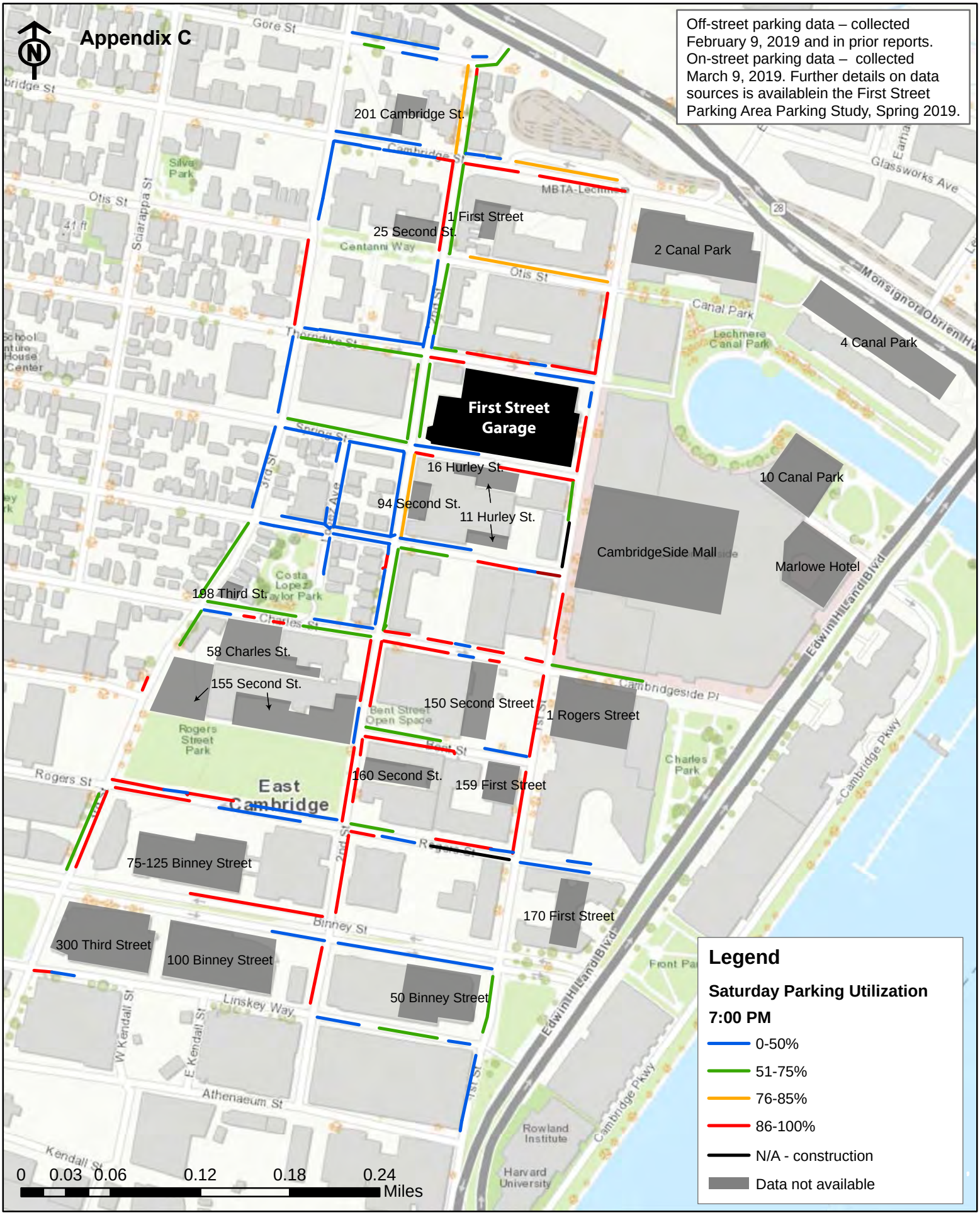
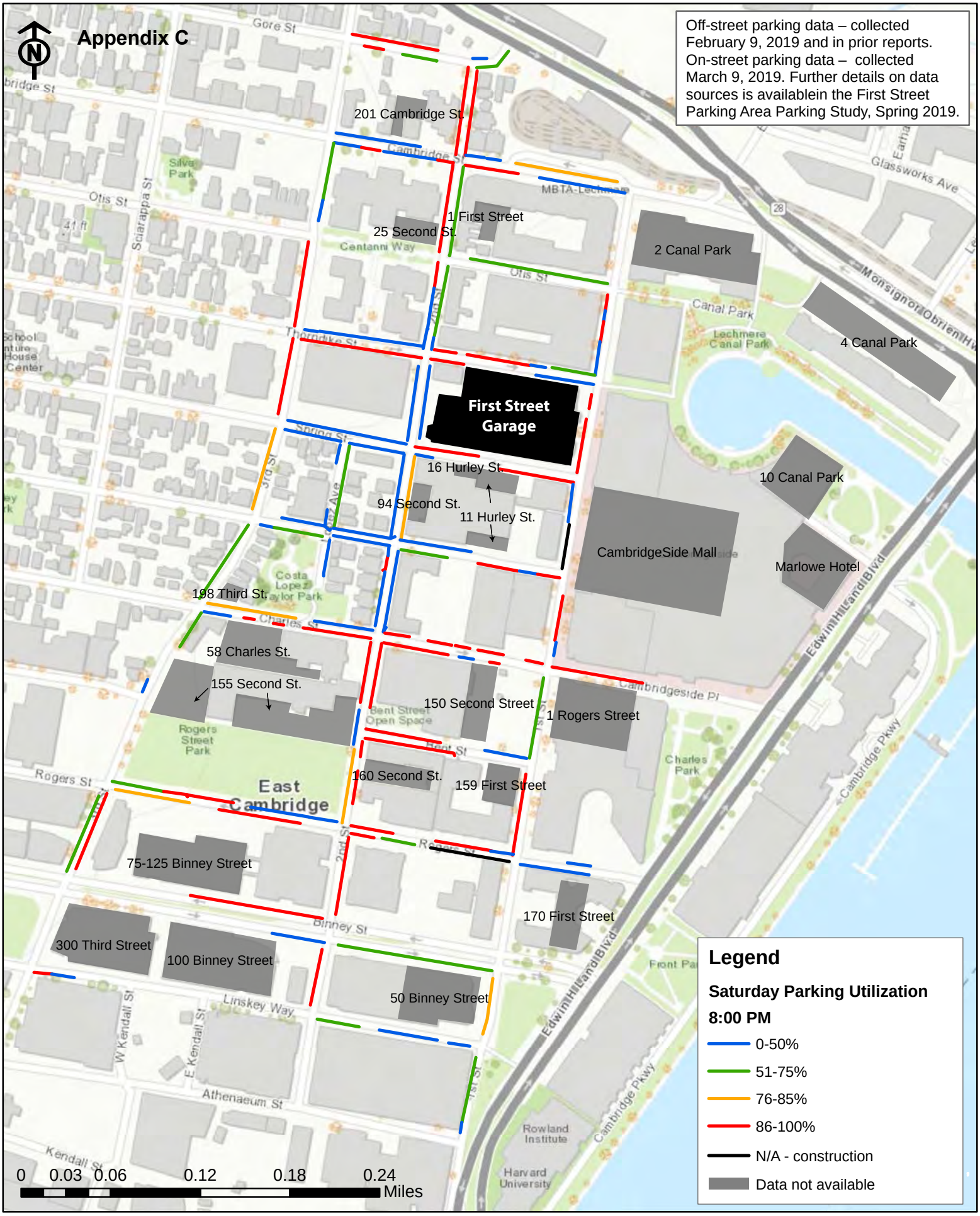
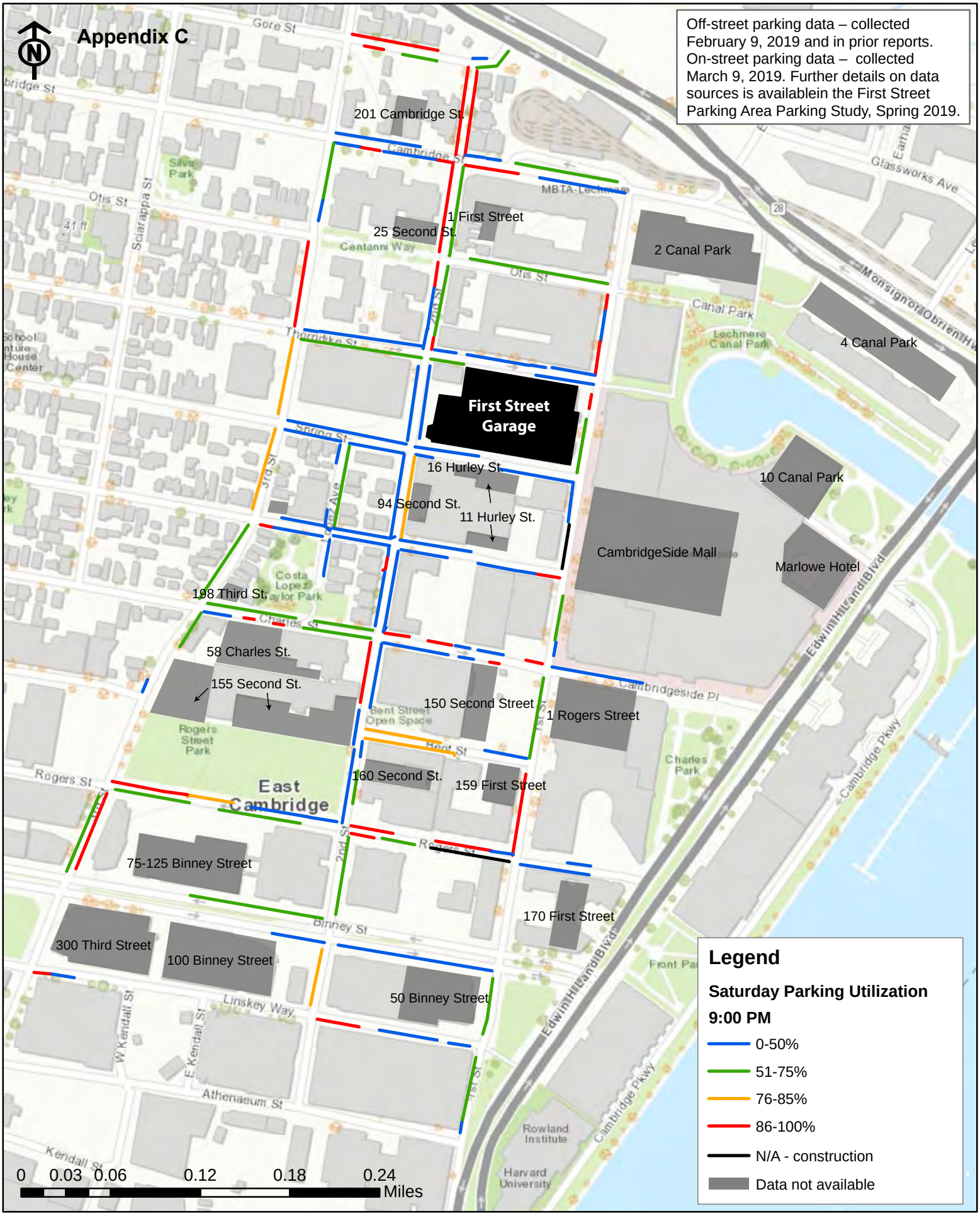
Saturday Parking Utilization - 6:00 PM
