THA CONSULTING

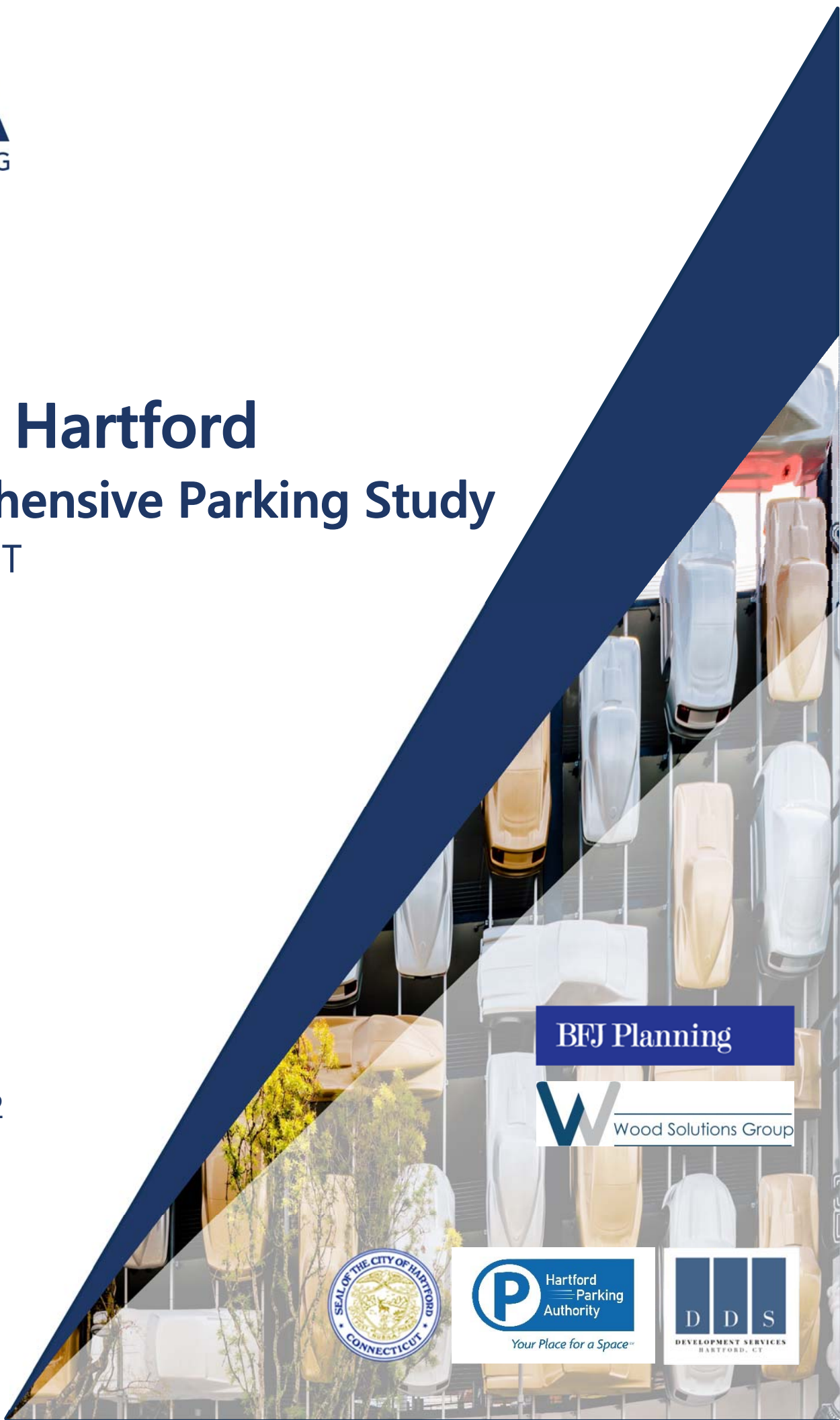
City of Hartford

Comprehensive Parking Study

Hartford, CT

Final Report

June 17, 2022



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June 17, 2022

Ms. Aimee Chambers, AICP
Director of Planning
City of Hartford
550 Main Street
Hartford, CT 06103

Mr. Armindo Gomes
Chief Executive Officer
Hartford Parking Authority (HPA)
11 Asylum Street, 2nd Floor
Hartford, CT 06103

RE: ***City of Hartford Comprehensive Parking Study***
Final Report

Dear Ms. Chambers and Mr. Gomes,

On behalf of the THA team, attached for your review and comment is the Final Report of the Comprehensive Parking Study. The primary intent of Report was to inventory existing parking resources, measure the pre-COVID parking demand, project the future parking needs resulting from anticipated development, and identify any modifications to the existing parking resources to meet the projected future parking needs. We have incorporated your feedback from the Draft Report into this Final Report and look forward to discussing the next steps of presenting these findings.

Sincerely,

Vicky Gagliano, CAPP, LEED AP
Associate
Director of Parking Studies

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EXECUTIVE SUMMARY

The Hartford parking system, including both public and private spaces, appears on the surface to be vast and abundant. Within the Downtown Hartford area specifically, the presence of large quantities of surface parking lots gives the appearance that the system is overparked and underutilized. However, the reality is that the public parking system is minimal compared to this large system which is primarily assigned to private companies. For anyone looking to find an hourly parking space, the availability and price are challenging. Especially now, in a post-COVID environment where commute patterns and volumes ae changing, its critical to rethink how this supply is apportioned to the driving public. One of the primary needs for the future of the system is to find a way to unlock this underutilized private supply for the greater good of the Hartford community.

The largest discrepancy affecting the parking system in Hartford, CT is the distribution of public and private parking assets. While the HPA manages the entirety of the on-street system, their control of the off-street public parking system is very limited. In fact, the Hartford parking system is made up of approximately 47,000 parking spaces, of which, less than 1/3 (<15,000) are under the management and control of the HPA and CRDA while the remaining 2/3 (>32,000> privately owned and/or managed by private entities. There are a few off-street facilities available to the public managed by private parking operators and/or landowners. More so, there are even more private parking facilities that are only available to on-site tenants or reserved parking, not available to the public. This disparity in ownership and control of the parking system limits the influence the HPA and the City can have on influencing parking policy throughout the area.

Beyond the disparity of allocation of public and private spaces, the HPA's approach to parking management is community-driven and focused on providing exceptional customer service and supporting business needs. The approach is most prevalent in the core Downtown neighborhoods. As people go further outside of the Downtown core, there is less consistency from an enforcement perspective. Parking management, operations, and enforcement need to be expanded into these growing districts to provide the same level of customer service for the community at large.

Continued approaches to modernize the program, including data-driven decision making and clear and transparent communications will be critical for the HPA to continue to support community needs. Modernized approaches to pricing (demand-based) and enforcement (activity-based) will help position the HPA for greater success. Leveraging and expanding the use of recent technology investments should help the HPA better serve the community and define needed parking management decisions in the context of surrounding businesses.

Finally, the valuable planning decision to remove minimum parking requirements for the community has generally seen the intended effects for the advancement of residential developments, with lower car ownership and usage. As more and more residential development is realized, it will be critical to define either shared parking supply to support those needs and continue to reap the benefits of lowered levels of privatized parking constructed or secure/ develop additional public parking assets. A broader public parking system that HPA has more control over would help to support balanced parking demands and a more centralized parking system. In addition, there is a point at which parking demand from new development will impact the existing public parking supply given that only a limited amount of parking is controlled by the HPA when compared to the overall downtown supply. In addition, the lack of centralized public parking resources may inhibit future development given the high cost to develop

parking structures for individual projects. Consequently, in addition to the strategy proposed in this report for the HPA to lease and share private parking resources for public use when possible, the HPA and City should judiciously increase its control of public parking resources to support Hartford's continued economic and redevelopment activities

The following primary parking management, operations, and policy recommendations are presented in the Task D section of this report. The purpose of Task D was to review the policies and procedures related to both the public on-street and off-street parking system and make recommendations to improve management, utilization, and oversight of the parking system. The outcome is "best practice" strategies to maximize the utilization and sharing of existing parking to mitigate, to the extent possible, the need for additional parking. The goals of Task D included:

- Using shared parking and management strategies to mitigate, to the extent possible, the need for additional parking
- Create management, outreach, and communication strategies that are tailored to the needs of the individual study areas
- Evaluate operational, technological, and pricing strategies that can help balance public parking demand and supply
- Improve the user experience for HPA and public parking customers, as well as area residents, employees, business owners and visitors
- Define right-sized parking strategies that leverage existing assets and improve the provision of public parking

The following parking-specific recommendations are defined by priority levels with the understanding that specific improvements will need to be made to support a more holistic public parking system before programmatic improvements can be completed successfully. The priorities include:

- Priority 1, which should be completed first in an effort to create more public parking supply
- Priority 2, which follow the introduction of public parking supply and aim to help improve parking behaviors
- Priority 3, which should be completed last to support continued modernization of the community parking system

The recommendations are divided into community-wide recommendations for the entire community and HPA program, as well as for each individual neighborhood district.

Priority One

The intention of the priority one recommendations is to focus on the development of a more comprehensive public parking system through partnership with private property owners and private parking operators. Hartford is home to two of the industry's largest parking operators, representing a unique opportunity to leverage their experience and expertise to help define a new approach to public parking. The following recommendations focus on the creation of new public parking, largely through the use of existing parking resources:

Community-Wide Recommendations

The following recommendations should be considered by the HPA and the City on a community-wide basis, helping to bolster the approach to the provision of public parking and customer service.

Creation of Public Parking

The Hartford Parking Authority (HPA) and the City should define new public parking in one of two ways: creating new street parking and collaborating with the private sector to create new off-street public parking. The first task

would require reviewing existing street networks and converting travel lanes to parking (where traffic volumes and emergency vehicle clearances allow). The second task would have the HPA work collaboratively with the private parking sector to establish long-term lease agreements that allow for more shared parking and create a higher market share of public parking within the community. HPA's role in this new public parking system would include:

- In facilities managed by private parking operators, leasing of spaces to create a shared public pool of spaces
- In facilities owned by the private sector but leased and managed by HPA, HPA would provide management and operations of the shared parking assets, including the provision of management resources, installation of technology, collection of revenue, and oversight of the parking facilities
- Enforcement of the shared parking assets, which would require the creation of management agreements that allow HPA staff to enforce parking citations on private property.
- Implementation of wayfinding, branding, and marketing elements of the parking program consistent with today's practices within the HPA program.

Given the drastic changes in commuting patterns in a post-COVID environment, there may exist very specific opportunities to leverage large parking facilities that were developed for institutional uses within the Downtown Hartford area. The HPA and the City should explore partnerships with these entities in the near term to better leverage available supply, promote better utilization from a wider variety of users, and develop a more flexible approach to parking management that takes advantage of new approaches to working remote and in the office on a flexible basis.

Additional specific considerations for this shared parking program are outlined in Task Memo D (page 126).

Expanding the Capability and Reach of the HPA

The HPA should continue its efforts to modernize parking and the customer experience in the Hartford community through a handful of initiatives intended to raise awareness of the program, improve the decision-making, and support parking needs within the community. These recommendations include:

- Creating a focused arm of HPA dedicated to Communications and Media to help improve messaging and communication with the greater Hartford community. This group would serve to improve the messaging, conduct neighborhood level outreach, focus on brand development and marketing, and communicating the success and intent of the HPA.
- The introduction of a Parking Advisory Committee, made up of individuals representing the varied interested of the community (Downtown, Upper Albany, Parksville, and Wethersfield Avenue Corridor) would help to define champions within the community and help provide partnership and oversight for the implementation of recommendations. The group would meet periodically to review data points related to the recommendations and discuss ongoing implementation and adaptation within the community.
- Improve functional use of data-driven decision making, including the development (or procurement) of program performance dashboards, expanding customer friendly concepts like virtual permitting in neighborhood areas, using existing data streams (like meters and license plate recognition), and expanding concepts like demand-based pricing to better balance parking demands and support the specific needs of each part of the community.

Downtown/DoNo/Bushnell Recommendations

Specific priority one recommendations for the Downtown/DoNo/Bushnell study area include:

- Leveraging available private parking supply in the area to create shared parking opportunities. HPA and the City should consider a program where they provide a financial subsidy (or tax relief) to owners of parking facilities in strategic areas in exchange for a lower-priced parking option available to transient public parkers. This program will establish more equitable transient parking (rather than flat-rate all day parking) that could help alleviate some of the parking pressures and establish more equitable public parking. The financial subsidy would essentially maintain revenue levels for the private parking owners or operators. In general, the HPA should look at these sites as opportunities to increase publicly available supply in underserved areas and introduce additional transient parking, a common theme amongst project stakeholders.
- Consider offering residential parking passes for residential parking nights and weekends (on-street).
- Continue to leverage the Woonerf app as the primary payment method (slowly eliminating cash).
- Implement asset-light concepts with combination of metering and app-based payments.

Upper Albany Recommendations

Specific priority one recommendations for the Upper Albany study area include:

- Leverage underutilized private surface parking areas for shared parking, including retail shopping centers, churches (on non-worship days/periods), and schools (outside of academic hours)
- Evaluate the neighborhood response to the ongoing paid parking pilot and expand as demand dictates, using a data-centric communication and outreach method to define how and where to implement paid parking going forward.

Parksville Recommendations

Specific priority one recommendations for the Parksville study area include:

- Evaluate potential (long- or short-term) public-private parking agreements in under-utilized private parking facilities to expand the HPA's inventory of off-street parking areas (which can be used to initiate an employee permit parking program).

PRIORITY TWO

The priority two recommendations are intended to focus on improving the parking experience and reducing poor parking behavior throughout the community. These recommendations would need to follow the creation of additional public parking assets (through shared parking) and the improvement of communications and data-driven decision making.

Community-Wide Recommendations

Improving Enforcement and Operations

The HPA should address inconsistent enforcement (as identified in the public outreach component of this project), with the intention of reducing unsafe parking behaviors like double parking, blocking driveways, parking in crosswalks, or parking on the sidewalk. This would begin with the expansion of enforcement staff, tailoring enforcement practices to the needs of the distinct neighborhoods, expanding operational and enforcement hours to support district needs, and potentially raising the costs of certain parking violations to dissuade poor behavior in commercial areas.

Parking Wayfinding

As the public parking system is expanded through the recommended shared parking system and collaboration with the private sector, the HPA should expand parking wayfinding signage and technologies to help better balance parking demands and serve the Hartford community.

Downtown/DoNo/Bushnell Recommendations

Specific priority two recommendations for the Downtown/DoNo/Bushnell study area include:

- Schedule price increases for the on-street system using data analytics and area demand profiles as catalyst for area and time-based increases.
- Increase use of demand-based pricing tools (like progressive pricing on Washington Street).
- Expand enforcement and payment into night and weekend hours (based on demand needs).
- Consider monetization of other curbside uses (loading, goods movement, micro-mobility, etc.) to help support diverse needs of businesses and residents in the downtown area.

Upper Albany Recommendations

Specific priority two recommendations for the Upper Albany study area include:

- Extend hours of enforcement and pricing to support turnover and business access (and address double parking and unsafe parking conditions).
- Introduce loading zones to support business needs and reduce double parking.
- Consider introduction and expansion of Residential Parking Permit (RPP)'s to help manage spillover
- demands.
- Consider reduced price parking for residents (through the Woonerf app).

Parksville Recommendations

Specific priority two recommendations for the Parksville study area include:

- Introduce a paid parking pilot to Parksville (similar to the one currently underway in Upper Albany).
- Roll out outreach, marketing and communications, and Parking Ambassadors to support a more consistent and visible customer centric parking system.
- Extend hours of enforcement and pricing to support turnover and business access.
- Utilize LPR system to undertake commercial and residential parking occupancy counts (2x) per year.
- Consider introduction and expansion of RPP's to help manage spillover demands.
- Consider reduced price parking for residents (through the Woonerf app).

Wethersfield Avenue Corridor Recommendations

Specific priority two recommendations for the Wethersfield Avenue Corridor study area include:

- Consider shared parking arrangements in underutilized parking areas. These would be more for economic development and area investment opportunities, rather than trying to solve a "need" problem.

PRIORITY THREE

The priority three recommendations are intended to build off of the successful implementation of priority one and priority two recommendations and begin to build a more community- and neighborhood-oriented parking management approach. These will incorporate program growth from new approaches to shared parking and improved behavior-based operational approaches.

Community-Wide Recommendations

As the program and public capacity evolves over time, the HPA and the City should begin to think about neighborhood-based strategies to support and balance business and resident needs and find opportunities to improve the overall approach to transportation in individual districts. These improvements could include:

- Implementing paid parking (virtual/digital permit only) in residential areas adjacent to heavily traversed commercial corridors, with the revenue generated from this implementation re-invested in the districts. This paid parking would be demand-based and only available in times when residential needs are lowered. This effort would support a more balanced approach to parking, while generating revenue to support the district.
- Consider the use of Commercial Benefit Districts to support the advancement of paid parking while providing opportunities for HPA to re-invest in the community. Using the revenues from the expanded parking management program to support mobility investments in the districts would support area growth while acknowledging a need for advanced management strategies.

Upper Albany Recommendations

Specific priority three recommendations for the Upper Albany study area include:

- Evaluate implementation of community parking programs (similar to the example from Columbus, OH which is described later in this report) that uses a combination of paid parking along Albany Avenue and app-based paid parking in adjacent residential streets, along with residential permit parking, to support a more holistic parking environment. The revenues generated from the program should be reinvested back in the community through a benefit district. Re-investment should be tailored to leasing spaces for shared parking, improvement of streetscape and mobility improvements, and overall neighborhood aesthetics.

Parksville Recommendations

Specific priority three recommendations for the Parksville study area include:

- Evaluate implementation of community parking programs (similar to the example from Columbus, OH which is described later in this report) that uses a combination of paid parking within commercial districts and app-based paid parking in adjacent residential streets, along with residential permit parking, to support a more holistic parking environment. The revenues generated from the program should be reinvested back in the community through a benefit district. Re-investment should be tailored to leasing spaces for shared parking, improvement of streetscape and mobility improvements, and overall neighborhood aesthetics.

MEASURING SUCCESS

For parking specific recommendations, the following measures of success should be considered.

1. Leased and Shared Parking – improved parking utilization and balance of parking demands in the on-street and off-street environment (as measured through tools like LPR); reduced citations associated with unsafe parking behaviors.
2. Improved Communications and Management – reduced complaints from downtown and neighborhood districts; increased and balanced utilization of parking spaces; reduced citations
3. Demand-Based Approaches to Paid Parking and Enforcement - increased and balanced utilization of parking spaces; reduced citations
4. Community/Commercial Benefit Districts - increased and balanced utilization of parking spaces; re-investment income volumes

These measures should be routinely reviewed with the Parking Advisory Committee as the program implements recommendations from this report.

Transit Initiatives

The THA team also evaluated the impacts that recent public transportation initiatives have had on parking demand and transportation patterns in Hartford and identified related recommendations. The leading objective of the City of Harford Parking Study is to support the continued redevelopment of Hartford while balancing the multi-modal transportation demands of its growing economy. Transit initiative analysis seeks to:

1. Understand how Hartford's parking system can benefit from recent public transportation investments.
2. Provide recommendations related to parking and streetscape management to support multi-modal transportation usage.

The analysis was guided by the principle that alternative transportation options in Hartford should be supported as a critical component of Hartford's smart growth and future sustainability. Although reliance on personal automobiles defines transportation and commutation culture in Hartford, the Hartford Parking Study public engagement process highlighted stakeholder interest to support alternative modes. Such interest builds off recent transit investments that have shaped new opportunities for enhanced mobility in Hartford. Despite recent investments in key transit infrastructure such as CTfastrak, the COVID pandemic has impeded ridership rates in the last couple of years.

Public transit and other alternative modes play an important role in improving accessibility and enabling a wider geographic reach for residents, workers, and visitors. Despite the value of recent public transportation investments such as CTfastrak, the redesign of CTtransit Express bus routes, and CTrail operation on the Hartford Line, these initiatives have not had a significant impact on parking demand in Downtown Hartford or neighborhood study areas. The COVID pandemic and related workforce shifts have complicated the value of ridership data from the last two years and the ability to make sound projections going forward.

Enhanced connectivity in Downtown Hartford would allow for a more decentralized parking system and greater flexibility for parking supply changes in core downtown locations. Public engagement illuminated the challenges associated with changing the behavior of drivers who want to park near their destinations for "door-to-door" service. However, new services and circulation enhancements such as the Circulator Shuttle and LINK scooters provide a basis to encourage behavior change for a more sustainable parking system that matches other planning goals for

the City. Outside of downtown, public engagement also highlighted the desire from many stakeholders to improve corridor conditions for pedestrians and bicycling.

Transit Recommendations

1. Support a coordinated, decentralized parking system downtown that incorporates connector services, micro-modes, and enhanced walkability.
   - Enhance marketing and communications information that emphasizes where available parking is in the Downtown area.
   - Enhance last mile connectivity through micro-modes such as existing Link scooters and bicycle infrastructure investments between parking facilities and key destinations. The City should continue to expand the LINK scooter program, as warranted, to match demand, including winter month operation.
   - Examine and modify downtown "circulator" shuttle routes, stops, and headway to ensure that existing needs are met while also aiming to improve level of service/convenience.
   - Continue investment towards Downtown streetscape improvements that enhance walkability conditions and encourage longer walking further distances.

2. Continue to encourage Transit-Oriented Development (TOD) around Hartford's CTfastrak Stations.
   - Developers in TOD areas should be incentivized to subsidize the CTfastrak passes for their residents for maybe one year.

3. Fund and support targeted marketing efforts to improve public awareness of transit services and initiatives, specifically CTfastrak, the new Downtown Connector Shuttles, and Link scooters.

   - Brand of the new CTtransit Downtown Connector Shuttle services so the vehicles are eye-catching and their service as a last-mile connector is quickly discernable.
   - Require that developers in TOD Overlay Districts advertise public transportation, such as CTfastrak, as part of their projects. Further, developers could be incentivized to provide subsided passes to CTfastrak for one month to introduce tenants to CTfastrak service.
     - Consider expanding LINK scooter service in Upper Albany and Parkville to promote alternative mobility options.
     - The City should consider promoting information on existing subsidies that LINK offers to low-income individuals. The City could provide additional subsidies to further incentivize the use of scooters in targeted neighborhood areas. LINK scooters could be promoted in Parkville as a service that has the potential to enhance last-mile connectivity to the CTfastrak station. In Upper Albany, LINK scooters could be promoted as a convenient alternative to navigate Albany Avenue.
   - The City should encourage major downtown employers to advertise and offer pre-tax public transit programs to their employees.

4. Support Hartford 2035 strategies to improve the City's walkability, bike-ability, and public transit services as a means to reduce in-city auto trips made by residents, especially from outer neighborhoods to Downtown.
   - The City should continue to work with bicycle advocates and the Complete Streets Task Force to identify priority areas for new bicycle racks or storage. During the Parking Study public outreach, bicycle advocates voiced that such amenities are not consistent around corridors and downtown.
   - With Hartford's commitment to maintain bicycle infrastructure in winter months, the City should consider communications that promote biking in the winter season.
   - In coordination with CT DOT, the City should consider a review of recent crash data that involved pedestrians and/or bicyclists in order to identify areas where safety improvements may be needed. For example, some stakeholders feel that pedestrian cross times at traffic signals on Albany Ave. should be increased in order to provide safer conditions.
5. Improve curb access and bus staging areas to enhance public transit service
   - In coordination with CTtransit, an audit of curb and sidewalk space around bus stops should be conducted to identify and prioritize locations where rider access could be enhanced. In some instances, enhancing bus stop accessibility might involve the removal of a parking space. The City should also collaborate to advance recommendations within the CRCOG'S RapidRoute study that will enhance bus level of service in key corridors.
   - Identify additional bus staging locations in Downtown that minimize street congestion and challenges for pedestrians. Efficient bus staging areas should be identified for both CTtransit buses as well as private buses related to events.