First Street Area Parking Study March 2019
Cambridge, MA



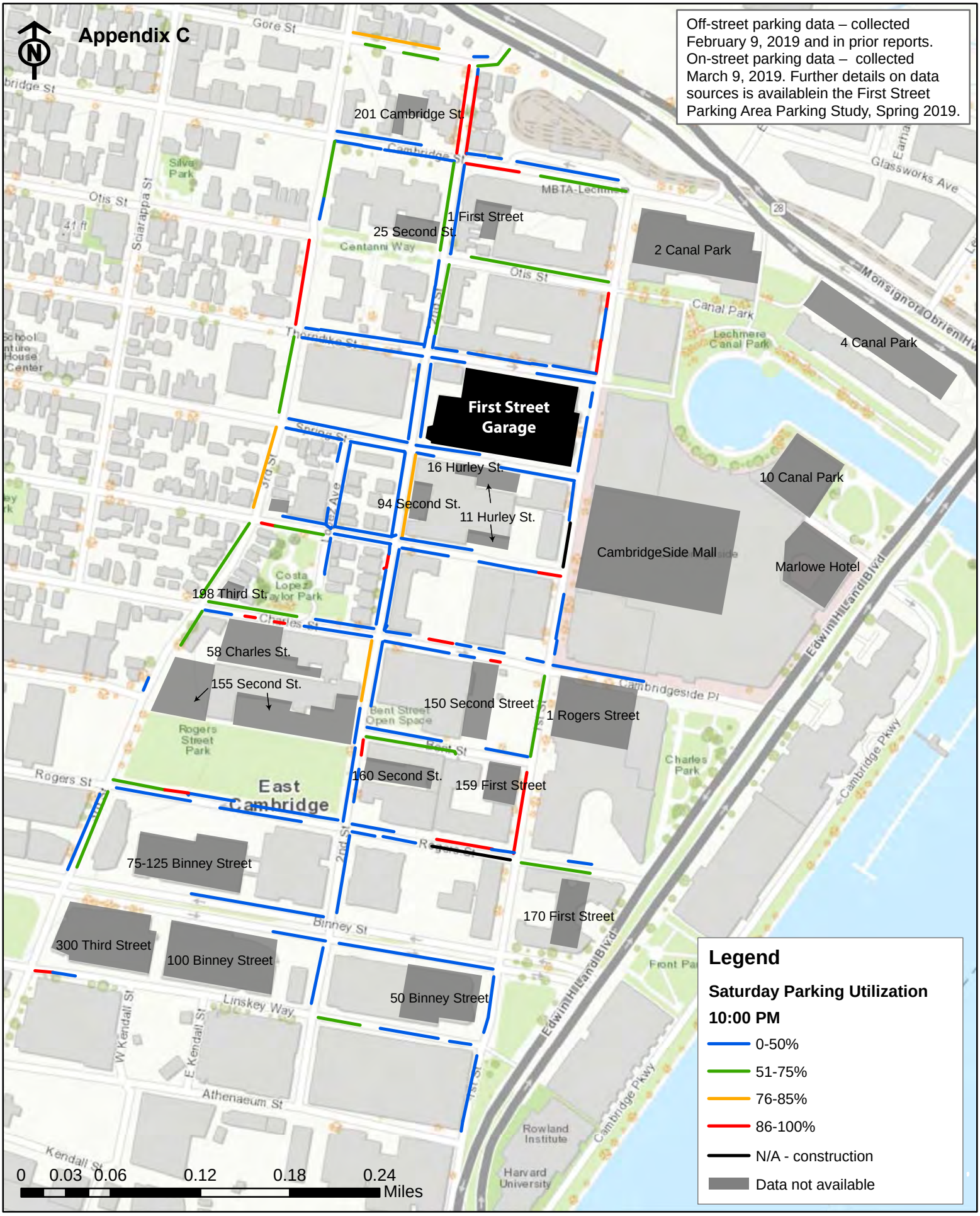
Saturday Parking Utilization - 7:00 PM
First Street Area Parking Study March 2019