Recommendations by Sub-Area

Citywide
• Fund and support targeted marketing efforts to improve public awareness of transit services and initiatives, specifically CTfastrak, the new Downtown Connector Shuttles, and Link scooters. • Promote information on existing subsidies that LINK offers to low-income individuals for scooter use. • Support Hartford 2035 strategies to improve the City's walkability, bike-ability, and public transit services as a means to reduce in-city auto trips made by residents, especially from outer neighborhoods to Downtown. • The City should request additional input from bicycle advocates and the Complete Streets Task Force to identify priority areas for new bicycle racks or storage. • With Hartford's commitment to maintain bicycle infrastructure in winter months, the City should consider communications that promote biking in the winter season. • Coordinate a curb audit around bus stops to assess opportunities for enhanced accessibility; Advance recommendations within the RapidRoute Study that will enhance bus level of service in key corridors. • In coordination with CT DOT, the City should consider a review of recent crash data that involved pedestrians and/or bicyclists in order to identify areas where safety improvements may be needed.
Downtown/DoNo/Bushnell
• Enhance marketing and communications information to emphasize where available parking is in the Downtown area, possibly in real-time. • Enhance last mile connectivity through micro-modes such as existing Link scooters and bicycle infrastructure investments to connect parking facilities and destinations. • Examine and modify downtown Connector Shuttle routes, stops, and headway to ensure that existing needs are met and to and improve level of service/convenience. • Optimize the branding of the CTtransit Connector Shuttle services so vehicles are eye-catching and their service as a last-mile connector is quickly discernable. • Continue investment towards Downtown streetscape improvements that improve walkability conditions and encourage walking further distances. • Identify bus staging locations in Downtown that minimize street congestion and challenges for pedestrians. • The City should encourage major downtown employers to advertise and offer pre-tax public transit programs to their employees.

<table>
<tr><th colspan="2">Upper Albany</th></tr>
<tr><td colspan="2">• Consider expanding LINK Scooter Service in Upper Albany as a convenient alternative to navigate Albany Avenue and adjacent parking areas.
• In coordination with DOT, audit pedestrian cross times at signals on Albany Ave. to ensure that pedestrian phases are sufficient and safe.</td></tr>
<tr><th>Parkville</th><th>Wethersfield Avenue Corridor</th></tr>
<tr><td>• Continue to encourage Transit-Oriented Development (TOD) around Hartford's CTfastrak Stations.
• Require that developers in TOD Overlay Districts advertise public transportation, such as CTfastrak, as part of their projects.
• Developers could be incentivized to provide subsided passes to CTfastrak for one month to introduce tenants to CTfastrak service.
• Developers in TOD areas should be incentivized to subsidize CTfastrak passes for their residents for up to a year.
• Consider further expanding LINK Scooter Service in Parkville.
• LINK scooters could be promoted in Parkville as a service that has the potential to enhance last-mile connectivity to the CTfastrak station.</td><td>• No current changes to transit initiatives but continue to monitor the area including the functionality of bike lanes and bus stop access.</td></tr>
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Future Parking Facilities

In Task F of this report, represents the recommendations associated Parking Expansion Strategies. The purpose of the task is to outline strategies, policies, design criteria, and sample opportunities to expanding both the public on-street and off-street parking to support access to the Hartford's businesses and attractions and future development.

Within the Downtown there is a considerable amount of curb space that is presently regulated as no parking. Based on a cursory look at the streets and the designated "no parking" areas, there does not seem to be compelling traffic safety or circulation concerns to limit the on-street parking supply in multiple instance. On-street metered parking provides highly desirable and convenient parking for downtown patrons and helps calm traffic within the downtown environment improving the pedestrian experience. On-street parking can serve as a buffer to sidewalk pedestrian activity and is highly effective at regulating the parking spaces for the intended durations and users when it's metered and consistently enforced. In addition, the revenue generated by metered parking supports operations and improvements to the parking system and can be reinvested in the downtown district. Lastly, adding on-street parking is an affordable option to providing additional public parking for downtown visitors, patrons and residents under the control of the HPA. To identify and quantify the amount of parking that can be added to the downtown inventory, the City should perform a comprehensive audit of downtown streets to verify the ability to add parking without negatively impacting pedestrian safety and the flow of traffic.

The Task F site feasibility study for new centralized parking primarily focuses on the downtown study area but does offer an example of public parking expansion in the Upper Albany study area. Our team identified two (2) locations were evaluated for future public parking facilities (one garage and one surface lot) as part of this study effort.

For site one, a new 516-space parking garage could be constructed at the site of the 250-space HPA lot located at 141 Sheldon Street near the UConn Hartford campus. This centrally located surface lot in the downtown is not the highest and best use of this property. A potential use of this property is a mixed-use project that provides residential, retail, or commercial uses coupled with structured parking. In this theoretical development scenario, a private

development partner could be selected to partner with the HPA to undertake the mixed-use project. By developing this new parking facility with available public parking, the city / HPA would have a new parking resource to support other projects in the area, offering developers the opportunity to satisfy their parking needs.

Throughout the country parking authorities have proven to be effective entities to develop and operate parking to support redevelopment and economic activity. In Hartford, in addition to the operation, management and enforcement of the City's parking assets, the HPA can serve as a valuable component and resource with regards to Hartford's economic development initiatives. The HPA can help secure existing parking for new projects and play a leadership role in the planning and development of new facilities to support new projects.

Site two is located on the north side of Albany Ave between Magnolia St and Irving St (614 Albany Ave). The property is owned by the City. The existing site contains a basketball court and two vacant parking lots. The HPA would like to convert this site to a municipal parking lot to accommodate potential parking demand in the Upper Albany neighborhood. For site two, we developed two concept designs, both of which maintain the existing basketball court and pocket park on the southwest corner. The first option includes 71 spaces with one (1) pocket park, one (1) basketball court, and one (1) playground. The second option includes 59 spaces with two (2) pocket parks, and one (1) basketball court. Both of these design options will provide public off-street parking in the Upper Albany area while also providing community amenities.

TASK A – PROJECT BACKGROUND AND PURPOSE

In September 2020, the Hartford Parking Authority (HPA) and City of Hartford (City) issued a Request for Proposal (RFP) to retain a firm to create a comprehensive parking study. The original intent of this RFP was to develop a parking study which included the following 8 elements:

1. An inventory of the existing public and private parking facilities.
2. A supply and demand forecast for all publicly owned parking across the City and within focus areas.
3. Strategic plans for key focus areas.
4. Integration with transit modes and facilities.
5. An analysis of City and other governmental regulations, policies, and procedures.
6. A series of meetings with relevant staff, stakeholders, and the public, and
7. A final report in print and digital presentation formats.

THA Consulting, along with BFJ Planning, and Wood Solutions Group (the THA Team) teamed up to deliver this project for the HPA and City.

Due to the City's successful growth and redevelopment over the past 20 years, there is now more residential, restaurant, entertainment, and retail businesses within the central business district. However, The City is working hard to maintain a healthy balance of a vibrant and growing downtown with one that is also very walkable and accessible for those who live, work, or visit. In 2016, the City updated its Zoning Regulations and eliminated all parking requirements. As a result of this regulation change and the new development projects planned to displace existing parking facilities, the need to create more shared and public parking spaces increased significantly.

Given the impact on parking from the pandemic, it was necessary to modify some of the traditional means and methods of measuring the capacity of a parking system. For instance, we would typically conduct parking occupancy counts and utilize that data as the baseline for which all future growth and development is built on. However, parking occupancy counts performed during the first few months of this study would result in a much lower parking occupancy than what was experienced just 12 months prior.

The initial thought when THA was awarded this project in late 2020 was that the pandemic would only last for a short time, the current health and safety measures would be temporary, and activities would resume as normal within 6 to 8 months. The HPA even developed their own recovery model that they used for the purpose of developing their budget. The THA team and HPA agreed to assume that activity in late 2021/2022 would resume at the same level as pre-pandemic and therefore we utilized historical 2019 parking occupancy data as our baseline.

To obtain this historical data, we relied on public agencies as well as private parking operators to assist our team. In instances where data did not exist, our team researched other means such as time and date stamped aerial images. The challenge for anyone in performing a study during this type of global event is that parking patterns and driving behaviors are neither consistent or predictable. While the data presented in this study is the best available, it should also be noted that our original assumption of quickly returning to pre-pandemic parking conditions may not hold true. For that reason, we recommend regularly monitoring parking utilization throughout the City in order to modify our recommendations as needed.

The following section summarizes our scope of services by task and includes a list of documents that have been reviewed by the Team as part of this study effort.

SCOPE OF SERVICES

Task A - Literature Review and Kick-off Meeting

1. The THA team met with the City's Steering Committee to discuss the study governance, the study area, scope of work and study schedule. Work tasks were adjusted due to the impact from COVID. The team agreed on a meeting schedule and public engagement program as per the terms and expectations of the RFP. Key stakeholders were identified, and engagement mechanisms were determined.
2. Requested and reviewed any recent parking studies, reports, data, or information associated with the study area(s). Provided an info request to the City for additional information identified throughout the study.

Task B - Public Engagement

1. The THA Team held one (1) city-wide virtual public forum which focused on identifying key issues, gather general comments, and receive stakeholder feedback. Due to COVID-19, we hosted the forum on the Zoom virtual videoconferencing platform to allow for social distancing guidelines while allowing members of the public to engage with the topics and provide input.
2. The THA Team held three (3) additional two (2) hour virtual stakeholder focus group meetings to discuss parking issues and opportunities. Again, due to COVID-19, we hosted the forum on the Zoom virtual videoconferencing platform to allow for social distancing guidelines while allowing the team to investigate and evaluate specific parking and TDM policies, regulations, concerns, etc.
3. Social Pinpoint Platform: A website was developed on the Social Pinpoint platform specifically for this study effort.
4. The THA Team will conduct semi-formal interviews with various public and private entities as identified throughout the study process.
5. The summary of these activities is included in the Task B section of this report.

Task C - Parking Demand and Future Parking Adequacy Analysis

1. Compiled a comprehensive inventory of parking in the study area(s) which included public on-street parking, public off-street parking, and the private off-street parking of adequate capacity to potentially be shared for public parking. The inventory includes the number of spaces, location, time limit, user restrictions, rates (if any), and hours of operation, etc. We worked with the City, HPA, and private operators to confirm the supply, its users, and any unique issues associated with both on- and off-street parking.
2. Summarized the results of the inventory and present graphically on maps and charts.
3. To estimate pre-COVID parking conditions (2019 as the baseline year), we requested the on- and off-street parking occupancy data from the Hartford Parking Authority (HPA) and the same for the private off-street facilities through LAZ and Propark.
4. To quantify the impact from COVID as well as analyze the speed and extent at which parking activity is recovering to pre-COVID levels, we requested monthly parking activity data and revenue from January 2019 through the most recent month of data available from the HPA. We will request the same monthly data from the private operators to compare the recovery in private facilities against the recovery in public facilities. Most of this data was not available and/or non-existent and irrelevant due to the pandemic.
5. We considered the impact of seasonal, temporary parking for snow emergencies and street sweeping as part of the inventory and usage data.
6. The results of the pre-COVID occupancy data were summarized in color coded graphics and tables to clearly identify areas and facilities that are at capacity or underutilized. This analysis identified specific areas with parking shortages and surpluses.
7. To assess future parking demand and adequacy, we obtained a complete list of future development projects in the City's planning and approval process and document the amount of anticipated new development by square

footages by land use, tenant mix, number of units, amount of parking, etc. We estimated the potential parking demand associated with the proposed developments based on the City's zoning requirements (or ratios based on our analysis in the section below, *Parking Conditions and Regulations Review – Item #4*) to determine the probable parking needs. We also obtained the amount of parking to be provided (or displaced) as part of the new development and project any anticipated parking shortages or surpluses associated with the new projects.

8. Future parking demand and supply assumptions and forecasts considered the impact of new and improved transit options, the potential lasting impacts that the pandemic may have on parking demand, and the impact of changes to the hours or rates of metered on-street parking within the focus areas. We reviewed the ramp-up projections used by the HPA for consideration within our model.
9. Based on the existing parking demand, the loss of any future parking resources to development, and the demand generated by proposed development projects, and the considerations outline above, we projected total future parking needs through 2031.
10. To "right size" the amount of new parking required to meet the projected parking demand in the study area as a result of our analysis, we prepared a shared parking analysis based on Urban Land Institute (ULI) and International Traffic Engineers (ITE) recommendations as well as local adjustments.
11. The summary of these activities is included in the Task C section of this report.

Task D - Parking Conditions and Regulations Review

1. Reviewed the policies and procedures related to both the public on-street and off-street parking system and made recommendations to improve management, utilization and oversight of the parking system.
2. Evaluated opportunities to share public and private parking resources to the greatest extent possible to mitigate the present and future need for new parking facilities.
3. Identified additional opportunities to institute parking pricing strategies (variable or demand-based pricing) to incentivize the wider use of all parking locations.
4. Reviewed existing parking requirements for the study area (multi-family residential, business, and retail requirements). The regulations were reviewed to determine if the existing parking ratios are appropriate for the study area and if they should be adjusted to "right size" new parking resources.
5. Performed a limited parking demand survey of recent residential projects in the study area consisting of the type of anticipated future development to identify actual parking utilization.
6. Obtained and reviewed the parking requirements from other peer towns with regards to similar types of developments and research "best practice" parking requirements and policies in similar municipalities to identify and recommend any changes to the area's parking ratios / requirements.
7. Assessed the City's existing on-street and off-street parking payment equipment and technology and recommended appropriate upgrades and new technologies to improve operational efficiency and customer convenience.
8. The summary of these activities is included in the Task D section of this report.

Task E - TDM and Public Transit & Rideshare Services Analysis

1. Obtained and Reviewed information on the City's existing TDM programs:
2. Assessed the existing TDM, transit and rideshare programs and strategies that the City has executed as well as lessons learned and their perceived success.
3. Made recommendations related to increasing the utilization and effectiveness of the TDM, transit and rideshare programs and services.
4. The summary of these activities is included in the Task E section of this report.

Task F - Parking Expansion Strategies

1. Identified locations for additional on-street parking.

2. Performed an analysis of existing ordinances, regulations, policies, and procedures which affect how parking facilities are planned, designed, constructed, and regulated in the city.
3. Working with the City, we identified two (2) potential sites where new parking facilities could be located.
4. Evaluated the two (2) sites for development.
5. Developed the best fit, functional design for the parking facility and developed conceptual plans for each of the two (2) sites.
6. Prepared a conceptual level, order of magnitude cost estimate for the development of the selected sites.
7. The summary of these activities is included in the Task F section of this report.

DOCUMENTATION

The following documents were provided to the THA team and used by our team as part of this study effort.

- Bushnell South Master Plan Public Presentation (June 2021)
- City of Hartford Complete Streets Plan (October 2020)
- City of Hartford Plan 2035 (May 2020)
- City of Hartford Redevelopment Agency Active Redevelopment Plan Project Areas (April 2017)
- CTfastrak Expansion Study (2016)
- Downtown Circulation Study (April 2010)
- Downtown Hartford, CT – Parking lots and garages (2014)
- Express Bus Service for a Dynamic Future (February 2021)
- Hartford 2020 Plan
- Hartford 2035 Plan
- Hartford Comprehensive Transit Service Analysis (2017)
- Hartford Complete Streets Ordinance (September 2016)
- Hartford Future Parking Needs Study (August 2014)
- Hartford Future Needs Parking Study (Nelson Nygaard)
    - Existing parking conditions
    - Valuation analysis
- Hartford Re-imagining Main Street Report (January 2021)
- Hartford Transit Oriented Development Pilot Study (March 2018)
- Hartford Neighborhood Parking Survey (January 2014)
- Hartford Zoning Map (March 2016)
- Hartford – Zoning Regulations (As Amended June 5, 2020)
- HPA Organization Chart (030032021)
- Metro Hartford Future
- MuniCode_Chapter_10__PARKING_AUTHORITY
- MuniCode_Chapter_22__MOTOR_VEHICLES_AND_TRAFFIC
- One City, One Plan POCD 2020: Hartford's Plan of Conversation and Development (2010)
- RPP Permits Allowed Per Zone
- Transportation Safety and Improvement Study - UConn Hartford Campus (August 2017)

TASK B – PUBLIC ENGAGEMENT

INTRODUCTION AND OVERVIEW

The Hartford Parking Study public engagement program was organized with the objective to hear from members of the public as well as key stakeholders to better understand community priorities. Due to the COVID-19 pandemic, all public meetings and informational stakeholder interviews were conducted virtually. To bolster opportunities for public participation and information gathering, the outreach program also included a project website that hosted additional web-based feedback tools such as an Interactive Map and a Public Survey.

Stakeholder engagement forums gathered comments and concerns from area residents, business owners, and neighborhood groups. Similarly, targeted meetings/interviews with stakeholders (city officials, property owners, developers, business owners and community leaders) were scheduled to target entities that have vested interest and specialized knowledge regarding the City's parking needs. Meeting summaries and a synthesis of the public survey and comments shared on the web-based interactive map engagement tool were utilized to inform recommendations. These meeting summaries with key takeaways are provided in the sections below for each Virtual Public Forum/Stakeholder Meeting, followed by a summary of the online engagement tools.

Several common themes and takeaways emerged from public engagement:

- There is strong public interest for the City to continue investing in Hartford's streetscapes, walkability improvements, and multi-modal transit options.
- Residents, workers, and visitors generally seek convenient parking adjacent to their destinations. However, it is acknowledged that enhanced information sharing on parking resources can influence behavior.
- COVID impacts on commutation and the uncertainty of future parking trends will require flexibility from both a municipal planning perspective as well as with payment/pricing options.
- In areas where there is currently sufficient parking or a surplus of parking, it is generally recognized that redevelopment projects will create new demand that will need to be planned for. Redevelopment that will bring greater residential density will also provide opportunities for alternative transportation.

Project Website and Online Engagement Tools

The project website (www.tinyurl.com/HartfordParking) was launched in tandem with the kick-off city-wide forum on April 28th. The landing page served as a portal for all Parking Study engagement opportunities, including links to join each virtual public meeting, to share feedback on the Interactive Map and to take the Public Survey. Additionally, a Parking Study email address was shared for the consultant team to field questions from the public and respond to process-related inquiries.

- The Social Pinpoint Interactive Map allowed the public to offer location-based comments on parking and parking-related issues, opportunities, and general suggestions. Approximately 50 comments were posted by members of the public.
- The Public Survey (via Survey Monkey) was designed to gather data on parking trends, satisfaction, and general feedback from Hartford residents, workers/students, and frequent visitors. The survey was available in English and Spanish and was open from April 28th until June 30th. A total of 82 surveys were completed.

Virtual Public Forums

All virtual public forums began with a short presentation that introduced the scope of the Parking Study, presented an existing conditions snapshot, and identified leading parking issues and themes for consideration. Meetings allotted the majority of time for breakout discussions facilitated by a member of the consulting team. Notes taken

in breakout rooms via screen share were presented back to the larger group at the end of each meeting. Compiled comments from each meeting were posted on the project website for public review.

- City-Wide Public Forum (April 28th, 2021): The parking study public engagement kicked-off with an initial meeting that aimed to spread awareness of the study and gather general feedback across Hartford neighborhoods.
- Three public Study Area Stakeholder Meetings gathered feedback and comments from stakeholders in focal neighborhood and corridor areas.
    - Upper Albany/Albany Ave. & Wethersfield Ave. Corridor (May 6th, 2021)
    - Downtown/ Downtown North (DoNo)/ Bushnell South (May 12th, 2021)
    - Parkville Area (May 13th, 2021)

Stakeholder Interview Meetings

The Parking Study consulting team conducted semi-formal interviews with key stakeholders to gather targeted insight and feedback. Discussion was centered on historic and current parking conditions, concerns and challenges related to parking and transportation, and anticipated outlook of growth and development. The following meetings were convened:

- Transit Agencies (May 27th, June 14th)
- Parking Operators (June 4th)
- Public Agencies (June 9th)
- Major Employers (June 9th, June 25th)

Additional Outreach Meetings

The need for additional community engagement arose during the public engagement process and resulted in the following additional meetings:

- Upper Albany Main Street: Design Committee meeting (May 13th)
- Hartford Complete Streets Task Force meeting (June 14th)
- Micro-transit (LINK electric scooter program) (June 21st)

The following sections summarize feedback received from each of the community engagement components listed above. Note that appendices include: (A) A full list of comments received during each public meeting, (B) Notes from each stakeholder interview meeting and other relevant meetings, (C) Survey Results exported from Survey Monkey, including open-ended response comments, (D) Interactive Map comments, and (E) Parking Study community engagement flyers.

VIRTUAL PUBLIC FORUMS

CITY-WIDE PUBLIC FORUM

The following takeaways emanated from the Parking Study Kick-off Forum (April 28, 2021):

- The Forum exhibited strong public interest for the Parking Study to investigate and thoroughly consider: (1) Parking as a component of mobility that should encourage other modes of transit, (2) Opportunities to improve streetscapes that balance parking supplies with other needs and uses.
    - Although streetscape improvement projects have generated positive changes in targeted areas (e.g. road narrowing for traffic calming, improved bus and bicycle infrastructure), these efforts demonstrate the desire by some for a more robust complete streets agenda. Throughout all public events, complete streets and alternative transit mode advocates emphasized the desire for the Parking Study to consider street design holistically, for all users.
- Opportunities for new regulations and/or metered parking outside of the Downtown area vary. Some cite that the potential need for metered parking and/or posted time limit regulation additions should be monitored along corridor areas expected to grow to best support access to businesses that rely on on-street parking.
- Across study areas there is a desire for on-street time limit regulations to support access to adjacent uses – e.g. short-term parking limits for pickup/drop-off needs.
- Hartford residents and workers who drive value and prioritize convenient parking. Perceptions of parking are often based on parking availability immediately adjacent to destinations.
- Many stakeholders across Hartford would like enhanced information sharing. Examples include better signage for wayfinding, updated signage for improved legibility, and digital information sharing from the Hartford Parking Authority (HPA) / City of Hartford.
    - There is also a recognition that enhanced information sharing includes better coordination between private and public parking operators.

UPPER ALBANY / ALBANY AVENUE PUBLIC FORUM

- While support of metered parking on Albany Ave. is not unanimous, more stakeholders readily cite the benefits of adding metered parking here compared to other areas outside of Downtown.
    - Greater parking turnover for small businesses would be beneficial - Metered parking and/or other regulation enhancements (e.g. posted time limit parking) can help manage the parking demand along Albany Avenue.
    - There is a relative lack of off-street parking capacity adjacent to certain destinations that make accessibility for some difficult, especially when nearby on-street parking availability is limited.
    - Time limit regulations should better match adjacent business needs – e.g. durations for service uses, pickup/drop-offs, etc.
    - Street signage should be added to communicate the ability to park.
- The Albany Ave. redesign project has brought about positive changes to the traffic flows and the streetscape environment – however, some cite unmet needs such as more robust bicycle infrastructure and pedestrian crossing conditions that remain difficult in certain locations.
- Future growth along the corridor, particularly the planned Albany-Woodland development, should provide adequate off-street parking to not exacerbate existing challenges.

- Upper Albany residents are cognizant that regulation changes along Albany Ave. might impact parking conditions on residential streets, i.e. unintended consequences and "spillover effects." The parking needs of both businesses along Albany Ave. and nearby residents must be balanced.

WETHERSFIELD AVENUE CORRIDOR PUBLIC FORUM

- The parking supply along the Wethersfield Avenue corridor is generally sufficient, however parking management enhancements could be made, including signage improvements and a careful buildout of bicycle infrastructure that balances the needs of different modes.
    - The parking supply along Wethersfield Avenue allows for relatively easy access to the uses along the avenue. There does not seem to be a need for major interventions such as new parking supplies.
    - There are some reported concerns around the management of parking related to light industrial / auto uses south of Elliott Street which overflow onto sidewalks at times.
    - New bicycle infrastructure has presented opportunities for bicyclists but also presents some challenges. Vehicular standing and parking in the bike lane is reported as a frequent occurrence that could be more vigorously enforced.
    - The provision of additional and/or updated regulation signage is desired.
    - Bus route needs along the corridor should be coordinated with parking needs.

DOWNTOWN/ DONO/ BUSHNELL SOUTH PUBLIC FORUM

- The impacts of the pandemic on commutation and the uncertainty of future parking trends in relation to workforce changes will require flexibility. Immediate pandemic recovery patterns are important to distinguish from more long-term changes in commutation.
- Generally, Downtown is an area with ample parking. However, there are cluster areas that exhibit considerably less vacancies (*based on anecdotes*).
- Driven by the desire for convenient parking adjacent to destinations, public perceptions of limited parking availability are often incongruent with the reality of parking availability in relative proximity.
- Despite general parking availability in the Downtown area today, some stakeholders and other representatives stress that the impact of future developments especially in DoNo will create new parking supply challenges that will need to be monitored.
- New residential developments should explore opportunities to use existing parking supplies that are underutilized.
- Regulations and Pricing
    - Forum participants generally reported that on-street pricing is reasonable, although some participants expressed a desire for short-term, on-street parking with lower rates adjacent to retail and commercial uses.
- On-street regulations in DoNo will have to be monitored and adjusted as new developments increase parking demands in this area.
- There is opportunity to improve signage Downtown to better communicate parking regulations as well as to enhance wayfinding to more easily locate parking.
- Enhanced public transit services and micro-mode means have the potential to improve mobility and circulation Downtown. The potential impacts of this are two-fold: a reduction in the number of single occupancy vehicle trips made into the downtown area, and a system that could encourage people to park more remotely and then walk/ride to their destination.