Cambridge, MA



Saturday Parking Utilization - 8:00 PM
First Street Area Parking Study March 2019
Cambridge, MA

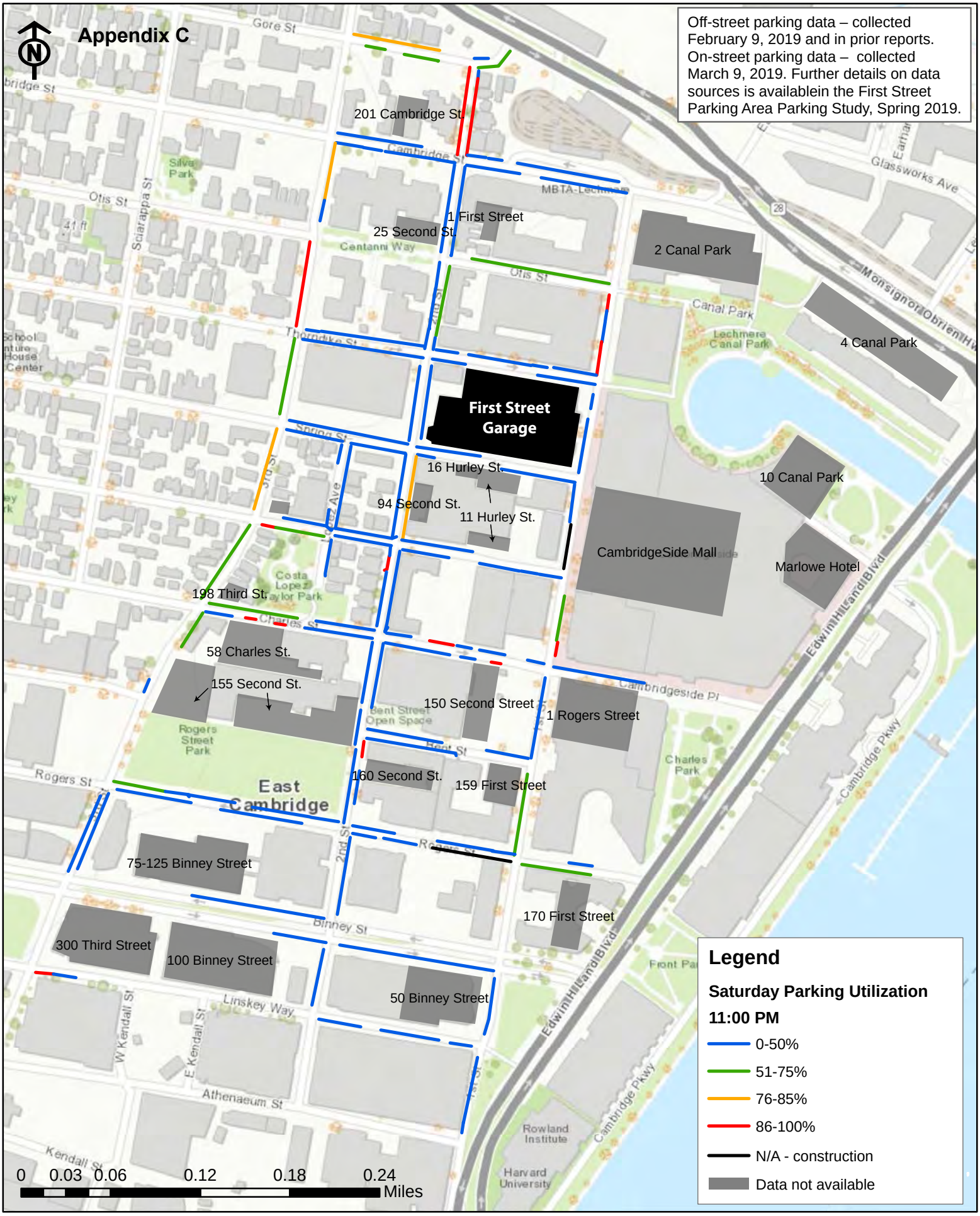


Saturday Parking Utilization - 9:00 PM
First Street Area Parking Study March 2019
Cambridge, MA



McMAHON TRANSPORTATION ENGINEERS & PLANNERS

Saturday Parking Utilization - 10:00 PM
First Street Area Parking Study March 2019
Cambridge, MA



Saturday Parking Utilization - 11:00 PM
First Street Area Parking Study March 2019
Cambridge, MA