PARKVILLE AREA PUBLIC FORUM

- Present-day parking conditions in the Parkville area generally meet the needs of residents, workers, and visitors. However, parking and streetscape planning should support expected neighborhood growth.

  - Participants did not unanimously cite locations that exhibit ongoing parking challenges, although Park Street was referenced as an area where small businesses and mixed uses have particular parking needs (both on-street and off-street). Maybe signage could emphasize the availability of rear lots behind businesses.
- Parking supply and management should support expected transit-oriented developments and CTfastrak ridership.
  - Although parking is not reported as a major issue in the Parkville area today, expected developments will change the character of certain streets (e.g. Bartholomew Ave.) and will bring new parking demands that should be properly manage.
  - Such neighborhood growth should consider demographic changes in car ownership and public transit usage.
  - As streetscapes are improved in the Parkville area, safety for pedestrians should be enhanced.

Stakeholder Interview Meetings

Transit Agencies

A meeting with CTtransit was held on May 27, 2021, followed by a meeting with Greater Hartford Transit District (GHTD) on June 14, 2021.

- Various barriers prevent greater public transit ridership for both Hartford residents as well as the commuter population. Impeding barriers include public perceptions, car-centric culture that prioritizes door-to-door trips, and gaps in marketing.
  - Local bus route utilization for residents' cross-city/neighborhood trips is generally low.
  - Transferring to local buses from express routes and CTfastrak could enhance convenience, but this is not often embraced by the commuter population.
- Commuter ridership:
  - Express ridership has been declining for the last 10 years and the pandemic made it worse.
  - There is opportunity to better strategize park and ride lots outside of Hartford.
  - Enhanced convenience rather than incentives is reported as a key strategy for increasing ridership.
- Recent planning efforts have provided opportunities for improved connectivity and transit system convenience. Examples of recent efforts include the redesign of the Express bus system and the related new Downtown circulator service.
- CTtransit does not have the ability to market their own services, as this is DOT's jurisdiction**.** New marketing strategies could help fill critical information gaps.
- There are unaddressed needs for bus staging in the downtown area, particularly around Union Station.
- Parking incentives, e.g. free parking for State employees, promotes driving and makes it difficult to encourage public transit ridership. Despite limitations, incentives for public transit should continue to be investigated.
- The new e-scooter program has been well received and shows potential for expansion. There is also renewed opportunity for other micro-modes to fill the gap left from LimeBike being discontinued.

Parking Operators Meeting

- The pandemic recovery will encourage increased parking flexibility - Hartford's workforce commutation patterns will continue to evolve and will eventually stabilize. Most office-based employees will return to at least two-three days per week in-office work.

    - Payment and pricing - The traditional monthly permit system is likely to shift to more flexible pricing options. There is an expectation that some monthly parkers will convert to transient parking (e.g. switch to per-day payments).
- New Technologies can support a more efficient payment and enforcement within parking facilities. However, the capacity to utilize such technologies varies between garages and surface lots.
- Many residents downtown will continue to own a car**.** Most residential developments build parking, but the evolution of no parking minimums will require monitoring the demand and supply of public and private parking resources.
- The parking tax/licensing fee was not well received by the private parking industry. Meeting participants believe a subsidy to support development is the only solution, not a levy.
- CTfastrack does not appear to have had a significant impact on parking demand downtown.
- Reportedly, there was a "shortage of monthly parking" pre-pandemic based on new retail and event-driven demand. Parking operators report that perceptions of parking oversupply are largely based on visible surface parking lot conditions and are not representative of the entire system downtown.

PUBLIC AGENCIES

- Residential development and presence is increasing downtown – as this trend continues and a more vibrant/active downtown is realized, new parking needs will emerge (e.g. car ownership and parking needs, costs, etc.)
- DoNo development will require parking for both new commercial and residential developments.
- Although many people have a "suburban mindset" and prioritize convenience, coordinated efforts can help change behaviors through information sharing, signage, and targeted incentives.
- Return to work policies post-pandemic will prioritize rotating work schedules/ hybrid models. The parking system should be flexible to embrace such changes.

MAJOR EMPLOYERS

- Pandemic-related outcomes are still leveling out. For example: What will the average number of days in the office be and how will downsizing impact office spaces?
    - Some employers are planning to downsize their office space while others have not yet announced plans or do not anticipate this.
    - Downsizing by some industries and tenants might create new opportunities for other industries – e.g. Tech uses want more space per employee.
    - The opportunity to convert commercial/office uses to residential units is a trend that may be seen in Hartford, depending on the markets.
- Future parking needs in DoNo merit monitoring. New developments projects in DoNo are replacing parking reserves while some new supplies are already planned.
- Conversation on parking availability reinforced the notion that public perception of parking supply is often reliant on convenient, door-to-door parking availability.
- The increase of residential units downtown and projects in the pipeline will continue to increase the live/work community. New mobility and commutation trends are expected (e.g. walking to work, use of micro-modes).
- Public transit service improvements are recognized as a critical variable that may impact future parking demands.
- It was suggested that major employers can further encourage employees to use public transit by offering incentives. This could be reinforced with funding help from the City or State.

PUBLIC SURVEY RESULTS

For detailed survey response summaries for all survey questions, please refer to Appendix B3.

The Public Survey sought to gather data and feedback on perceptions and experiences of on- and off-street parking conditions. While the survey gathered feedback from all stakeholders in Hartford, it was designed to distinguish feedback for four key study areas. With a total of 82 responses, participation was generally lower than anticipated, and the response rate in the four target areas of Downtown/ DoNo/ Bushnell South resulted in particularly low sample sizes.

The majority of respondents (44%) live and work/attend school in Hartford and equal shares (22%) are either residents who do not work in the city or are individuals who work/attend school in Hartford but live elsewhere.

Breakdown of Survey Respondents' Relationship to Hartford

	Total	% Share
Live in Hartford	18	22%
Live and Work/Attend School in Hartford	36	44%
Work/Attend School in Hartford (Live Elsewhere)	18	22%
Frequent Visitor	9	11%
Other	1	1%

The summary table below demonstrates that the Downtown/DoNo/Bushnell South study area had the highest response rate. Low sample sizes in Parkville, Upper Albany Avenue, and Wethersfield Avenue Corridor hinder the ability to draw conclusions for these areas. Consequently, major survey takeaways largely represent the Downtown study area and the broader parking conditions city-wide.

Breakdown of Respondent Cohorts by Study Area Selection

	Residents		Workers/ Students	
	% Share	Total	% Share	Total
Downtown/DoNo/Bushnell South	53%	21	70%	26
Parkville	5%	2	5%	2
Albany Ave. / Upper Albany	3%	1	3%	1
Wethersfield Ave. Corridor	10%	4	11%	4
Other	30%	12	11%	4
Total	*100%*		*100%*	

Early survey formatting feedback from the public resulted in the addition of a question to provide greater inclusivity for individuals who do not drive. The survey was reformatted in order to direct individuals who do not drive to a specific page that gathered their parking-related feedback (Refer to Appendix B4 Item D-38 for open-ended responses from this cohort). Further, some public comments received during forums and sent to the consultant team email expressed that the parking study survey had a bias towards car owners and that the Parking Study should be part of a larger effort to discuss transit, broader mobility, and use of streetscape space in Hartford.

Key Takeaways from the Public Survey

- *Other Modes of Transit and Mobility:*

  - Over 70% of respondents indicated that they would increase the number of trips made by public transit, ride hailing, or bicycling if conditions in Hartford made this easier.
    - ➔ *To some degree, this indicates that reliance and use of personal vehicles in Hartford (and related parking needs) are tied to alternate travel opportunities rather than preferred travel methods.*
  - *38% of respondents utilize public transportation in Hartford and 30% ride bicycles as a means of transit (at least part of the time).*
    - ➔ *Similar to the public forums, the public survey included significant representation from individuals who advocate for better bicycle and public transit infrastructure in Hartford.*
  - *83% of individuals drive at least once a week or more; 13% of survey participants never or rarely drive.*

- *Lack of neighborhood-specific feedback related to on-street parking conditions:* The lack of participants who rely on on-street parking makes it difficult to discern issues related to on-street parking. However, respondents feel that parking is affordable across Hartford.

- *Private Parking Use:*
  - *The majority of residents who participated in the survey (77%) utilize private (Non HPA) parking near their homes, whereas only 18% utilize on-street parking. Individuals who park on-street were more likely to live or work in a neighborhood outside of an identified Study Area.*
- *Similarly, the majority (61%) of workers/students who participated report that they park in a private (Non HPA) facility for work/school. A number of respondents noted that they park in a private facility but do not pay for parking (e.g. parking is subsidized by their employer).*

- *Identified Top Parking Priorities:*
  - *For residents, the top parking priorities (Question 11) include: (1) Safety of parking (lighting, visible security measures, etc.) and (2) The enforcement of parking rules/issuance of citations for violations.*
  - *For workers/students, the top parking priority (Question 23) is the convenience of parking location in proximity to workplaces.*

- *Parking Satisfaction:*
  - *The majority of respondents report being either Satisfied or Very Satisfied with on-street parking conditions in their neighborhood. This is similar for conditions reported by residents and workers/students. Areas that are difficult for on-street parking seem to be in specific locations rather than a common occurrence in neighborhood areas.*

- *Pandemic-related commutation and parking trends:*
  - *Just over half of respondents report that since March 2020, they drive to work/school less often and work from home more frequently. Of these individuals, the majority currently work from home five days a week. Over the next year 70% expect to continue working from home at least part of the week.*

Public Survey Short Answer Responses

All user groups (residents, workers/students, and frequent visitors) were asked to provide their insight on the most important thing that could be done to improve the parking experience in their neighborhood or area where they live/work/visit. Common responses include:

- Parking concerns are infrequently about a lack of parking or the availability of parking spaces. Rather, people typically comment that they would like a more efficient and/or user-friendly system and would like enhanced information sharing.
    - Oversupply of parking in the Downtown area is frequently cited. There is interest to reduce the presence of surface lots in an effort to increase density and promote other activities.
    - Signage enhancements are desired, updating dated signage and introducing wayfinding measures along corridors and in the downtown area to highlight parking options. Some cite that regulatory signage should be made clearer in certain locations and that this should be evaluated city-wide.
- Many survey respondents seek streetscape enhancements, improved pedestrian conditions and greater transit opportunities. Ideas mentioned include:
    - Pedestrianize streets
    - Increase parking prices in certain locations (downtown) to promote walking.
    - Introduce measures throughout Hartford that improve safety, e.g. traffic calming and better conditions for pedestrians.
    - Encourage greater public transit and micro-mode use for residents and commuters alike.
- There is desire to evaluate on-street time limit regulations to match a diversity of needs in key locations. Some references indicate the desire for more long-term on-street parking (e.g. for workers in Downtown) while other individuals would like more spots for short-term parking needs (e.g. pickups, drop-offs, and loading zones).
- The most frequent parking enforcement concern is the perception of inconsistent enforcement. For example, there are concerns over inconsistent alternate-side practices and some belief that "outer" areas of the city receiving less consistent enforcement.
- Issues of the parking system's equity and accessibility should be addressed, particularly around issues of affordability and access for individuals with mobility impairments.

Interactive Map Comments

For a list of all Interactive Map comments received, please refer to Appendix B4.

The Interactive Map tool served as an additional platform to gather parking and parking-related feedback. This tool provided stakeholders the ability to submit targeted, location-based comments. The comments and suggestions received generally reflect similar feedback provided in the Public Survey responses. Common feedback is summarized below:

- <u>Pedestrian safety and streetscape conditions should be improved.</u>
    - Parking on both sides of the street can compromise the visibility of pedestrians, even near intersections. Areas with low on-street parking utilization could present an opportunity to switch to one-side street parking. However, Interactive Map discussion demonstrates that such decisions are contested based on varying perceptions of parking availability.
    - Streetscape design modifications, such as "road diets" could be utilized in more neighborhood areas. However, such efforts should incorporate well-designed crosswalks with appropriate signalization.
    - Signage, of various types, could play a role in improving safety.
    - Areas with pedestrian safety concerns include Albany Ave., Park St., and the intersection of Brookfield and Hamilton St.
- <u>Alternative Transit Modes</u>
    - Comments reflect the interests of stakeholders who want the city to prioritize a complete streets agenda. Parking planning should promote access to transit modes.

    - There is a desire for new bicycle lanes and infrastructure. Bicycle advocates believe efficient parking design can help designating street allocations for bike lanes.
    - Curb and sidewalk space around bus stops and other forms of transportation should be ample in order to enhance accessibility.
- There is an opportunity to improve signage. Comments suggest that signage and related regulations are not thorough across Hartford (e.g. locations that have alternate side parking should have clear signage that is similar across zones for the purposes of streamlined enforcement).
- Interactive Map participants also commented that free parking downtown encourages driving and makes it difficult to encourage commuters to utilize public transit.
- There is interest to downsize parking reserves and land use dedicated to parking where there are high rates of underutilization.

TASK C – PARKING SUPPLY, DEMAND, AND FUTURE ADEQUACY

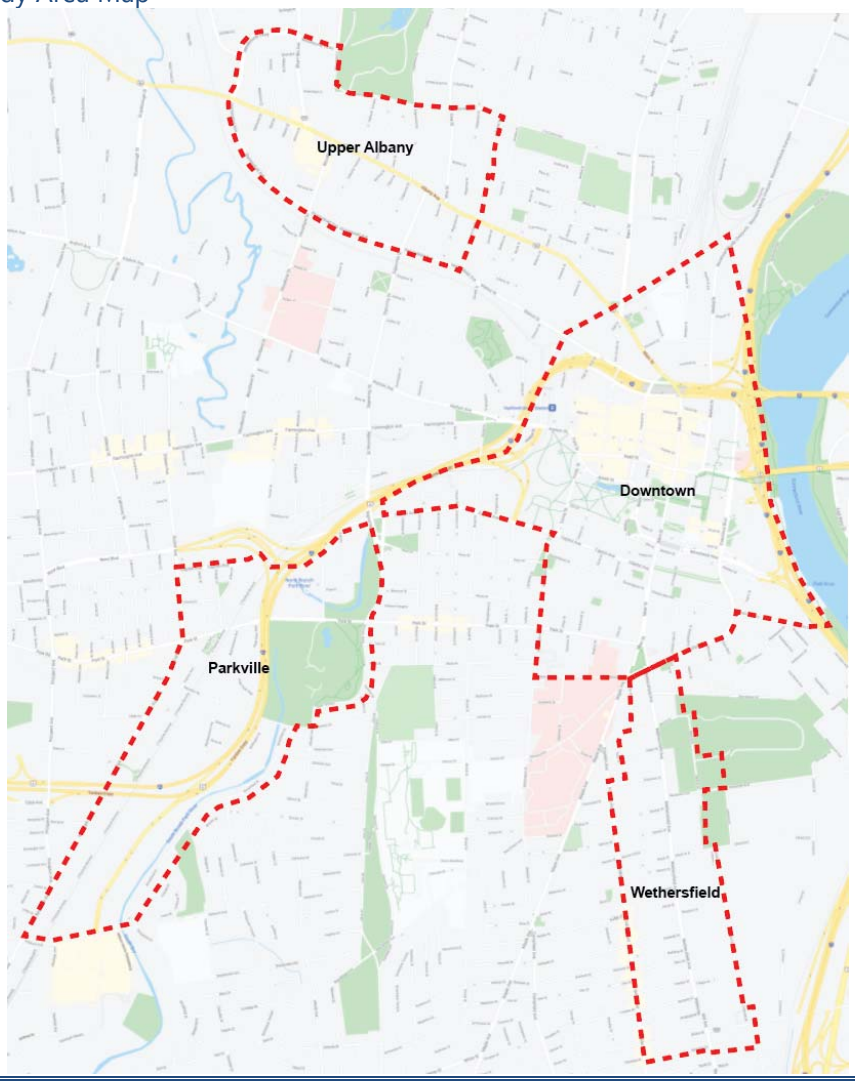
INTRODUCTION AND OVERVIEW

The Hartford Parking Study Task C includes a comprehensive inventory of all parking infrastructure within the overall study area and our understanding of the pre-COVID parking conditions based on historical data provided by local parking operators and the Hartford Parking Authority (HPA). The primary purpose of Task C is to quantify the parking supply, utilization, and estimate the future parking conditions as growth and development occurs. Data provided in this section has been sourced from public and private entities and in some cases cannot be physically verified.

STUDY AREA

Hartford is the capital city of the U.S. state of Connecticut, with an estimated population of over 122,000 residents in 2019. This study primarily focusses on four (4) districts in the City, including Downtown, Upper Albany, Parkville and Wethersfield Avenue Corridor. A map showing the overall study area and each of the sub-areas is included below.

Figure 1: Overall Study Area Map

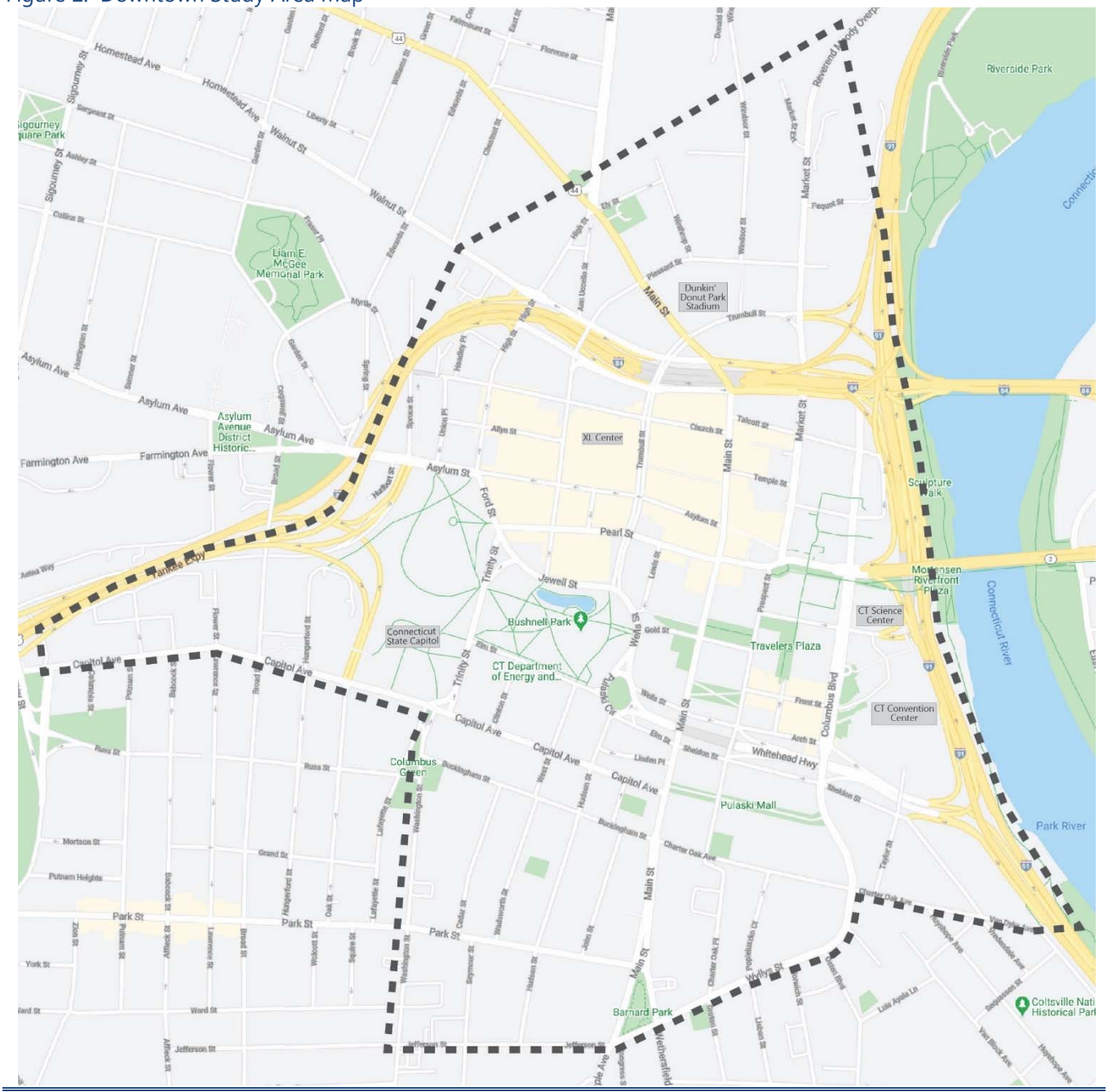


Source: Google Maps, THA Consulting, Inc, 2022

Downtown Study Area

The Downtown study area is generally defined as follows: the railroad to the north; Capital Avenue, Jefferson Street, Wyllys Street and Charter Oak Avenue to the south; Interstate 84 and Sigourney Street to the west; and Interstate 91 to the east. Please note "Downtown" refers to Downtown North, Downtown, and Bushnell South. Downtown includes two (2) major State highways, Interstate 84 and Interstate 90, and several major parking generators, e.g. Dunkin' Donut Park Stadium, XL Center, Connecticut Science Center, Connecticut Convention Center, etc. Figure 2 illustrates the Downtown study area.

Figure 2: Downtown Study Area Map

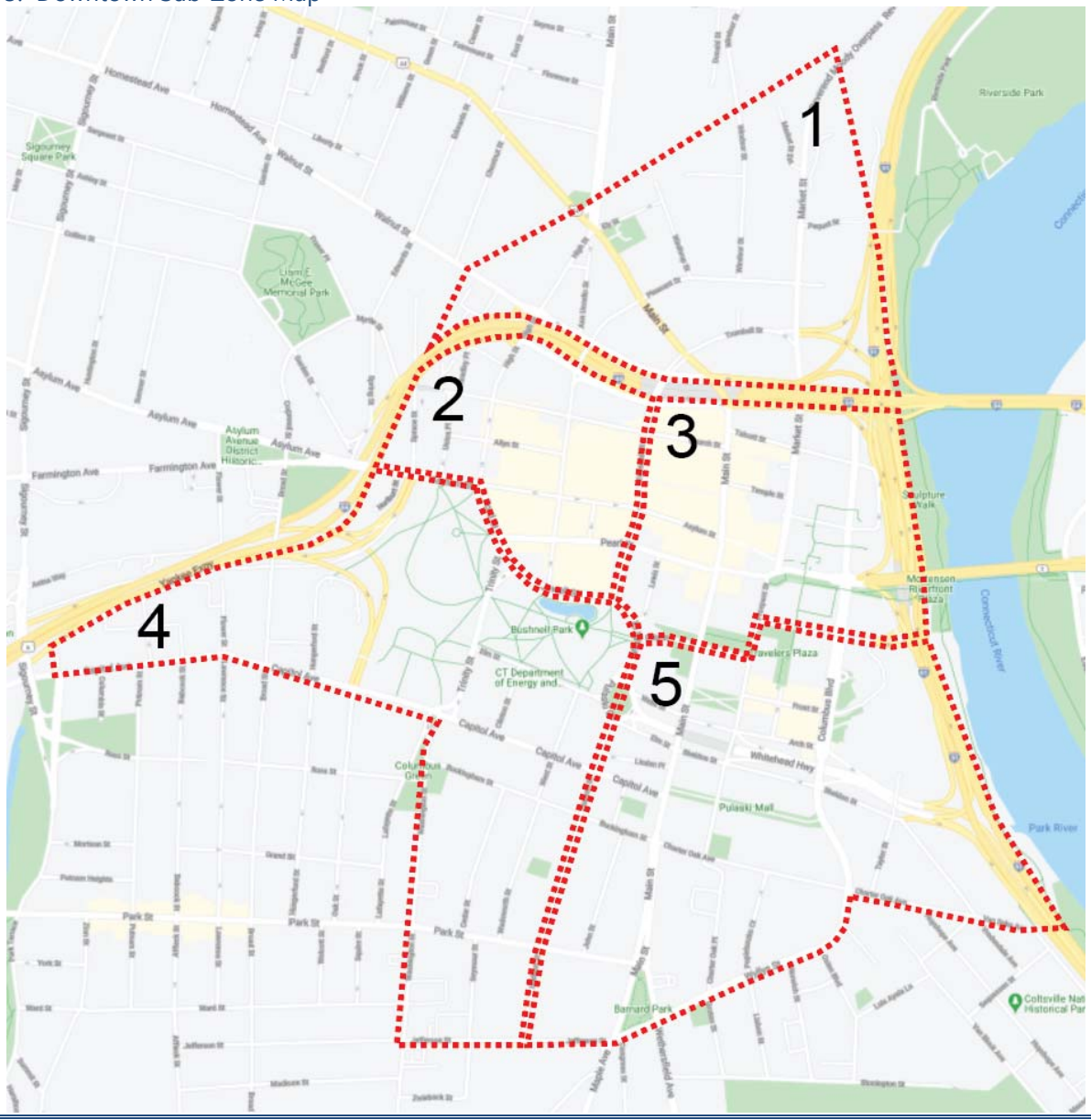


Source: Google Maps, THA Consulting, Inc, 2022

Given the large size and diverse characteristics, we divided the Downtown Study Area into five (5) smaller Sub-Zones. Figure 3 illustrates the location of each of the five (5) Sub-Zones in the Downtown Area.

Zone 1 Railroad to the north and west; Interstate 84 to the south; and Interstate 91 to the east.
Zone 2 Interstate 84 to the north and west; Ford Street to the south; and Trumbull Street to the east.
Zone 3 Interstate 84 to the north; Gold Street and Bob Steele Street to the south; and Interstate 91 to the east.
Zone 4 Interstate 84 to the north; Capital Avenue, Jefferson Street to the south; Asylum Street to the north; and Hudson Street to the east.
Zone 5 Gold Street, Atheneum Square, and Bob Steele Street to the north; Wyllys Street and Charter Oak Avenue to the south; Hudson Street to the west; and Interstate 91 to the east.

Figure 3: Downtown Sub-Zone Map

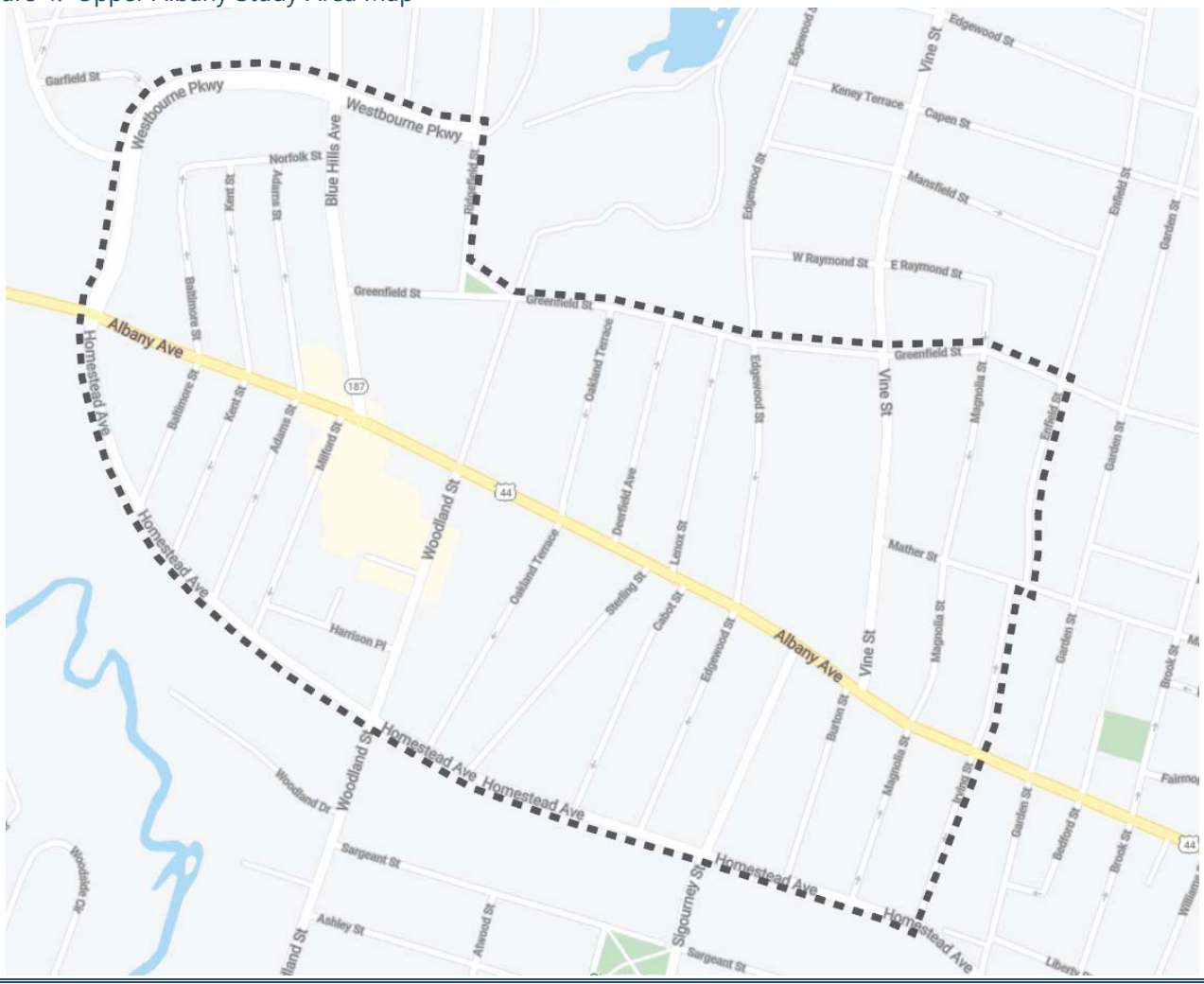


Source: Google Maps, THA Consulting, Inc, 2022

Upper Albany

The Upper Albany study area is generally defined as follows: Westbourne Parkway and Greenfield Street to the north and west; Homestead Avenue to the south; and Enfield Street and Irving Street to the east. Albany Avenue is one of the primary streets connecting this neighborhood to downtown. Upper Albany is predominantly a residential area located just to the northwest of downtown Hartford. Figure 4 illustrates the Upper Albany study area.

Figure 4: Upper Albany Study Area Map



Source: Google Maps, THA Consulting, Inc, 2022

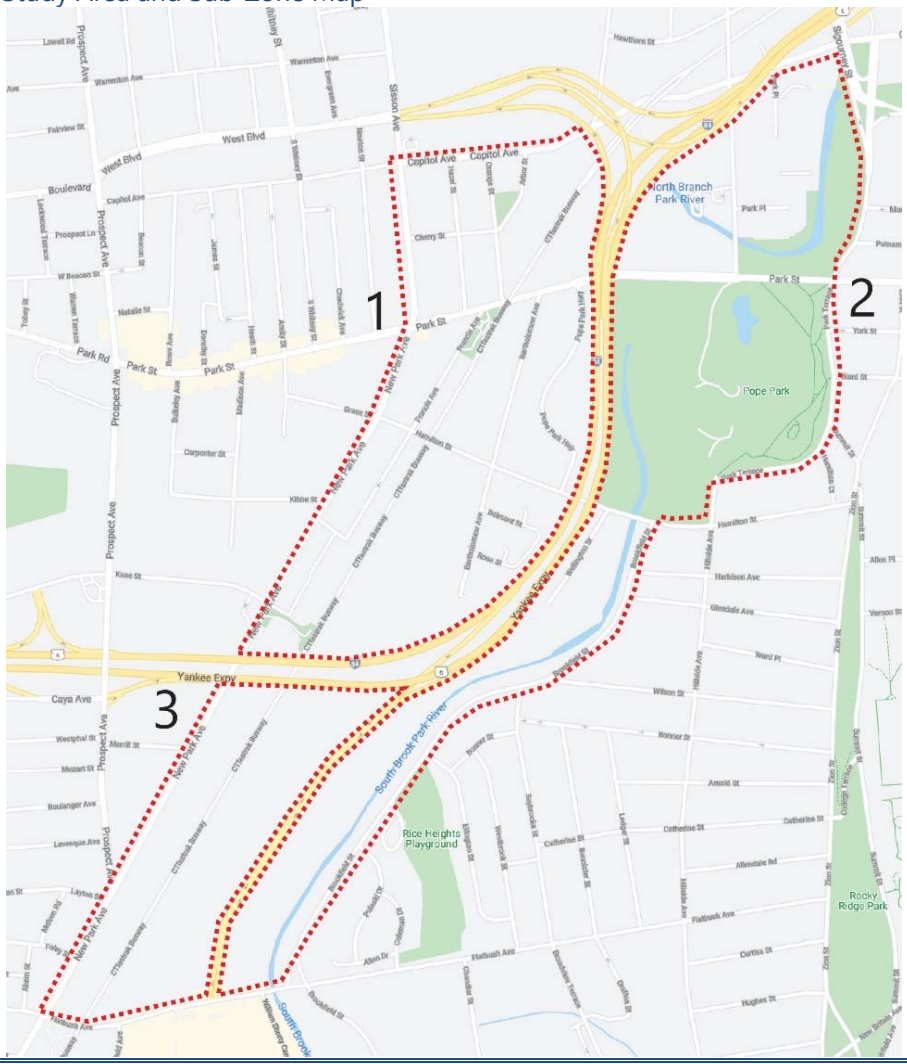
Parkville

The Parkville study area is generally defined as follows: Interstate 84 to the north; Flatbush Avenue to the south; New Park Avenue and Sisson Avenue to the west; and Bloomfield Street and Park Terrace to the east. Park Street is one of the primary streets in the Parkville, connecting the Parkville to downtown. Parkville also has a CTfastrak bus rapid transit station. Today Parkville is being revitalized by converting old factories and mills to loft apartments. Parkville is transforming itself into a home design district. Storefront businesses and restaurants line the main roads of Parkville.

Given the diverse characteristics, we divided the Parkville Study Area into three (3) smaller Sub-Zones. Figure 5 illustrates the Parkville Study Area and the location of each of the three (3) Sub-Zones in the Parkville Area.

Zone 1 Capitol Ave to the north; Interstate 84 to the south and east; and New Park Ave to the west.
Zone 2 Capitol Ave to the north; Flatbush Ave to the south; Yankee Expressway and Interstate 84 to the west, and Park Terrace and Brookfield Street to the east.
Zone 3 Yankee Expressway to the north; Flatbush Avenue to the south and east; and New Park Avenue to the west.

Figure 5: Parkville Study Area and Sub-Zone Map

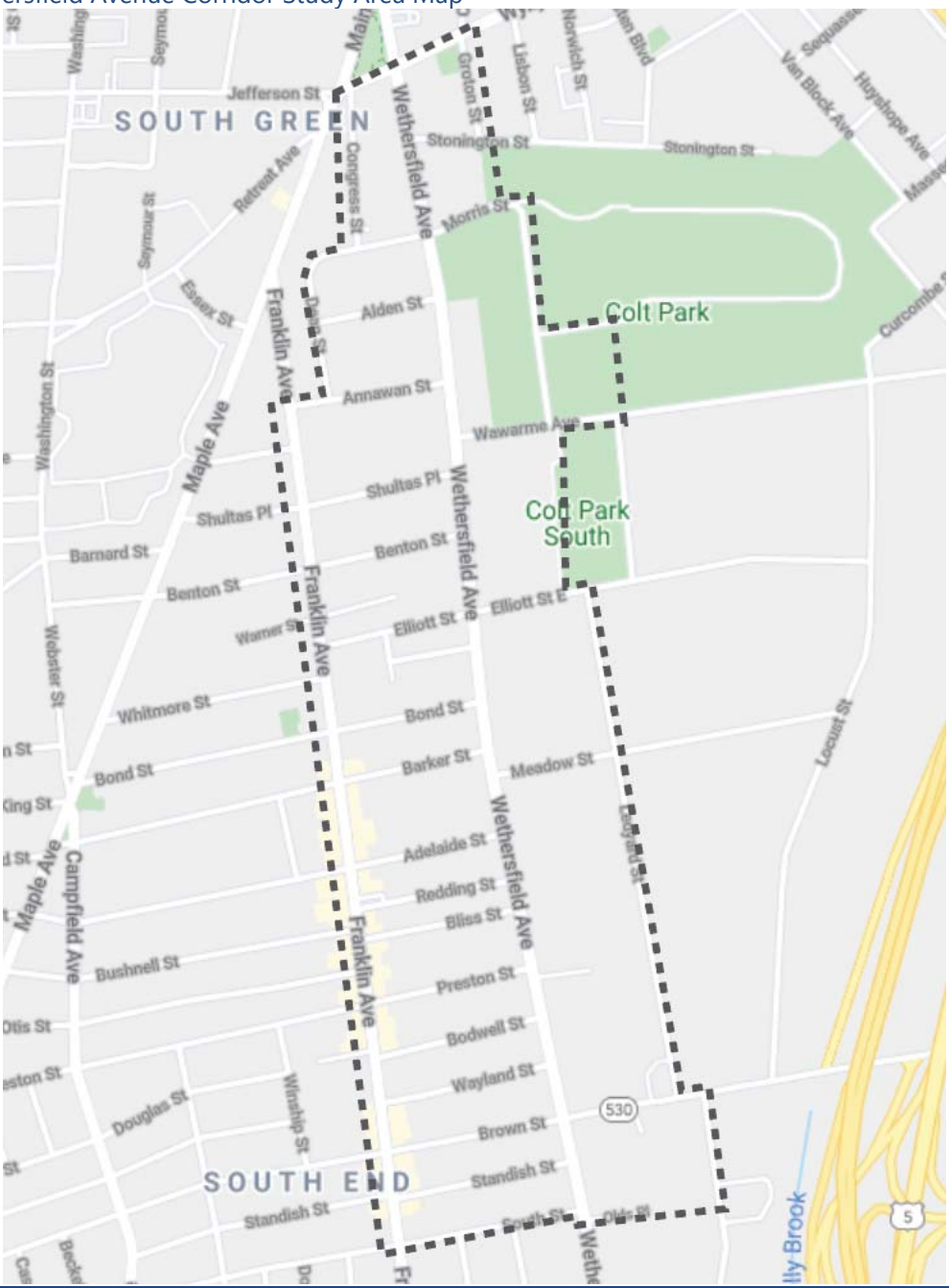


Source: Google Maps, THA Consulting, Inc, 2022

Wethersfield Avenue Corridor

The Wethersfield Avenue Corridor study area is generally defined as follows: Wyllys Street to the north; South Street to the south; Franklin Avenue to the west; and Bloomfield Street and Ledyard Street to the east. Wethersfield Avenue is one of the primary streets connecting this neighborhood to downtown. Along Wethersfield Ave, there are multiple historic buildings on both sides of the avenue including the Parkside Historic District. Figure 6 illustrates the Wethersfield Avenue Corridor study area.

Figure 6: Wethersfield Avenue Corridor Study Area Map



Source: Google Maps, THA Consulting, Inc, 2022

DEFINITION OF TERMS

In order to familiarize yourself with the terms used within this report and the parking industry, the following list of definitions area included to provide a better understanding for those less familiar.

- Study Area – Includes all land within each of the four primary sub-area boundaries: Upper Albany, Wethersfield Avenue Corridor, Parkville, and Downtown (which includes Downtown North or DONO and Bushnell South). Figure 1.

- Sub-Area – The four (4) smaller areas of concentration: Upper Albany, Wethersfield Avenue Corridor, Parkville, and Downtown. Figure 1.

- Sub-Zone – The five (5) smaller areas of concentration within Downtown and three (3) smaller areas of concentration within Parkville. Figure 3 and Figure 5.

- Parking Inventory or Parking Supply – The total number of parking spaces.

- Effective Supply Factor or Utilization Factor – The occupancy rate at which a parking location or facility operates at peak efficiency. This factor provides users with a ***cushion*** to reduce the time needed to locate an available parking space, account for the flow of vehicles moving into and out of parking spaces, accommodate misparked vehicles, and provide for sufficient spaces during times of repair or during snowstorms.

- Effective Parking Supply – The total number of ***effective*** parking spaces after adjusting for the previously described cushion or the Effective Supply Factor.

- Parking Demand – The total number of parked vehicles observed or recorded at a specific time and date.

- Parking Occupancy – The portion, represented as a percentage, of parking spaces that are occupied by vehicles within a designated location or parking facility at a specific time and date.

- Parking Adequacy – The difference between the effective parking supply and the observed parking demand. A positive number indicates the location or facility has a parking surplus. If the difference is negative, the location or facility has a parking shortage or deficit.

- PARCS – Parking Access and Revenue Control System (parking equipment such as gates and proximity card readers) which control the movement of vehicles in and out of a parking location or facility.

- Duration – The length of time that a vehicle is parked in a parking space or how long their vehicle is parked.

- Turnover – The number of times a single parking space is used in a day. Typically represented as an average for a parking location or facility.

STUDY METHODOLOGY

The global pandemic had, and is having, a profound impact on the parking industry, one that our team has never experienced before. Essentially, parking demand, and the revenue associated with parking, disappeared over a matter of months as the nation went on lockdown. Navigating the path of these conditions has been far from easy, even now as we emerge on the latest variant, BA.2 Omicron. Fortunately, it looks like the vaccinations are working to stave off critical illness as businesses, travel, and traditional in-office work schedules are opening up again.

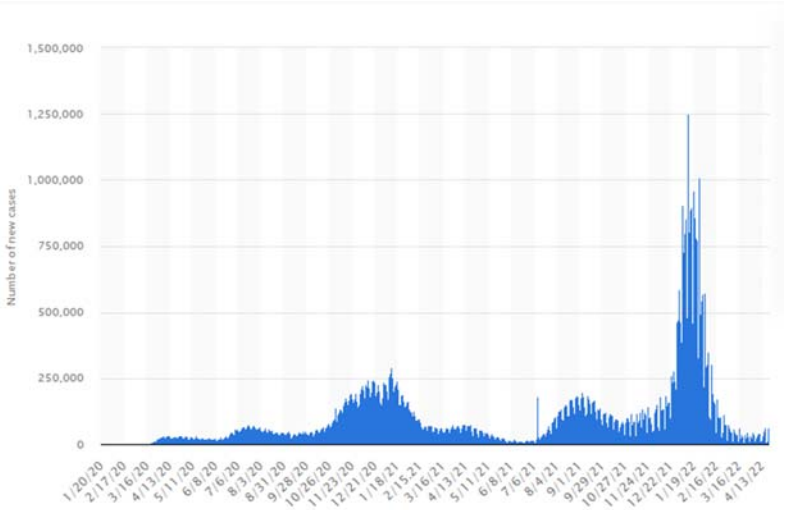


Figure 7: National Coronavirus Cases (January 2020-April 2022)

To account for the unforeseen impact of a global pandemic, the THA team, in coordination with the HPA and the City, developed an alternative study methodology in order to assess the parking conditions. Typically, our team would physically perform parking occupancy counts throughout the City and using that data, project the future parking conditions. However, at the time of our engagement for this study (Q1 2021), a large majority of the employees who previously commuted into work were now working remotely from home and the downtown parking demand was significantly lower than it was pre-COVID. Additionally, many of the residents were now working from home and many of their vehicles sat parked throughout the week.

Based on our conversations with the HPA and the assumption that the parking demand would rebound as COVID cases declined, we agreed that a more accurate approach would be to evaluate the parking conditions pre-covid (October 2019), compare those against the current parking conditions (March2021) and then apply a recovery ramp-up adjustment factor in order to estimate the future parking conditions. To analyze historical conditions, we relied on data being provided by the HPA and the two (2) largest parking operators (ProPark and LAZ). In instances where data was not available by those agencies, our team accessed time and date stamped historical satellite imagery compiled by ESRI World Imagery and Google Earth to estimate the demand for those two timeframes. Our team also performed independent field observations in late May 2021.

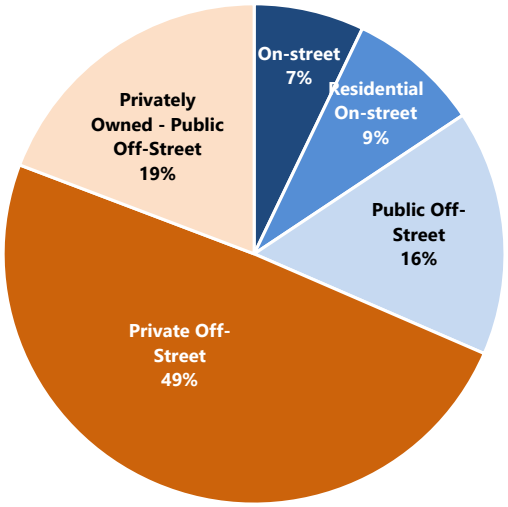
As a result of implementing an alternative methodology never used before, our team relied on 3rd party data and was not able to independently verify this information. THA has made every attempt to validate information when it was possible, however, most of the historical and March 2021 data used in this analysis were provided to our team and assumed to be valid and accurate.

PARKING INVENTORY

THA staff performed data collection efforts and field observations during our site visit from May 25, 2021 (Tuesday) to May 27, 2021 (Thursday). A total of 47,189 public and private parking spaces were inventoried within the four (4) study sub-areas. Of this total, 49% of the inventory recorded is privately-owned and for private use only; 19% of the inventory is privately-owned but open to public use; and only 16% of the inventory is publicly owned and open to public. On-street parking accounts for 16% of the overall parking supply, but more than half of those spaces are located in the residential areas.

Table 1: Hartford Overall Study Areas 2019 Parking Inventory

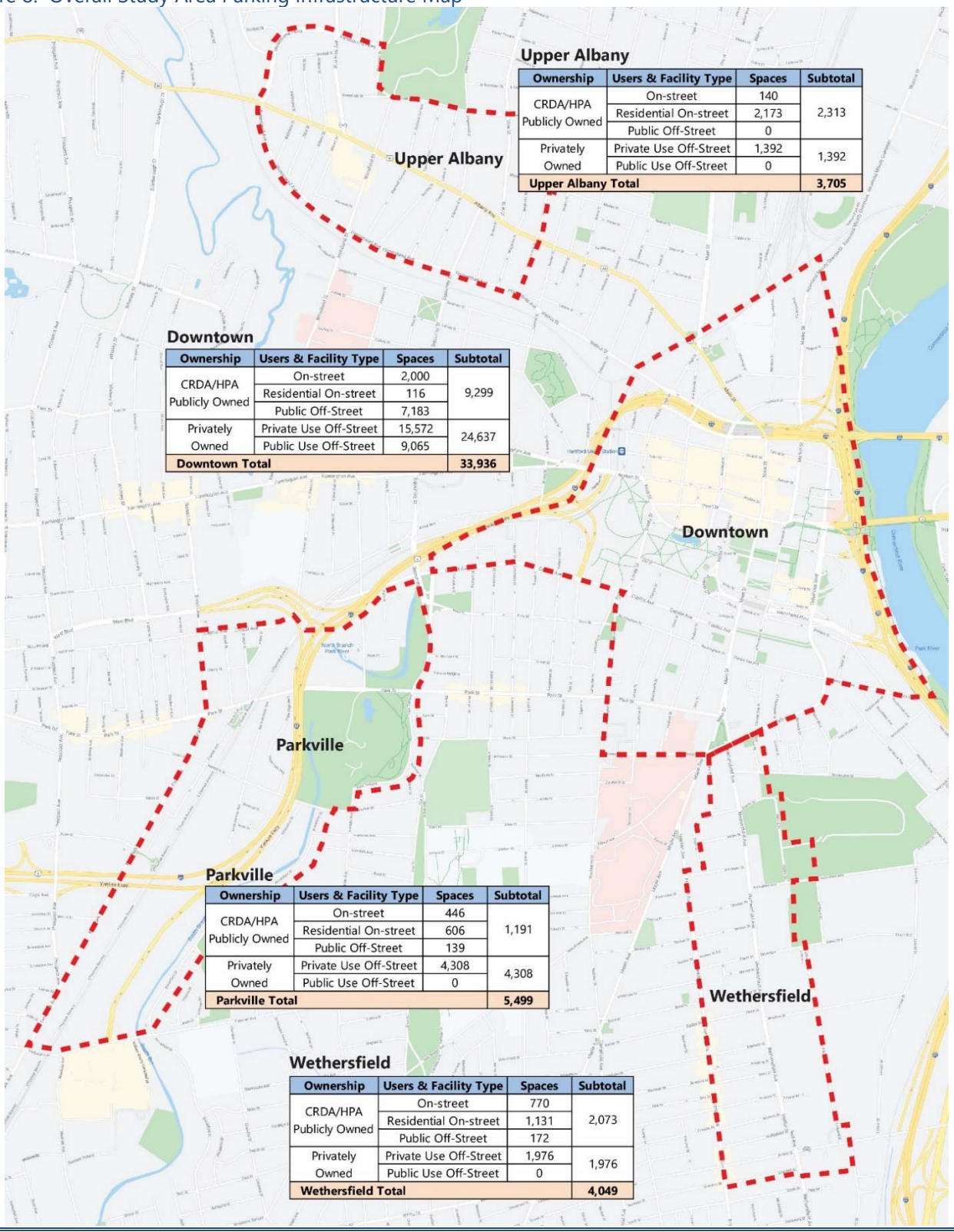
Ownership	Users & Facility Type	Spaces	Subtotal
CRDA/HPA Publicly Owned	On-street	3,356	14,876
	Residential On-street	4,026	
	Public Off-Street	7,494	
Privately Owned	Private Off-Street	23,248	32,313
	Public Off-Street	9,065	
Inventory Summary			**47,189**



Source: HPA and THA Consulting, Inc. 2021

Based on the above information, Public Agencies, the Capital Region Development Authority (CRDA) and HPA, control only 32% of the parking infrastructure vs. 68% that is controlled by Private Entities. While the imbalance between public and privately owned parking infrastructure may not be of concern in a fully densified urban city, Hartford is amid a significant development/redevelopment growth period and that disparity of parking infrastructure ownership should be noted. Furthermore, the two (2) sub-areas with the smallest amount of "public" parking, Downtown and Parkville, are the two (2) areas where future growth and development is focused.

Figure 8: Overall Study Area Parking Infrastructure Map



Upper Albany

Ownership	Users & Facility Type	Spaces	Subtotal
CRDA/HPA Publicly Owned	On-street	140	2,313
	Residential On-street	2,173	
	Public Off-Street	0	
Privately Owned	Private Use Off-Street	1,392	1,392
	Public Use Off-Street	0	
Upper Albany Total			**3,705**

Downtown

Ownership	Users & Facility Type	Spaces	Subtotal
CRDA/HPA Publicly Owned	On-street	2,000	9,299
	Residential On-street	116	
	Public Off-Street	7,183	
Privately Owned	Private Use Off-Street	15,572	24,637
	Public Use Off-Street	9,065	
Downtown Total			**33,936**

Parkville

Ownership	Users & Facility Type	Spaces	Subtotal
CRDA/HPA Publicly Owned	On-street	446	1,191
	Residential On-street	606	
	Public Off-Street	139	
Privately Owned	Private Use Off-Street	4,308	4,308
	Public Use Off-Street	0	
Parkville Total			**5,499**

Wethersfield

Ownership	Users & Facility Type	Spaces	Subtotal
CRDA/HPA Publicly Owned	On-street	770	2,073
	Residential On-street	1,131	
	Public Off-Street	172	
Privately Owned	Private Use Off-Street	1,976	1,976
	Public Use Off-Street	0	
Wethersfield Total			**4,049**

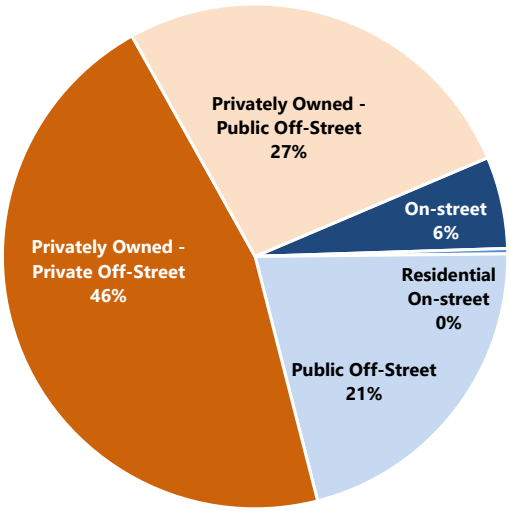
Source: Google Maps, THA Consulting, Inc, 2022

DOWNTOWN STUDY AREA

The current parking supply in the Downtown study area consists of approximately 33,936 parking spaces comprised of 2,000 on-street spaces available to the general public, 116 on-street spaces designated for residential use only, 7,183 publicly owned off-street parking spaces, and 24,637 privately-owned off-street parking spaces (15,572 of which are exclusively for private-use only). These parking resources are utilized by multiple user groups consisting of downtown office employees, retail business owners, restaurant patrons, local residents, etc. Table 2 summarizes all of the downtown parking resources.

Table 2: Downtown Study Area 2019 Parking Inventory

Ownership	Users & Facility Type	Spaces	Subtotal	%
CRDA/HPA Publicly Owned	On-street	2,000	9,299	27%
	Residential On-street	116		
	Public Off-Street	7,183		
Privately Owned	Private Use Off-Street	15,572	24,637	73%
	Public Use Off-Street	9,065		
Downtown Total			**33,936**	**100%**

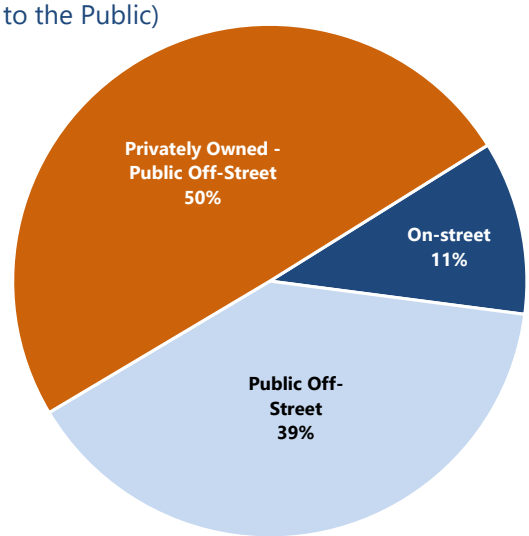


Source: HPA and THA Consulting, Inc, 2022

For the purpose of this study, THA primarily focused on the on-street and off-street parking facilities that are **available to public** to determine the utilization and adequacy of the study area's public parking. Table 3 summarizes all the downtown parking resources.

Table 3: Downtown Study Area 2019 Parking Inventory (Available to the Public)

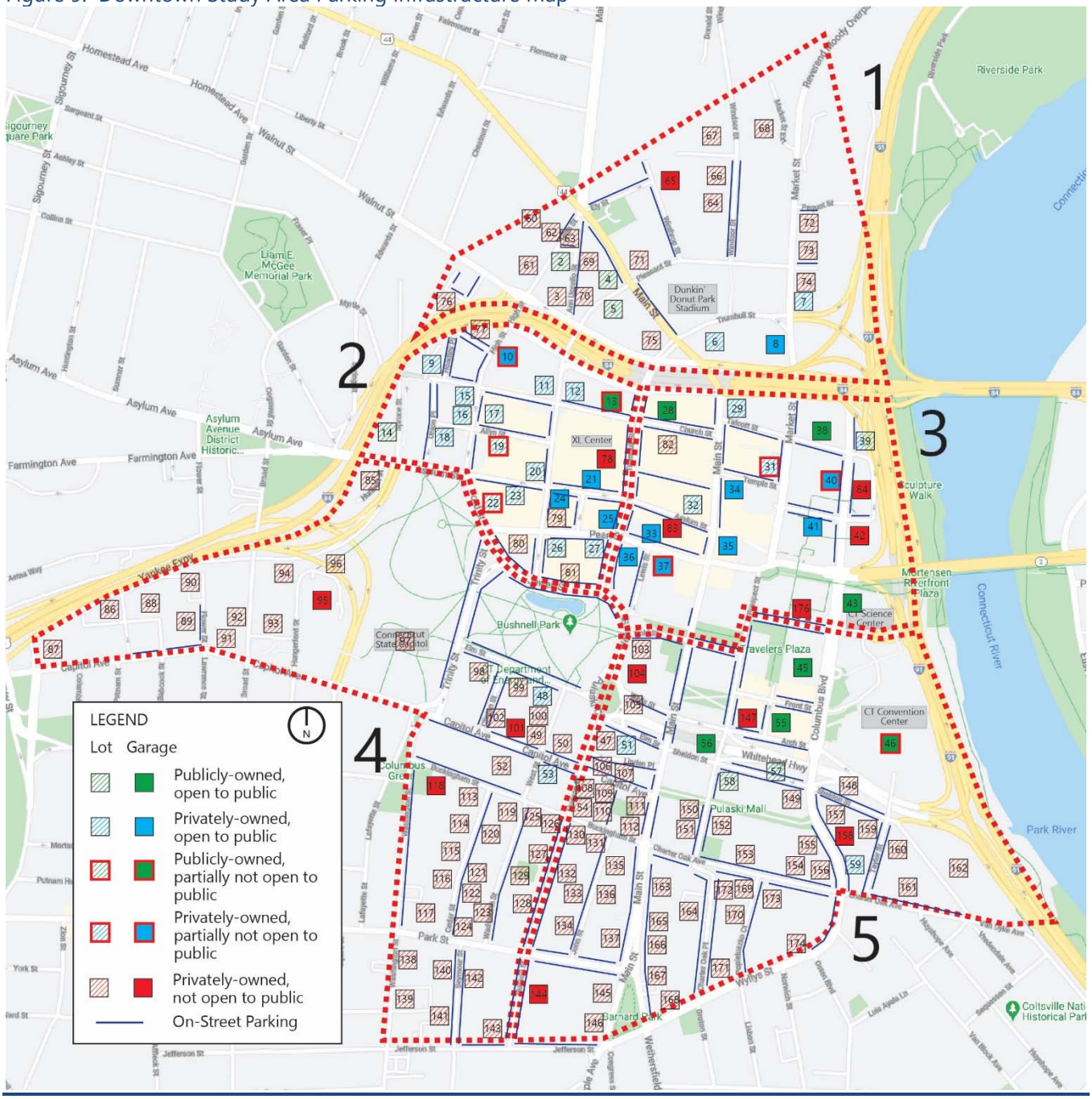
Users & Facility Type	Spaces	%
On-street	2,000	11%
Public Off-Street	7,183	39%
Privately Owned - Public Off-Street	9,065	50%
Downtown Total Public	**18,248**	**100%**



Source: HPA and THA Consulting, Inc, 2022

Figure 9 depicts all the on- and off-street parking resources in Downtown. Facilities that are owned by a public agency (CRDA/ HPA) are indicated with a solid green (garage) or green stripe (surface lot).

Figure 9: Downtown Study Area Parking Infrastructure Map

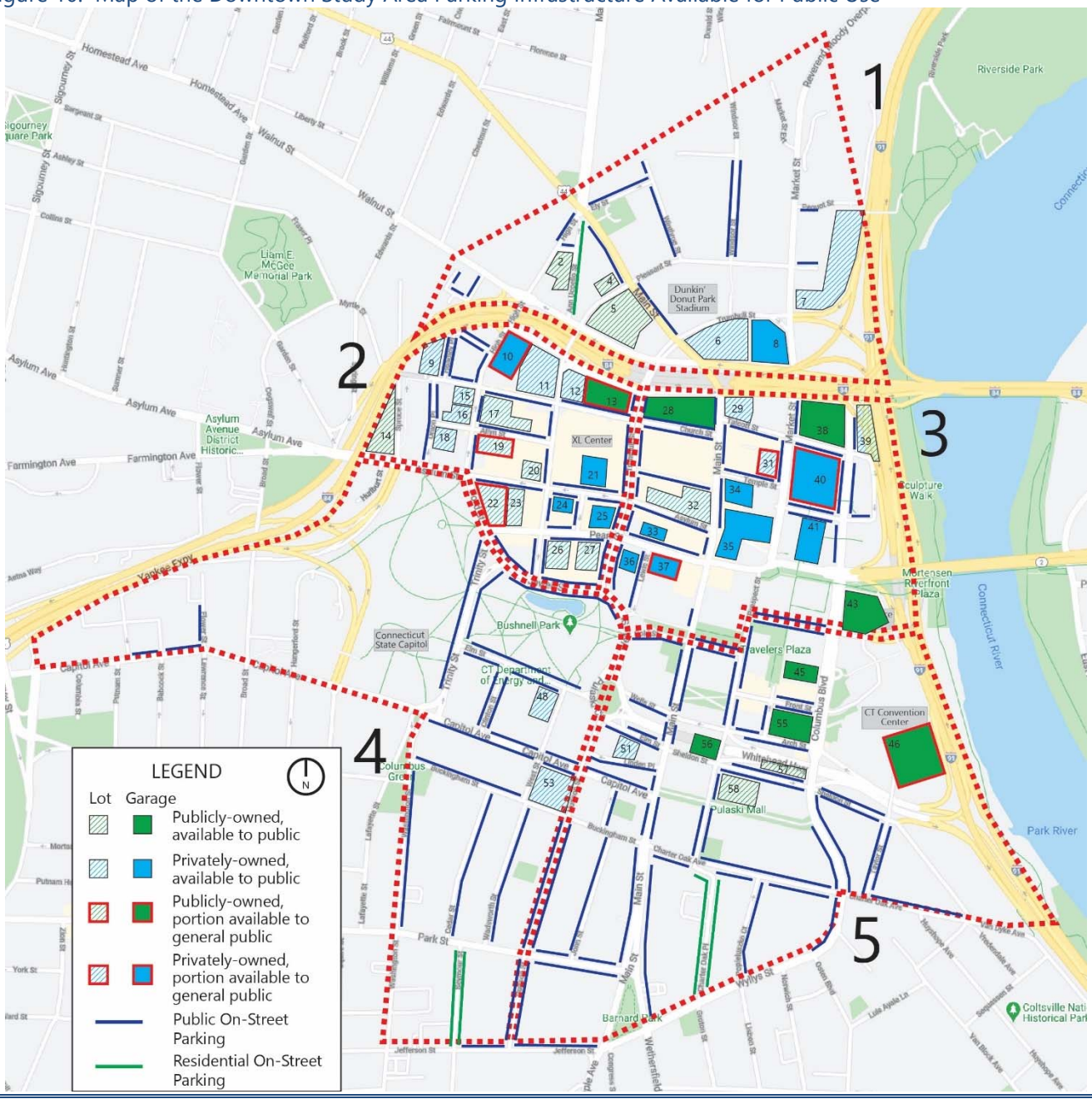


Source: Google Maps, THA Consulting, Inc, 2022

As seen in the map above, there are several areas in downtown where there are very few, if any, public parking facilities, and in many, the public parking options are limited to privately owned facilities.

Figure 10 depicts the on- and off-street parking infrastructure that is available to the general public. In this map, it is clear that some downtown areas or sub-zones have very limited access to any on and off-street parking options. Also, unlocking parking from development is a key priority for allowing places to urbanize more successfully, more equitably and more authentically. In particular, the public access is sometimes limited to privately owned parking facilities which may have a less affordable rate (or rate structure) than what a public counterpart may charge. Pricing is discussed later in this study as it was a topic of concern shared by several community members during the public stakeholder meetings.

Figure 10: Map of the Downtown Study Area Parking Infrastructure Available for Public Use



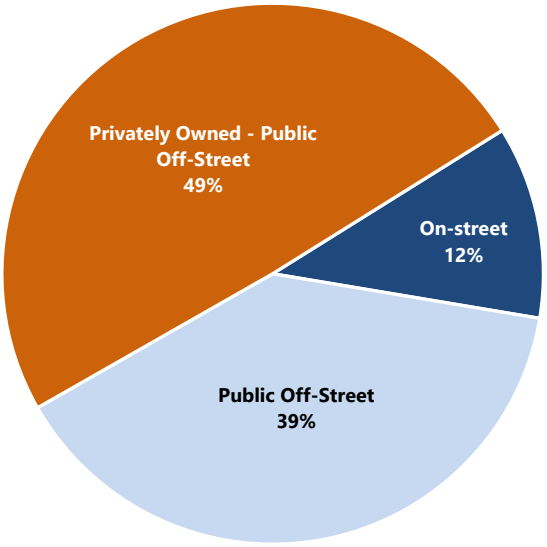
Source: Google Maps, THA Consulting, Inc, 2022

Figure 11 below lists the downtown parking resources that are available for public use.

Figure 11: List of Downtown Parking Facilities Available for Public Use

Publicly Owned, Open to Public

Map Label	Sub Zone	Description	Supply
N/A	N/A	On-Street	**2,116**
2	1	Ann & Pleasant St	187
4	1	San Juan Lot	27
5	1	Main St. Stadium	600
13	2	Church St, XL Center, Hilton Parking	900
28	3	MAT Garage	907
38	3	Morgan St Garage	2,300
43	3	CT Science Center	468
45	5	105 Columbus Blvd Garage	657
46	5	CT Convention Center	500
55	5	62 Front St South Crossing	232
56	5	Hartford Public Library	84
57	5	166 Sheldn St Lot	71
58	5	141 Sheldon St Republic Parking	250
Subtotal			**9,299**



Privately Owned, Open to Public

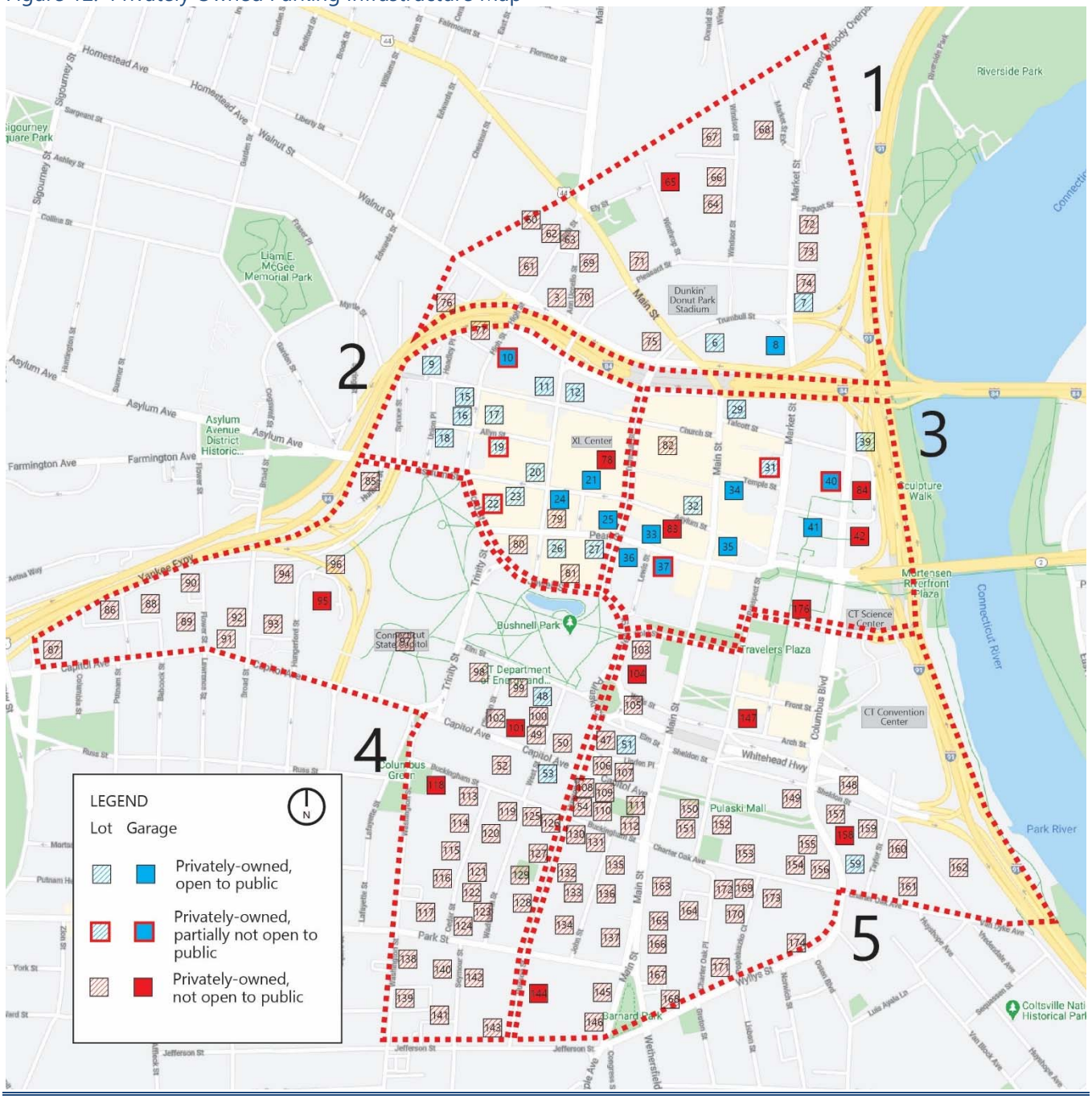
Map Label	Sub Zone	Description	Supply
6	1	Republic Parking	318
7	1	Market St Lot	500
8	1	Crown Plaza Garage	425
9	2	Union Pl & Church St,450 Church St	79
10	2	Metro Center,150 High St	600
11	2	Saints	282
12	2	228 Church St	135
14	2	Union Station	187
15	2	Church St & High St	88
16	2	Union Place Parking	80
17	2	180 Allyn S	297
18	2	Allyn St & High St	98
19	2	Xcenter, Homewood Suites Parking Lot	58
20	2	A&A Lot	86
21	2	XL Center garage	380
22	2	Parkview Hilton (Capitol Lot)	160
23	2	302 Asylum St,Q Lot	78
24	2	Goodwin SQ	316
25	2	City Place	310
26	2	30-44 Ann Uccello St	56
27	2	Pearl St Lot (Frontier)	106
29	3	Morgan St Lot	95
31	3	Residence Inn Parking	20
32	3	Pratt St	207
33	3	100 Pearl Garage	280
34	3	Temple St	343
35	3	State House SQ	600
36	3	Trumbull on the Park	610
37	3	One Financial Plaza	570
39	3	Columbus Blvd Lot (under highway)	53
40	3	250 Constitution Plaza	600
41	3	Kinsley Street South Garage	616
48	4	71 Elm St	50
53	4	South Lot (Capitol Avenue)	282
51	5	Pulaski Circle	100
Subtotal			**9,065**

Source: Google Maps, THA Consulting, Inc, 2022

As shown above, public entities only control 51% of the overall downtown parking supply that is available for public use. Please note, among the 2,339 spaces in the Convention Center parking garage (facility #46), only 500 spaces are open to public.

We have also analyzed the total private parking inventory by user group to understand what percentage of those facilities are open for general public use. Figure 12 depicts all the privately owned off-street parking resources in Downtown. Facilities available for general public use are indicated in blue and blue stripe.

Figure 12: Privately Owned Parking Infrastructure Map



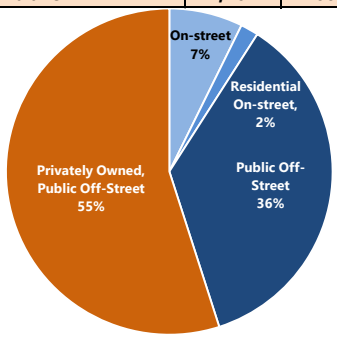
Source: Google Maps, THA Consulting, Inc, 2022

Again, while there are almost 160 privately owned parking facilities, a majority of them, 75%+, are dedicated to a single or specific user group and are not available for general public use.

Figure 13: Downtown Sub-Zone Parking Inventory Available for Public Use

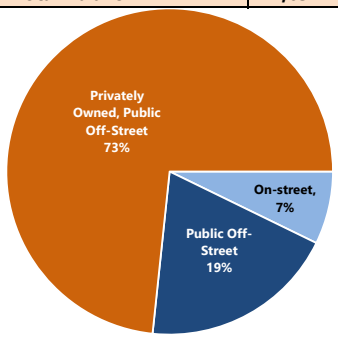
Sub-Zone 1

Ownership	Users & Facility Type	Spaces	%
CRDA/HPA Publicly Owned	On-street	165	7%
	Residential On-street	40	2%
	Public Off-Street	814	36%
Privately Owned, Public Off-Street		1,243	55%
Sub-Zone 1 Total Public		**2,262**	**100%**



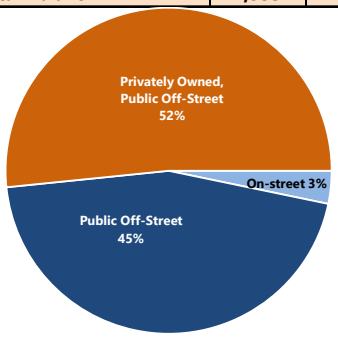
Sub-Zone 2

Ownership	Users & Facility Type	Spaces	%
CRDA/HPA Publicly Owned	On-street	335	7%
	Residential On-street	0	0%
	Public Off-Street	900	19%
Privately Owned, Public Off-Street		3,396	73%
Sub-Zone 2 Total Public		**4,631**	**100%**



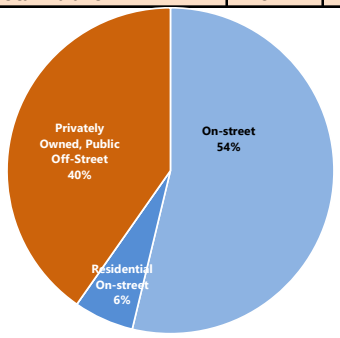
Sub-Zone 3

Ownership	Users & Facility Type	Spaces	%
CRDA/HPA Publicly Owned	On-street	266	3%
	Residential On-street	0	0%
	Public Off-Street	3,675	46%
Privately Owned, Public Off-Street		3,994	50%
Sub-Zone 3 Total Public		**7,935**	**100%**



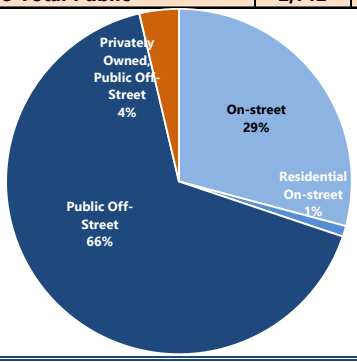
Sub-Zone 4

Ownership	Users & Facility Type	Spaces	%
CRDA/HPA Publicly Owned	On-street	443	54%
	Residential On-street	49	6%
	Public Off-Street	0	0%
Privately Owned, Public Off-Street		332	40%
Sub-Zone 4 Total Public		**824**	**100%**



Sub-Zone 5

Ownership	Users & Facility Type	Spaces	%
CRDA/HPA Publicly Owned	On-street	791	29%
	Residential On-street	27	1%
	Public Off-Street	1,794	66%
Privately Owned, Public Off-Street		100	4%
Sub-Zone 5 Total Public		**2,712**	**100%**



Source: HPA and THA Consulting, Inc, 2022

UPPER ALBANY STUDY AREA

The current parking supply in the Upper Albany study area consists of approximately 3,705 parking spaces comprised of 2,313 on-street spaces and 1,392 privately-owned off-street parking spaces (all of which are exclusively for private-use only). However, almost 93% (2,173 spaces) of on-street spaces are on residential neighborhood, and not conveniently located for public uses, **leaving only 140 publicly available on-street parking spaces**. Furthermore, there are no public off-street parking facilities in the Upper Albany study area at this time.

Figure 14: Upper Albany Study Area Parking Infrastructure Map

Source: Google Maps, THA Consulting, Inc, 2022

Within the Upper Albany Sub-Area, there are 140 public on-street parking spaces, 2,173 residential on-street parking spaces, and another 1,392 off-street privately owned parking spaces. A complete list of the facilities and their capacity is included in Table 4.

Table 4: Upper Albany Private Parking Facilities

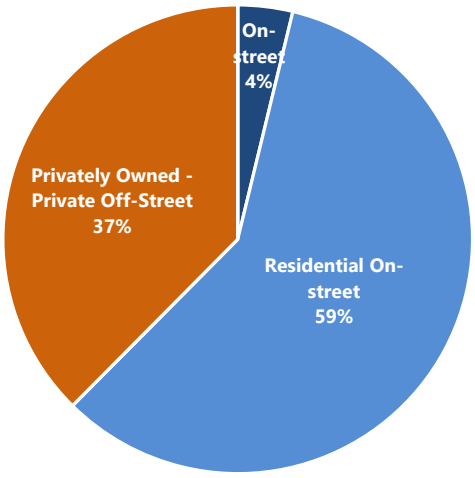
Map Label	Facility Type	Owner Type	User Group	Inventory
1	Lot	Private	Private	126
2	Lot	Private	Private	62
3	Lot	Private	Private	148
4	Lot	Private	Private	36
5	Lot	Private	Private	35
6	Lot	Private	Private	64
7	Lot	Private	Private	21
8	Lot	Private	Private	81
9	Lot	Private	Private	13
10	Lot	Private	Private	45
11	Lot	Private	Private	42
12	Lot	Private	Private	92
13	Lot	Private	Private	9
14	Lot	Private	Private	22
15	Lot	Private	Private	12
16	Lot	Private	Private	70
17	Lot	Private	Private	15
18	Lot	Private	Private	10
19	Lot	Private	Private	71
20	Lot	Private	Private	32
21	Lot	Private	Private	86
22	Lot	Private	Private	96
23	Lot	Private	Private	45
24	Lot	Private	Private	13
25	Lot	Private	Private	86
26	Lot	Private	Private	22
27	Lot	Private	Private	8
28	Lot	Private	Private	22
29	Lot	Private	Private	8
Total				**1,392**

Source: Google Maps, THA Consulting, Inc, 2022

At this time, there are not any publicly owned off-street parking facilities or privately owned off-street parking facilities available to the general public. Within this study area, 62% of the parking resources are located on-street and the remaining 38% are located within private off-street lots for private use which leaves the general public with only a single parking option. **Again, less than 4% of the parking supply is available to the general public.**

Table 5: Upper Albany 2019 Parking Inventory

Ownership	Users & Facility Type	Spaces	Subtotal	%
CRDA/HPA Publicly Owned	On-street	140	2,313	62%
	Residential On-street	2,173		
	Public Off-Street	0		
Privately Owned	Private Use Off-Street	1,392	1,392	38%
	Public Use Off-Street	0		
Upper Albany Total			**3,705**	**100%**

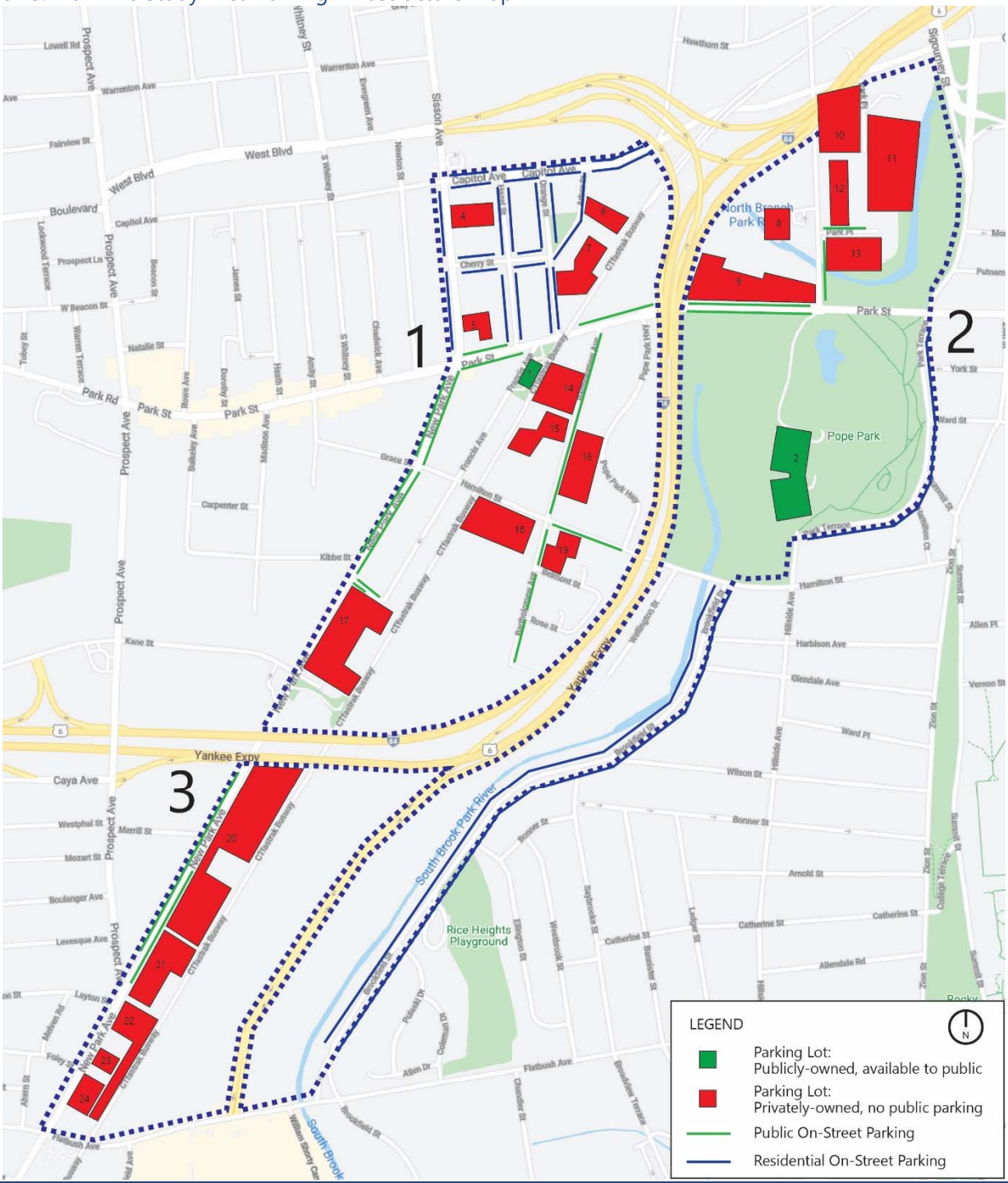


Source: HPA and THA Consulting, Inc, 2022

PARKVILLE STUDY AREA

The parking supply in the Parkville area consists of approximately 4,896 parking spaces comprised of 1,052 on-street spaces, 139 publicly owned off-street parking spaces, and 4,308 privately owned off-street parking spaces (which are exclusively for private use).

Figure 15: Parkville Study Area Parking Infrastructure Map

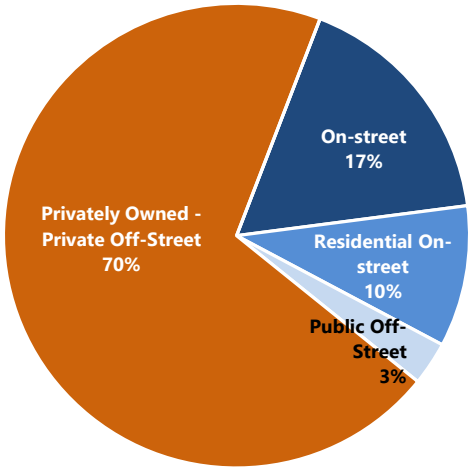


Source: Google Maps, THA Consulting, Inc, 2022

In addition to the 1,052 on-street parking spaces, there are two (2) publicly owned off-street parking lots and another 21 privately owned off-street parking lots. Please note, there is a City of Hartford parking lot with 47 parking spaces located at 8 Francis Court. Those parking spaces are not included in our analysis as that lot is signed for use only during a snowstorm, which closes "12 hours after the ban is lifted."

Table 6: Parkville Study Area 2019 Parking Inventory

Ownership	Users & Facility Type	Spaces	Subtotal	%
CRDA/HPA Publicly Owned	On-street	446	1,191	22%
	Residential On-street	606		
	Public Off-Street	139		
Privately Owned	Private Use Off-Street	4,308	4,308	78%
	Public Use Off-Street	0		
Parkville Total			**5,499**	**100%**



Source: HPA and THA Consulting, Inc, 2022

Within the 139 publicly available off-street parking spaces, 130 of those are located to the east of Interstate 84 in Pope Park, essentially segregated from a majority of the destinations where public parking would be needed. A complete list of the facilities and capacity is included below.

Table 7: Parkville Public and Private Parking Facilities

Map Label	Facility Type	Owner Type	User Group	Supply
1	Lot	Public	Public	9
2	Lot	Public	Public	130
4	Lot	Private	Private	27
5	Lot	Private	Private	27
6	Lot	Private	Private	117
7	Lot	Private	Private	114
8	Lot	Private	Private	47
9	Lot	Private	Private	387
10	Lot	Private	Private	296
11	Lot	Private	Private	568
12	Lot	Private	Private	74
13	Garage	Private	Private	650

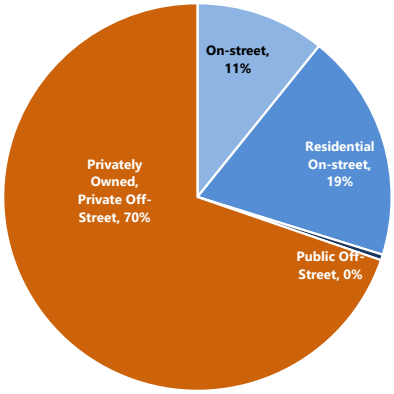
Map Label	Facility Type	Owner Type	User Group	Supply
14	Lot	Private	Private	75
15	Lot	Private	Private	58
16	Lot	Private	Private	234
17	Lot	Private	Private	380
18	Lot	Private	Private	145
19	Lot	Private	Private	149
20	Lot	Private	Private	519
21	Lot	Private	Private	245
22	Lot	Private	Private	141
23	Lot	Private	Private	21
24	Lot	Private	Private	34
Total				**4,447**

Source: Google Maps, THA Consulting, Inc, 2022

Figure 16: Parkville Sub-Zone Parking Inventory

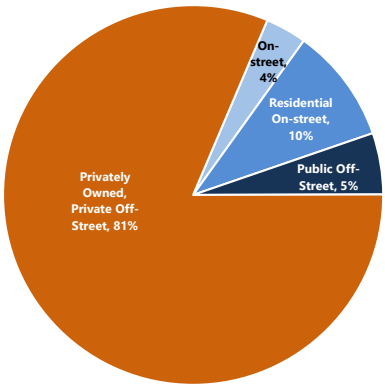
Sub-Zone 1

Ownership	Users & Facility Type	Spaces	%
CRDA/HPA	On-street	205	11%
Publicly	Residential On-street	362	19%
Owned	Public Off-Street	9	0%
Privately Owned, Private Off-Street		1,326	70%
Sub-Zone 1 Total Public		**1,902**	**100%**



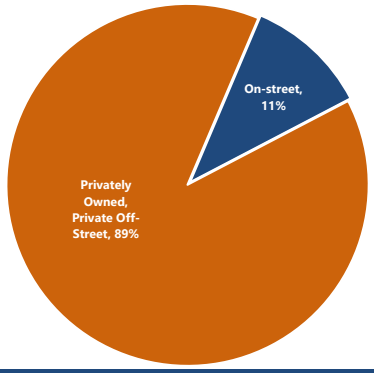
Sub-Zone 2

Ownership	Users & Facility Type	Spaces	%
CRDA/HPA	On-street	87	4%
Publicly	Residential On-street	244	10%
Owned	Public Off-Street	130	5%
Privately Owned, Private Off-Street		2,022	81%
Sub-Zone 2 Total Public		**2,483**	**100%**



Sub-Zone 3

Ownership	Users & Facility Type	Spaces	%
CRDA/HPA	On-street	154	14%
Publicly	Residential On-street	0	0%
Owned	Public Off-Street	0	0%
Privately Owned, Private Off-Street		960	86%
Sub-Zone 3 Total Public		**1,114**	**100%**



Source: THA Consulting, Inc, 2022

WETHERSFIELD AVENUE CORRIDOR STUDY AREA

The parking supply in the Wethersfield Avenue Corridor area consists of approximately 4,049 parking spaces comprised of 1,901 on-street spaces, 172 off-street publicly owned parking spaces, and 1,976 off-street privately owned parking spaces that are exclusively for private use. At this time, the only public off-street parking facility is located in Colt Park.

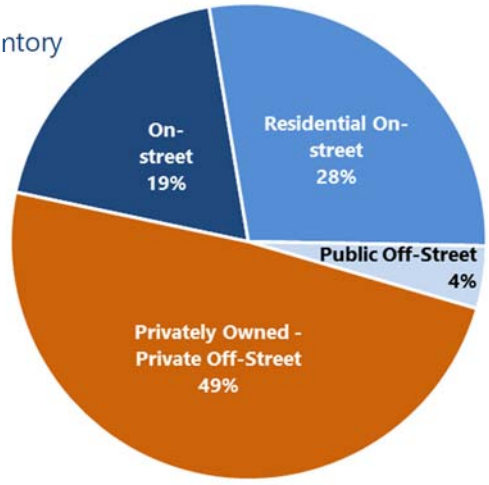
Figure 17: Wethersfield Avenue Corridor Study Area Parking Infrastructure Map

Source: Google Maps, THA Consulting, Inc, 2022

As previously mentioned, the only off-street parking lot available for public use is located in Colt Park. However, this study area contains over approximately 770 general on-street parking spaces, and 1,131 residential on-street parking spaces, making up almost 50% of the total inventory. Based on our field observations, this area appears to have less activity and therefore the absence of public off-street parking resources is not a concern at this time. If and when, this area is developed/redeveloped, there will likely also be a need for off-street parking facilities for public use.

Table 8: Wethersfield Avenue Corridor Study Area 2019 Parking Inventory

Ownership	Users & Facility Type	Spaces	Subtotal	%
CRDA/HPA Publicly Owned	On-street	770	2,073	51%
	Residential On-street	1,131		
	Public Off-Street	172		
Privately Owned	Private Use Off-Street	1,976	1,976	49%
	Public Use Off-Street	0		
Wethersfield Total			**4,049**	**100%**



Source: HPA and THA Consulting, Inc, 2022

In addition to the 1,901 on-street parking spaces, there is one publicly owned off-street parking lot and another 33 privately owned off-street parking lots. A complete list of the facilities and capacity is included below.

Table 9: Wethersfield Avenue Corridor Study Area Private Parking Facilities

Map Label	Facility Type	Owner Type	User Group	Inventory
1	Lot	Public	Public	172
2	Lot	Private	Private	39
3	Lot	Private	Private	29
4	Lot	Private	Private	64
5	Lot	Private	Private	16
6	Lot	Private	Private	56
7	Lot	Private	Private	32
8	Lot	Private	Private	43
9	Lot	Private	Private	74
10	Lot	Private	Private	31
11	Lot	Private	Private	37
12	Lot	Private	Private	71
13	Lot	Private	Private	67
14	Lot	Private	Private	20
15	Lot	Private	Private	62
16	Lot	Private	Private	110
17	Lot	Private	Private	388

Map Label	Facility Type	Owner Type	User Group	Inventory
18	Lot	Private	Private	110
19	Lot	Private	Private	97
20	Lot	Private	Private	137
21	Lot	Private	Private	15
22	Lot	Private	Private	17
23	Lot	Private	Private	28
24	Lot	Private	Private	34
25	Lot	Private	Private	31
26	Lot	Private	Private	25
27	Lot	Private	Private	55
28	Lot	Private	Private	11
29	Lot	Private	Private	41
30	Lot	Private	Private	28
31	Lot	Private	Private	34
32	Lot	Private	Private	11
33	Lot	Private	Private	121
34	Lot	Private	Private	42
Total				**2,148**

Source: Google Maps, THA Consulting, Inc, 2022

HARTFORD PARKING RATES

THA reached out to the Hartford Parking Authority (HPA), the Capital Region Development Authority (CRDA), LAZ Parking (LAZ) and Propark Mobility (Propark) to obtain parking rates.

In general, best practices dictate on-street parking rates should be higher than the off-street lot rates, which should also be higher than the off-street parking garage rates. This pricing structure encourages the use of off-street parking facilities (especially for long-term users) and allows for higher use and turnover of valuable on-street parking spaces (especially for short-term users).

While the HPA currently follows this best practice, they control a very limited number of off-street parking facilities and because of that limited control, the rate structure in some areas served solely by private facilities are not in line with this general pricing structure. The result is limited availability of affordable short-term public parking options because on-street parking in most instances is less expensive than off-street parking.

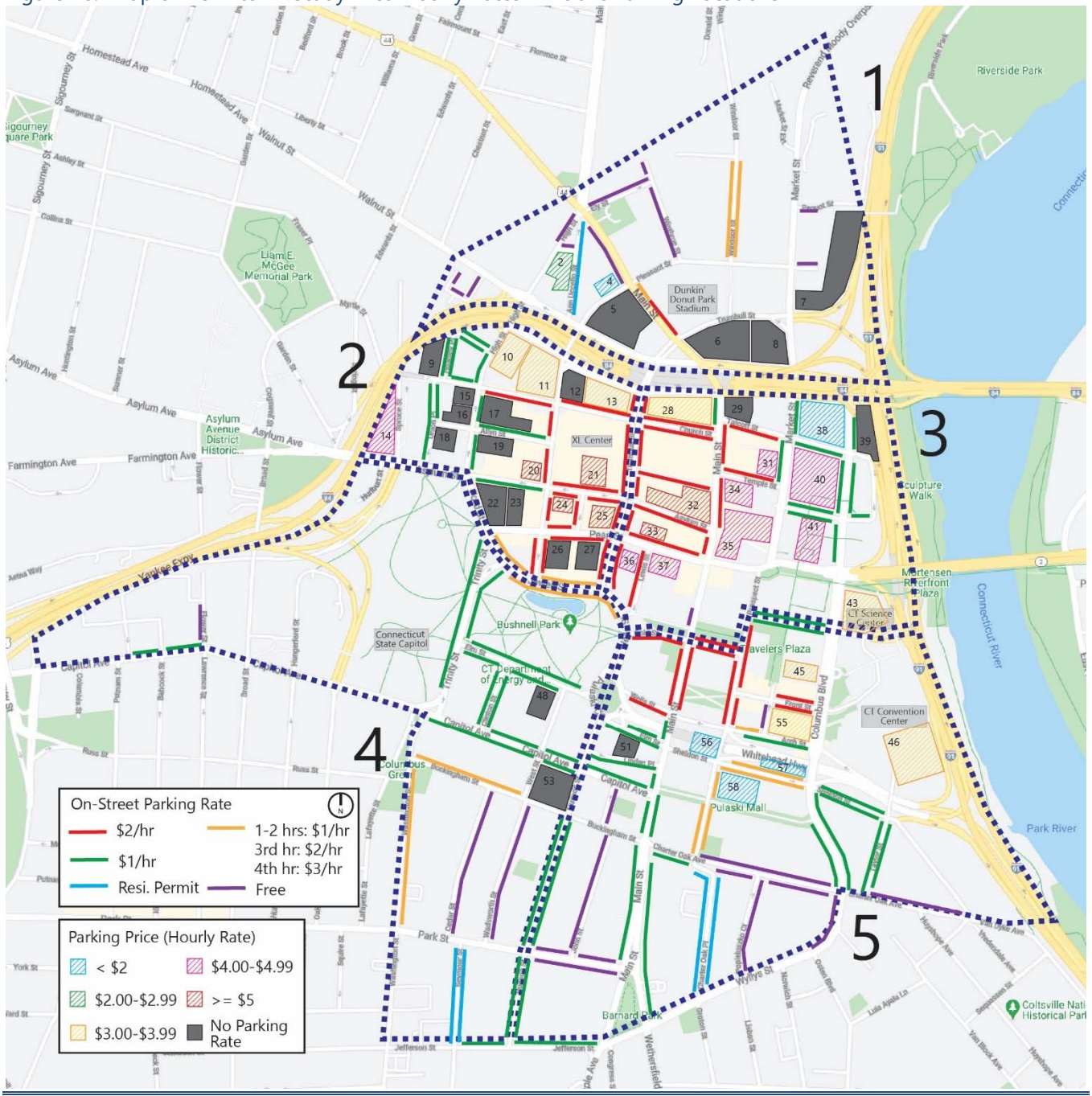
Please note the following observations regarding the rates associated with the parking infrastructure available to the general public:

- Within the Downtown Study Area:
  - Among the 48 off-street parking facilities, 28 offer an hourly rate, 44 offer a daily rate, and 26 offer a monthly rate.
  - In sub-zone 2 and 3, only 20 of the 33 off-street parking facilities offer hourly parking and all of those charge a rate well above the on-street parking rate.
  - Among the 48 off-street parking facilities, the HPA/CRDA only owns
    - In sub-zone 1, the HPA/CRDA owns 3 of the 6 off-street parking facilities
    - In sub-zone 2, the HPA/CRDA owns 2 of the 19 off-street parking facilities
    - In sub-zone 3, the HPA/CRDA owns 4 of the 14 off-street parking facilities
    - In sub-zone 4, the HPA/CRDA does not own any off-street parking facilities
    - In sub-zone 5, the HPA/CRDA owns 6 of the 7 off-street parking facilities
- Within the Upper Albany Study Area:
  - All off-street resources are privately owned for private use only and free.
  - Most of the on-street spaces are free with the exception of Adams Street which requires a Residential Parking Permit.
  - A pilot project is being implemented by HPA, and new meters have been installed on one (1) block along Albany Avenue at the corner of Garden Street and data will be collected for three months. There is also another location along Albany Avenue just two (2) blocks west of Woodland Street which will last for six (6) months. Like other meters throughout Hartford, the Albany Avenue meters offer up to two-hours of parking from 8 a.m. until 6 p.m. and free parking on the weekends and most holidays.
- Within the Parkville Study Area:
  - All on-street parking is free.
  - The two (2) publicly owned off-street lots (Parkville Station and Pope Park) are free.
  - All privately owned parking is private use only and free.
- Within the Wethersfield Avenue Corridor Study Area:
  - All on-street parking is free.
  - The only publicly owned off-street parking lot is at Colt Park and is free.
  - All privately owned parking lots are private use only and free.

Downtown Study Area

Hourly on-street parking rates range from free to $3.00 per hour and hourly off-street parking rates range from under $2.00 per hour to $5.00+ per hour. Please note that in Sub-Zone 4, no off-street parking facilities that provide public parking.

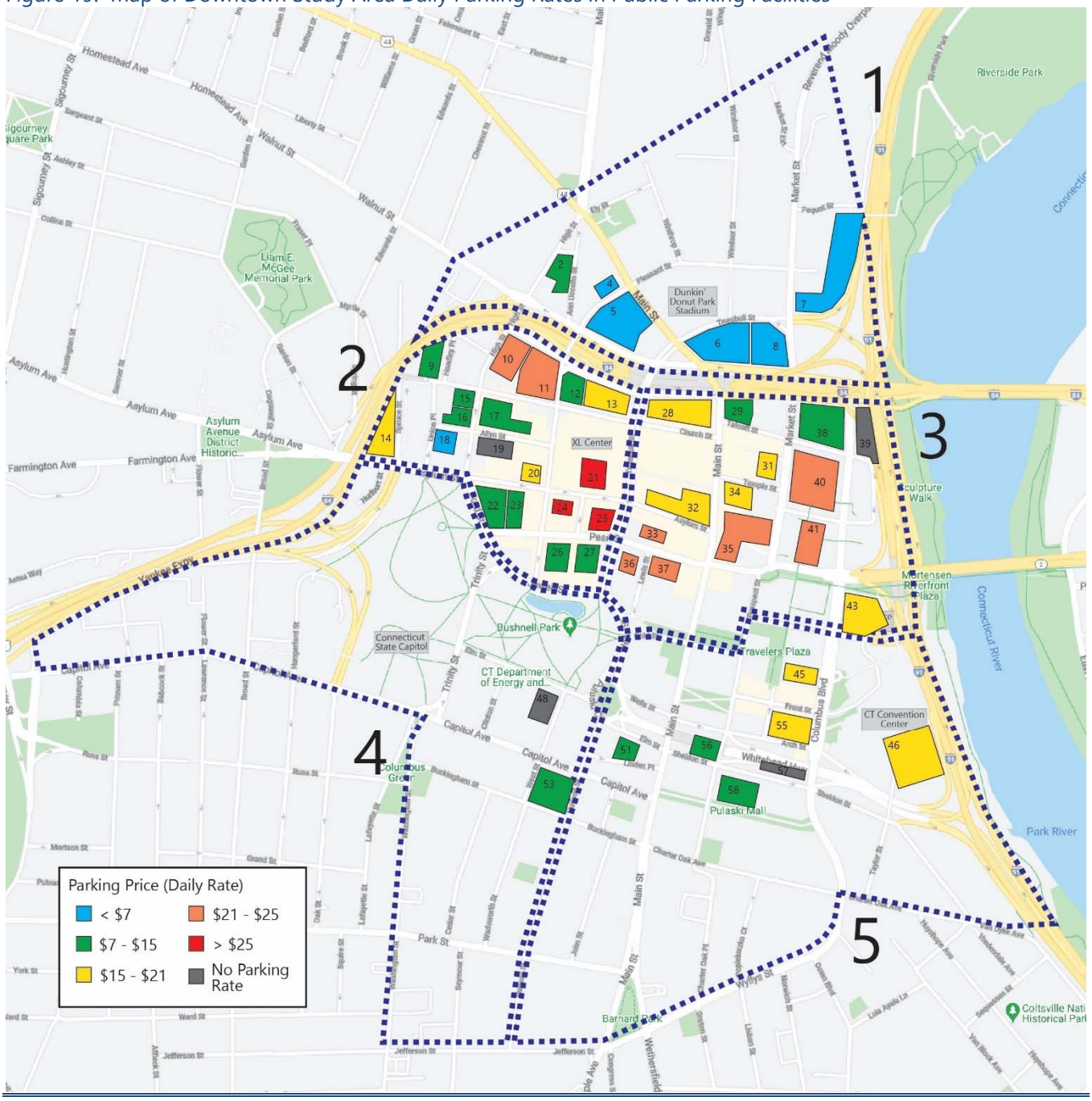
Figure 18: Map of Downtown Study Area Hourly Rates in Public Parking Locations



Source: Google Maps, THA Consulting, Inc, HPA, LAZ, ProPark, K&K Parking, 2021

Daily public off-street parking rates range from under $7.00 to $25.00+ per day.

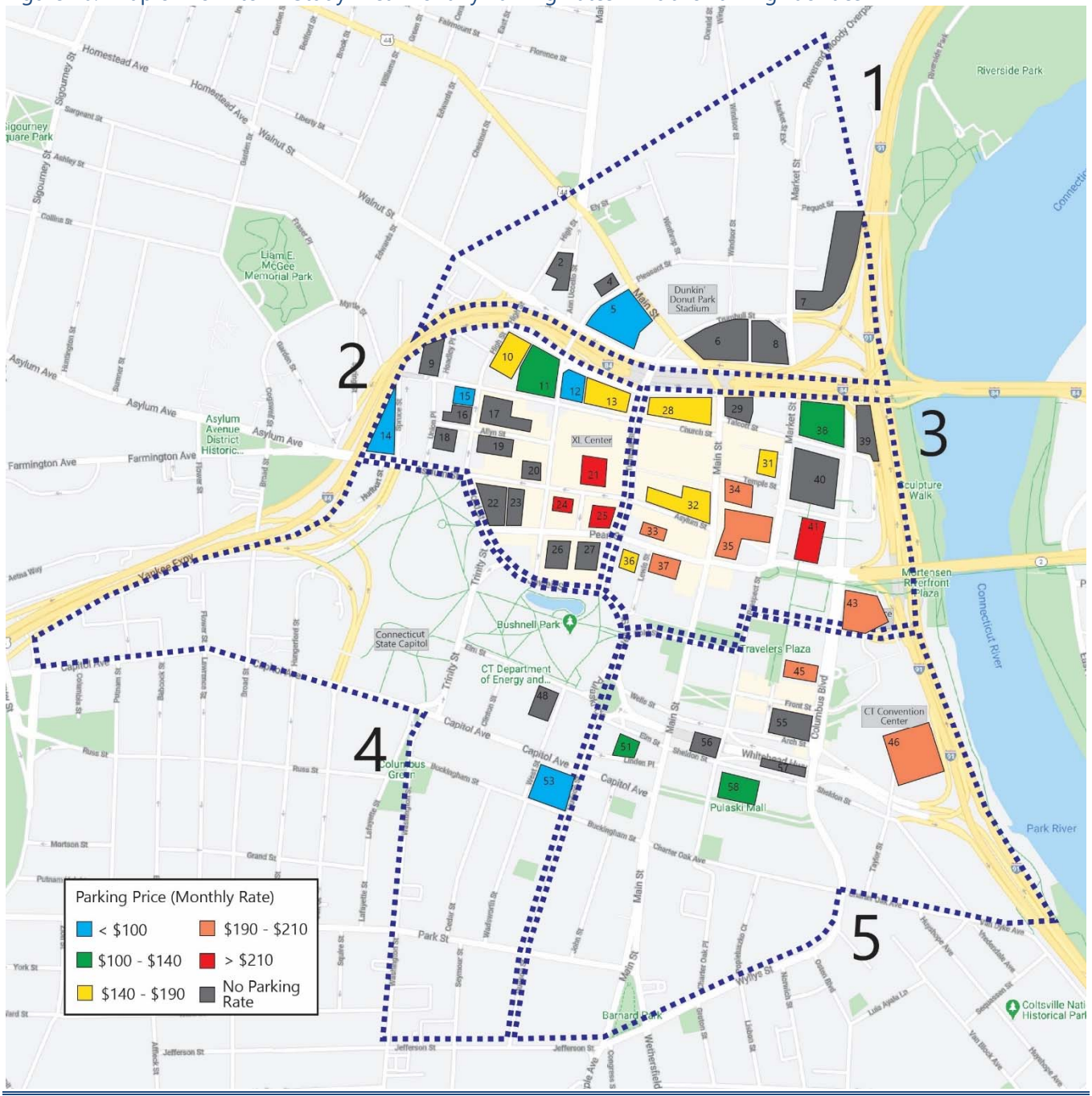
Figure 19: Map of Downtown Study Area Daily Parking Rates in Public Parking Facilities



Source: Google Maps, THA Consulting, Inc, HPA, LAZ, ProPark, K&K Parking, 2022

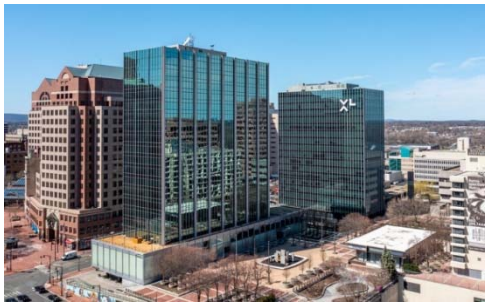
Monthly off-street public parking rates in downtown range from under $100 to $210+ per month.

Figure 20: Map of Downtown Study Area Monthly Parking Rates in Public Parking Facilities



Source: Google Maps, THA Consulting, Inc, HPA, LAZ, ProPark, K&K Parking, 2022

PRE-COVID (OCTOBER 2019) AND RECOVERY (MARCH 2021) PARKING CONDITIONS



The COVID-19 pandemic has led to decreased parking activity and a significant impact on the parking industry. According to parking occupancy data we collected from each parking operator and satellite imagery, the peak parking occupancy of public parking facilities has decreased by approximately 60% due to the pandemic. The largest decline in occupancy occurred in facilities serving office employees which declined by approximately 75% from October 2019 to March 2021.

The COVID-19 pandemic demonstrated that a considerable amount of the work that historically took place in offices or outside the home can occur remotely. Accordingly, many employers and employees were forced to quickly pivot operations from in-office to remote work, have experienced success in productivity. A study done by Owl Labs and Global Workplace Analytics[1] in October 2020 outlines some remote work statistics and trends during the COVID-19 pandemic including the following:

- 1 in 2 people will not return to jobs that don't offer remote work after COVID-19 pandemic
- 81% of respondents think their employer will support remote work after COVID-19 pandemic
- After COVID-19 pandemic, 80% expect to work from home at least 3x/week
- Most people expect work from home arrangements will continue to be an option

As workplaces reopen with physical distancing measures in place, offices in major cities have a more problematic road to recovery given the need to commute on public transit. Meanwhile, suburban, or out-of-town locations where workers typically drive will likely resume something approaching normal operations much more quickly[2]. Pre COVID-19 pandemic, companies were putting more people in less space resulting in increased demand for parking. However, Work from Home (WFH) policies, social distancing requirements, and occupancy limits could potentially result in lower peak parking demand compared to pre COVID-19 pandemic parking demand levels.

[1] State of Remote Work, 2020
[2] How Will Covid-19 Change Demand for Office Space? https://www.wsp.com/en-MY/insights/how-will-covid-19-change-demand-for-office-space

DOWNTOWN STUDY AREA

Prior to the pandemic, a majority (60%) of the off-street parking facilities were operating at or above an occupancy of 80%. In March 2021, only 25% of the off-street parking facilities are operating above a 40% occupancy level.

Table 10: Downtown Parking Occupancy Pre-COVID and Recovery

Publicly Owned, Open to Public

Map Label	Sub-Zone	Description	Oct 2019 Occ. (Pre-COVID)	Mar 2021 Occ. (Recovery)
2	1	Ann & Pleasant St	39%	17%
4	1	San Juan Lot	5%	0%
5	1	Main St. Stadium	53%	1%
13	2	Church St, XL Center, Hilton Parking	75%	72%
28	3	MAT Garage	90%	30%
38	3	Morgan St Garage	93%	29%
43	3	CT Science Center	79%	23%
45	5	105 Columbus Blvd Garage	97%	70%
46	5	CT Convention Center	75%	39%
55	5	62 Front St South Crossing	56%	19%
56	5	Hartford Public Library	18%	7%
57	5	166 Sheldn St Lot	59%	0%
58	5	141 Sheldon St Republic Parking	97%	3%

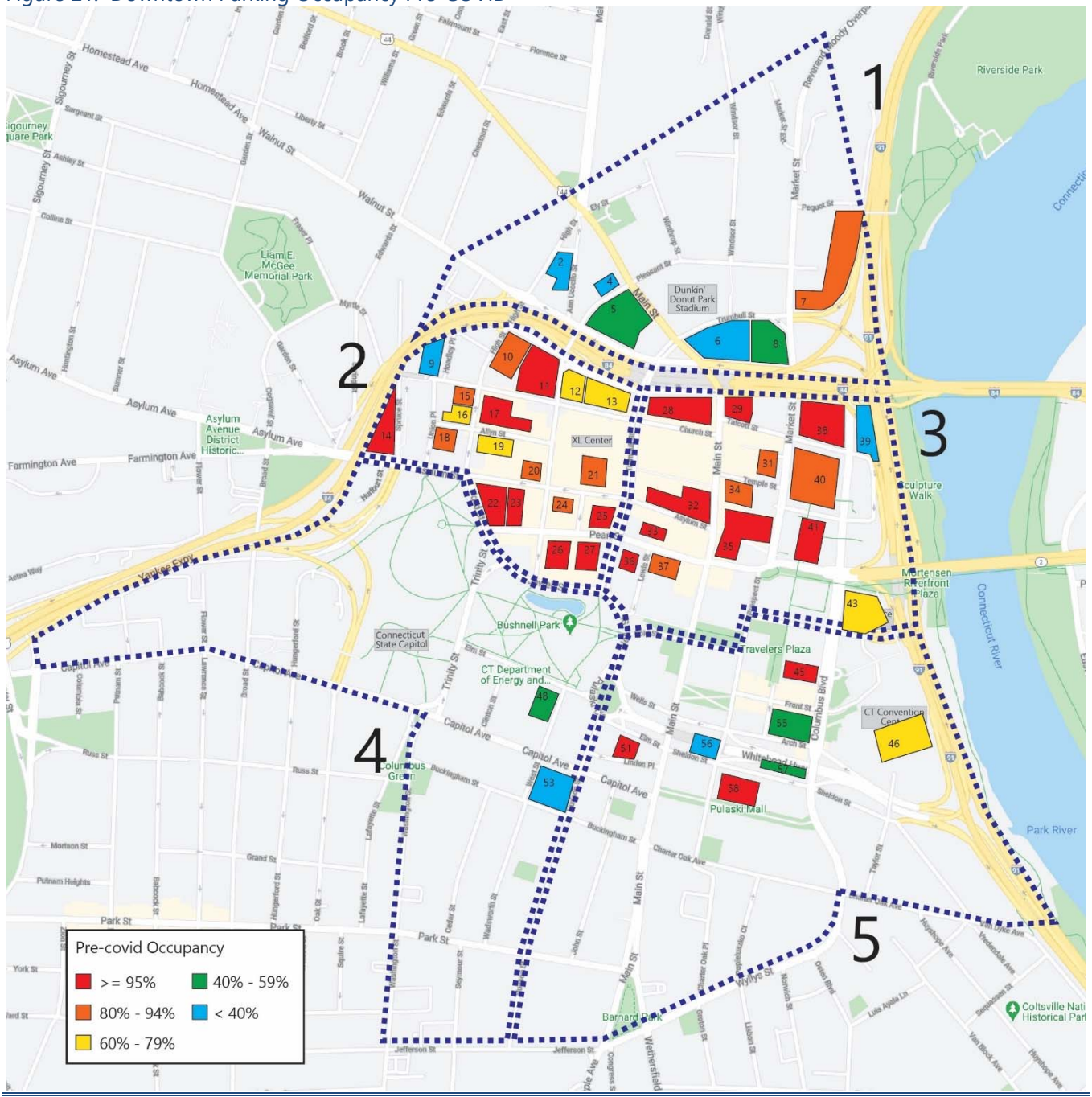
Sub-Zone	Oct 2019 Occ. (Pre-COVID)	Mar 2021 Occ. (Recovery)
1	**42%**	**8%**
2	**83%**	**42%**
3	**87%**	**35%**
4	**32%**	**1%**
5	**72%**	**33%**

Privately Owned, Open to Public

Map Label	Sub Zone	Description	Oct 2019 Occ. (Pre-COVID)	Mar 2021 Occ. (Recovery)
6	1	Republic Parking	18%	0%
7	1	Market St Lot	86%	3%
8	1	Crown Plaza Garage	53%	26%
9	2	Union Pl & Church St,450 Church St	3%	1%
10	2	Metro Center,150 High St	83%	19%
11	2	Saints	95%	35%
12	2	228 Church St	66%	0%
14	2	Union Station	95%	40%
15	2	Church St & High St	94%	72%
16	2	Union Place Parking	63%	25%
17	2	180 Allyn S	95%	35%
18	2	Allyn St & High St	91%	62%
19	2	Xcenter, Homewood Suites Parking Lot	76%	9%
20	2	A&A Lot	90%	19%
21	2	XL Center garage	87%	48%
22	2	Parkview Hilton (Capitol Lot)	96%	32%
23	2	302 Asylum St,Q Lot	100%	77%
24	2	Goodwin SQ	87%	73%
25	2	City Place	95%	41%
26	2	30-44 Ann Uccello St	97%	66%
27	2	Pearl St Lot (Frontier)	97%	66%
29	3	Morgan St Lot	100%	48%
31	3	Residence Inn Parking	92%	18%
32	3	Pratt St	100%	60%
33	3	100 Pearl Garage	100%	85%
34	3	Temple St	88%	25%
35	3	State House SQ	97%	38%
36	3	Trumbull on the Park	95%	50%
37	3	One Financial Plaza	86%	22%
39	3	Columbus Blvd Lot (under highway)	13%	0%
40	3	250 Constitution Plaza	93%	12%
41	3	Kinsley Street South Garage	96%	50%
48	4	71 Elm St	50%	0%
53	4	South Lot (Capitol Avenue)	14%	1%
51	5	Pulaski Circle	100%	90%

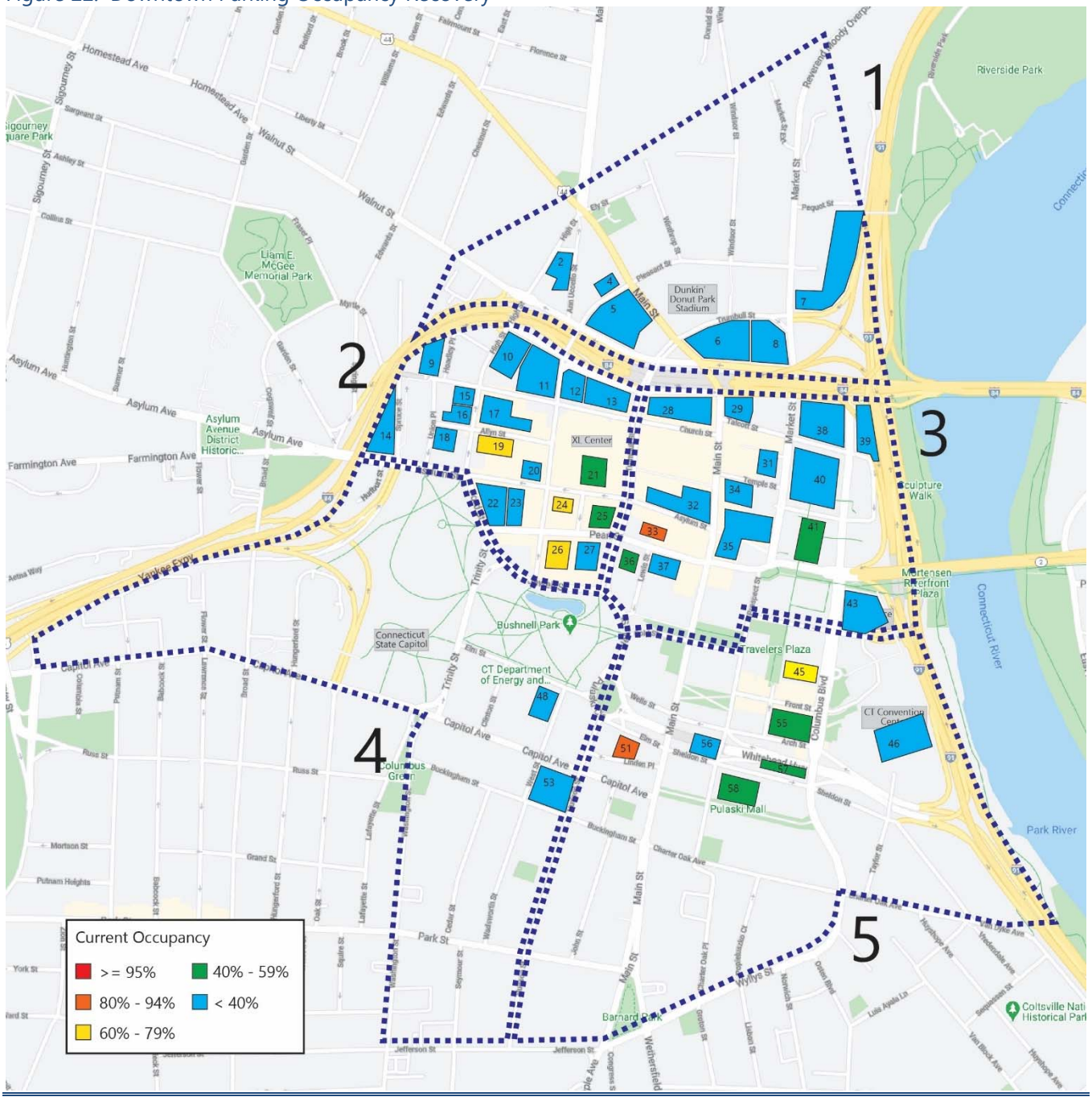
Source: THA Consulting, Inc, HPA, LAZ, ProPark, K&K Parking, 2022

Figure 21: Downtown Parking Occupancy Pre-COVID



Source: Google Maps, THA Consulting, Inc, HPA, LAZ, ProPark, K&K Parking, 2022

Figure 22: Downtown Parking Occupancy Recovery



Source: Google Maps, THA Consulting, Inc, HPA, LAZ, ProPark, K&K Parking, 2022

Upper Albany

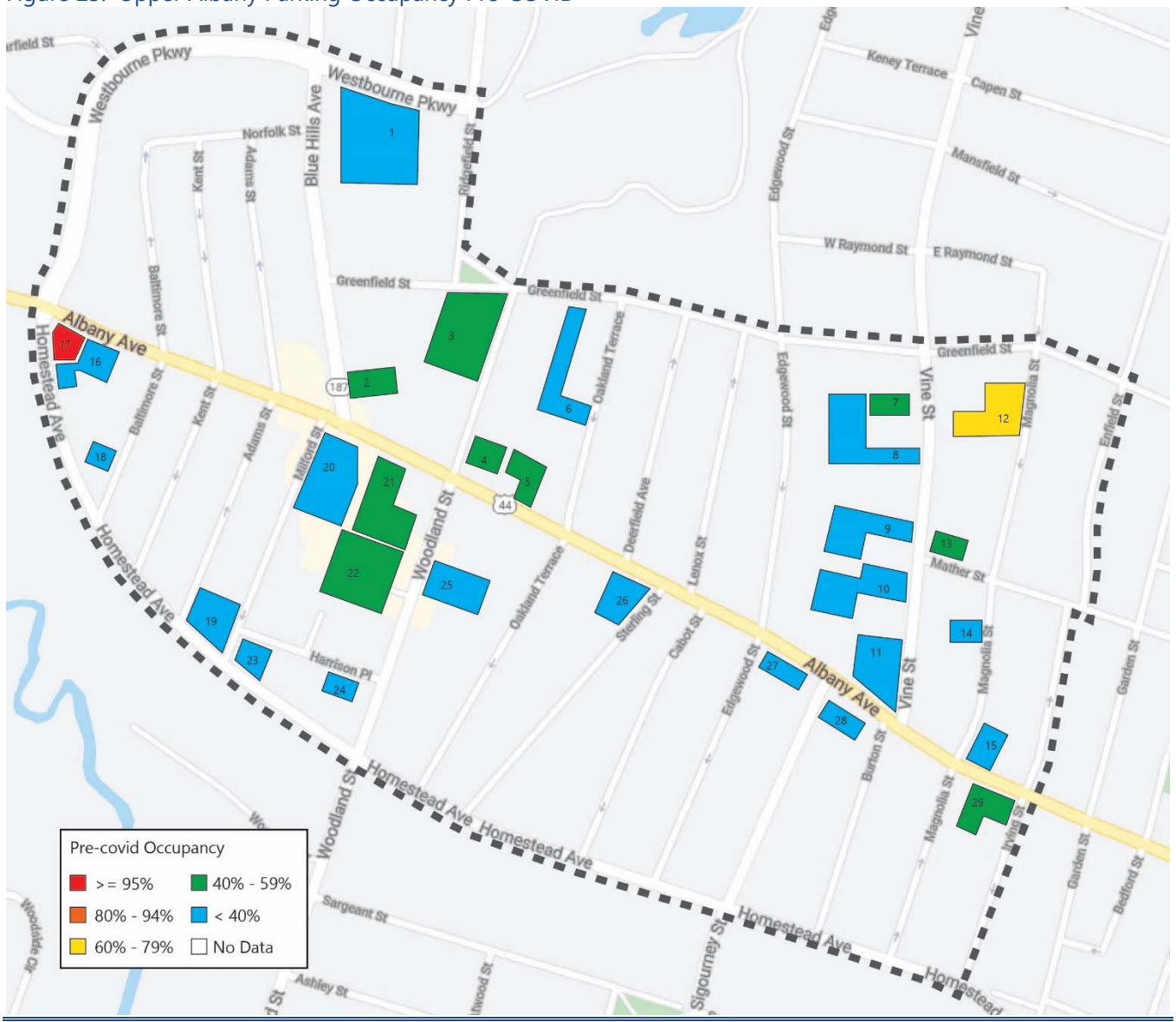
Prior to the pandemic, a majority of the off-street parking facilities were operating at or below an occupancy of 40%, and only two private lots, the Auto Repair Shop (100% occupied) and the Vine Street School Lot (65% occupied), were above that level. In March 2021, the parking occupancy increased above 40% in many facilities due to an increase in restaurant and retail activities. Additionally, except for businesses along Albany Avenue, Upper Albany's primary land use is residential. Despite the increase in off-street occupancy, all of the off-street parking facilities in this sub-area are privately owned and for private use only.

Table 11: Upper Albany Parking Occupancy Pre-COVID and Recovery

Map Label	Description	Oct 2019 Occ. (Pre-COVID)	Mar 2021 Occ. (Recovery)
1	Martin Luther King. Jr. Middle School	0%	21%
2	Hartford Public Library, Albany Branch	48%	69%
3	Achievement First Hartford High School	54%	44%
4	482 Woodland St	47%	36%
5	1132 Albany Ave	57%	63%
6	Cathedral Manors	16%	55%
7	107 Vine St	57%	43%
8	95 Vine St Mahoney Village Apt	5%	9%
9	Mary Mahoney Village	23%	38%
10	Horace Bushnell Congregate Homes	31%	44%
11	Liberty Christian Center	12%	5%
12	Vine Street School	65%	60%
13	Vine Associates	44%	44%
14	Vine Street Apts	5%	23%
15	88 Magnolia St	0%	0%
16	AutoZone	26%	29%
17	Auto Repair Shop	100%	100%
18	Webster Bank	0%	0%
19	320 Homestead Ave	23%	25%
20	McDonald's	38%	63%
21	Hartford North Health Center	47%	26%
22	Bravo Supermarket	47%	41%
23	300 Homestead Ave	0%	0%
24	359 Woodland St	23%	23%
25	Kings Chapel Church of God	12%	14%
26	Sline Laundromat	23%	32%
27	Convenience Store	38%	100%
28	KFC	9%	5%
29	Q-P Cleaners	50%	0%

Source: THA Consulting, Inc, HPA, 2022

Figure 23: Upper Albany Parking Occupancy Pre-COVID



Source: Google Maps, THA Consulting, Inc, 2022

Figure 24: Upper Albany Parking Occupancy Recovery

Source: Google Maps, THA Consulting, Inc, 2022

PARKVILLE

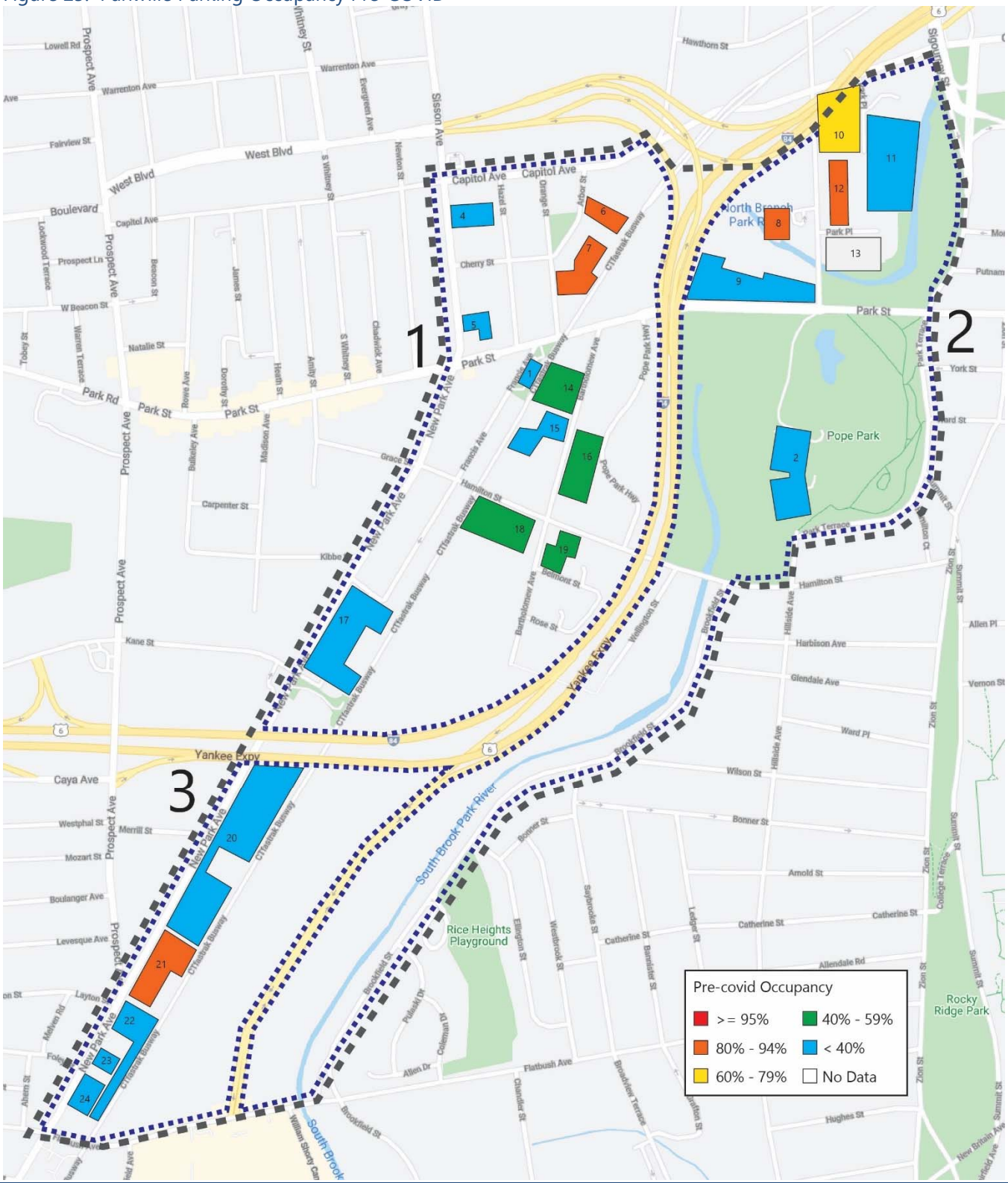
Prior to the pandemic, a majority of the off-street parking facilities were operating at or below an occupancy of 40%, and a few private lots serving residential and retail businesses in the northern portion of the study area were above 80% occupied. In March 2021, the parking occupancy for residential increased while the occupancy for retail/office decreased, resulting in an average occupancy around the same as pre-pandemic.

Table 12: Parkville Parking Occupancy Pre-COVID and Recovery

Map Label	Description	Oct 2019 Occ. (Pre-COVID)	Mar 2021 Occ. (Recovery)
1	Parkville Station	33%	56%
2	Pope Park Dr Parking	2%	3%
4	Wood n Tap	19%	7%
5	Sisson Plaza	19%	15%
6	Hartford Flavor Factory,30 Arbor St	87%	56%
7	56 Arbor St	82%	42%
8	Underwood Elderly Apt Homes	89%	100%
9	KeyFood Supermarket	25%	18%
10	98 Laurel St	74%	86%
11	Dept of Social Services	4%	2%
12	30 Laurel St	82%	65%
13	Park Place Towers	70%	80%
14	1477 Park St	47%	60%
15	Hands On Hartford	40%	45%
16	230 Hamilton St	49%	52%
17	Stop & Shop	34%	25%
18	237 Hamilton Place	41%	39%
19	211 Hamilton St	58%	66%
20	Apple Cinemas Xtreme	1%	1%
21	Team Mitsubishi Hartford	92%	90%
22	West Hartford CoWorking	26%	32%
23	Cesar's Liquor Outlet	10%	0%
24	Dunkin'	15%	9%

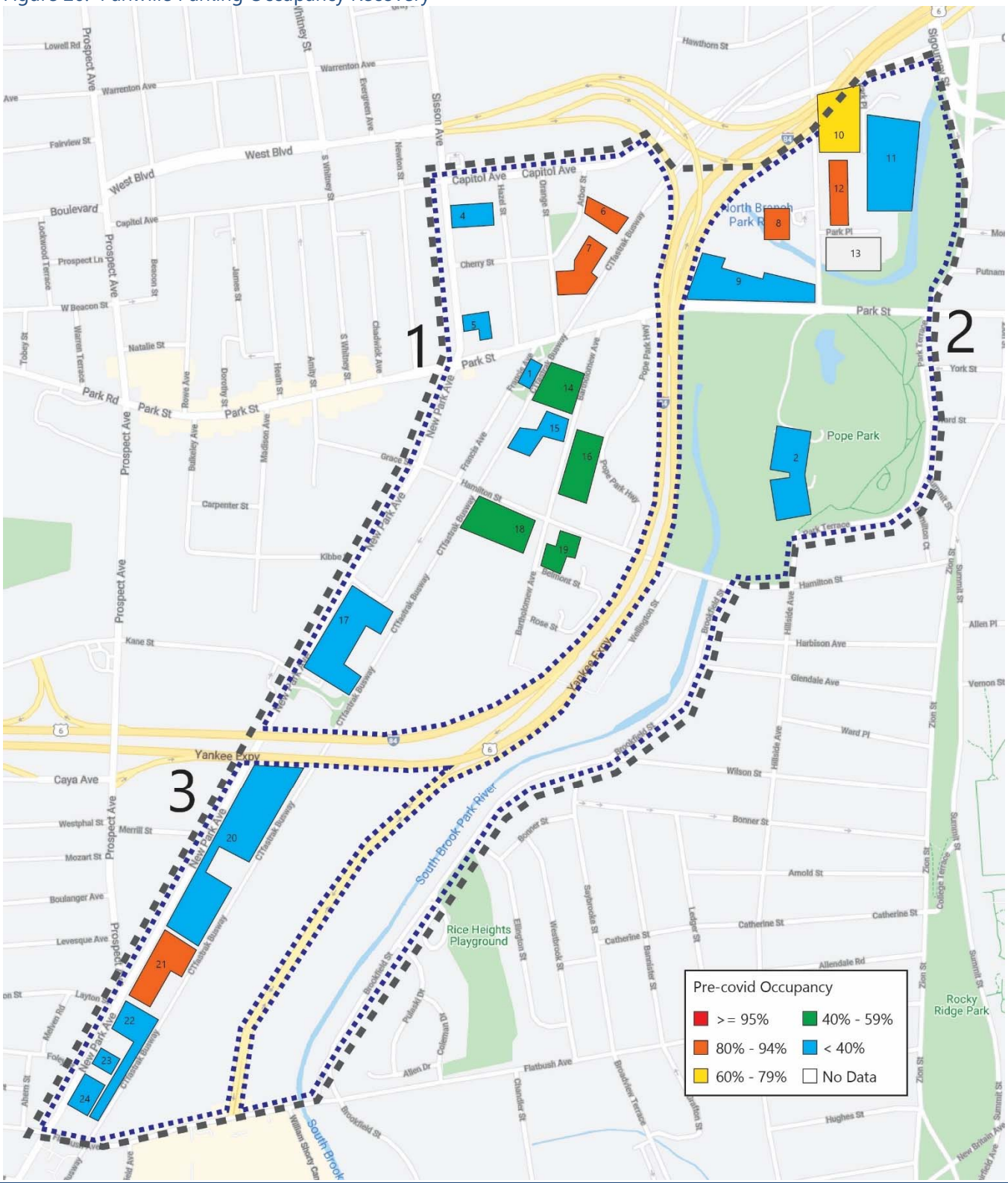
Source: THA Consulting, Inc, HPA, 2022

Figure 25: Parkville Parking Occupancy Pre-COVID



Source: Google Maps, THA Consulting, Inc, 2022

Figure 26: Parkville Parking Occupancy Recovery



Source: Google Maps, THA Consulting, Inc, 2022

WETHERSFIELD AVENUE CORRIDOR

Prior to the pandemic, a majority of the off-street parking facilities were operating at or below an occupancy of 40% with the most heavily utilized lots serving residential use. In March 2021, the parking occupancy increased slightly above 60% primarily due to an increase in occupancy at residential parking facilities.

Table 13: Wethersfield Avenue Corridor Parking Occupancy Pre-COVID and Recovery

Map Label	Description	Oct 2019 Occ. (Pre-COVID)	Mar 2021 Occ. (Recovery)	Map Label	Description	Oct 2019 Occ. (Pre-COVID)	Mar 2021 Occ. (Recovery)
1	Colt Park Parking Lot	70%	50%	18	15 Elliott St E	23%	32%
2	One Congress St. & Beacon Resident Lot	3%	1%	19	Burr School Wally	25%	26%
3	57 Wethersfield Ave	51%	67%	20	People's United Bank	95%	78%
4	16 Morris St (Residential)	59%	62%	21	Webster Bank	45%	35%
5	12 Morris St	39%	50%	22	73 Redding St	33%	20%
6	Catholic Charities	25%	31%	23	AutoZone Auto Parts	24%	24%
7	Armsmear	20%	34%	24	Pentecostal Church El Rapto	14%	25%
8	Rego (55 Morris St)	63%	75%	25	Advance Auto Parts	9%	15%
9	Saint Michael Ukrainian Catholic Church	56%	63%	26	Fieldcrest Apartments	16%	19%
10	46 Dean St	1%	0%	27	Betances STEM Magnet School	20%	56%
11	Alden Estates Condominium	94%	74%	28	Dollar General	55%	62%
12	Ctown Supermarkets	19%	35%	29	590 Chapin Pl	18%	36%
13	29-31 Annawan St	37%	48%	30	14 Standish St	56%	49%
14	223 Wethersfield Ave	30%	43%	31	15 Standish St	0%	0%
15	22 Elliott St	60%	65%	32	12 South St	15%	9%
16	The Village	26%	35%	33	CVS	64%	100%
17	Bulkeley High School	98%	70%	34	NAPA Auto Parts	16%	9%

Source: THA Consulting, Inc, HPA, 2022

Figure 27: Wethersfield Avenue Corridor Parking Occupancy Pre-COVID

Source: Google Maps, THA Consulting, Inc, 2022

Figure 28: Wethersfield Avenue Corridor Parking Occupancy Recovery

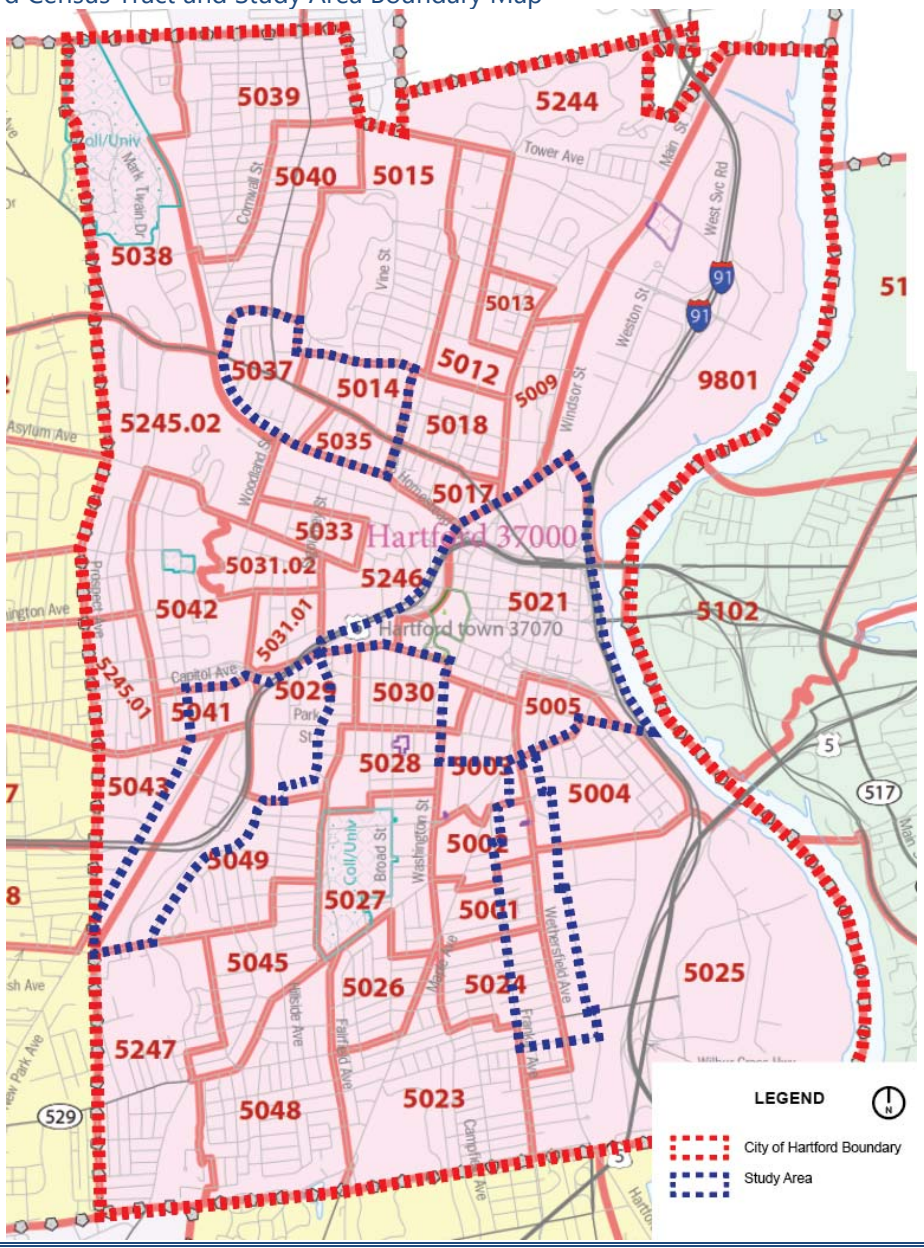
Source: Google Maps, THA Consulting, Inc, 2022

U.S. CENSUS DATA

To determine the increase in parking demand from changes in population growth and increased economic activity in the study area, we compared the Census Tract map with our study area boundaries and selected the following census tracts for our analysis.

Downtown	Parkville	Upper Albany	Wethersfield
Census Tract 5003	Census Tract 5029	Census Tract 5014	Census Tract 5001
Census Tract 5005	Census Tract 5041	Census Tract 5035	Census Tract 5002
Census Tract 5021	Census Tract 5043	Census Tract 5037	Census Tract 5024

Figure 29: Hartford Census Tract and Study Area Boundary Map



Source: Hartfrod Census Tract, THA Consulting, Inc, 2022

HARTFORD SUMMARY

To determine an appropriate parking ratio for the residential component for future development projects, and to have a better understanding of the historical trend, THA collected the population, residential units, vehicle ownership, vehicle per household and median household income change trends from 2010 to 2019 in the referenced Census Tracts in Hartford.

Since 2015, the population of Hartford has decreased for five (5) consecutive years from 2015 to 2019. The population declined 1.3% in comparison with Year 2010, while the total number of residential units grew slightly by 3.2%. From 2010 to 2019, the vehicle ownership has increased 37.0%, and vehicle per household has increased 35.1%. The average vehicle per household has increased from 0.87 per vehicle per household in 2010 to 1.18 per vehicle per household in 2019. Corresponding with the increased number of vehicles per household, from 2010 to 2019, the median household income has also increased by 25.2%.

Table 14: City of Hartford Census Data from 2010 to 2019

Year	Population		Household		Vehicle Ownership		Vehicle per Household		Median Household Income	
	Total	Change %	Total	Change %	Total	Change %	Total	Change %	Total	Change %
2010	124,760		46,073		40,250		0.87		28,970	
2011	124,817	0.0%	46,048	-0.1%	40,847	1.5%	0.89	1.5%	29,107	0.5%
2012	124,879	0.0%	45,895	-0.3%	41,336	1.2%	0.90	1.5%	28,931	-0.6%
2013	125,130	0.2%	45,808	-0.2%	40,167	-2.8%	0.88	-2.6%	29,430	1.7%
2014	125,211	0.1%	45,801	0.0%	42,048	4.7%	0.92	4.7%	29,313	-0.4%
2015	124,795	-0.3%	45,239	-1.2%	43,944	4.5%	0.97	5.8%	30,630	4.5%
2016	124,320	-0.4%	45,845	1.3%	46,012	4.7%	1.00	3.3%	32,095	4.8%
2017	124,390	0.1%	45,822	-0.1%	44,316	-3.7%	0.97	-3.6%	33,841	5.4%
2018	123,628	-0.6%	45,879	0.1%	47,403	7.0%	1.03	6.8%	34,338	1.5%
2019	123,088	-0.4%	46,690	1.8%	55,125	16.3%	1.18	14.3%	36,278	5.6%
5-Year Annual Avg. Change (2015-2019)		-0.3%		0.8%		6.1%		5.2%		4.3%
5-Year Change		-1.4%		3.2%		25.4%		21.5%		18.4%
10-Year Annual Avg. Change (2010-2019)		-0.3%		0.2%		3.7%		3.5%		2.6%
10-Year Change Rate		-1.3%		1.3%		37.0%		35.1%		25.2%

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

POPULATION GROWTH

From 2010 to 2019, the population in Downtown Hartford and Parkville increased by 14.9% and 5.2%, with an average annual increase rate of 1.6% and 0.6%. Meanwhile, the population in Upper Albany and the Wethersfield Avenue Corridor decreased by 12.3% and 2.8%, respectively.

Table 15: Population Change from 2010 to 2019 by Sub-Area

Year	Downtown					Parkville				
	Census Tract 5021	Census Tract 5003	Census Tract 5005	Total	Change %	Census Tract 5029	Census Tract 5041	Census Tract 5043	Total	Change %
2010	1,424	1,979	1,964	5,367		2,678	2,501	2,318	7,497	
2011	1,635	1,989	1,601	5,225	-2.6%	2,890	2,351	2,291	7,532	0.5%
2012	1,731	2,094	1,478	5,303	1.5%	3,091	2,036	2,103	7,230	-4.0%
2013	1,742	2,177	1,460	5,379	1.4%	2,946	2,120	2,278	7,344	1.6%
2014	1,767	2,011	1,415	5,193	-3.5%	3,158	1,692	2,620	7,470	1.7%
2015	2,001	2,132	1,437	5,570	7.3%	3,326	1,694	2,761	7,781	4.2%
2016	1,986	2,231	1,498	5,715	2.6%	2,981	1,606	3,007	7,594	-2.4%
2017	2,108	2,086	1,514	5,708	-0.1%	2,869	1,686	3,060	7,615	0.3%
2018	2,322	2,204	1,465	5,991	5.0%	2,867	1,648	3,081	7,596	-0.2%
2019	2,403	2,306	1,459	6,168	3.0%	3,047	1,805	3,034	7,886	3.8%
5-Year Annual Avg. Change (2015-2019)					2.6%					0.4%
5-Year Change					10.7%					1.3%
10-Year Annual Avg. Change (2010-2019)					1.6%					0.6%
10-Year Change Rate					14.9%					5.2%

Year	Upper Albany					Wethersfield				
	Census Tract 5014	Census Tract 5035	Census Tract 5037	Total	Change %	Census Tract 5001	Census Tract 5002	Census Tract 5024	Total	Change %
2010	2,657	1,760	3,065	7,482		3,851	2,552	6,411	12,814	
2011	2,628	1,629	2,868	7,125	-4.8%	4,131	2,534	6,326	12,991	1.4%
2012	2,760	1,605	2,531	6,896	-3.2%	4,154	2,653	6,288	13,095	0.8%
2013	3,017	1,754	2,409	7,180	4.1%	4,029	2,660	6,291	12,980	-0.9%
2014	2,840	1,905	2,559	7,304	1.7%	3,845	2,749	6,378	12,972	-0.1%
2015	2,823	1,608	2,478	6,909	-5.4%	3,843	2,646	6,606	13,095	0.9%
2016	2,793	1,658	2,561	7,012	1.5%	3,875	2,754	6,215	12,844	-1.9%
2017	2,495	1,682	2,592	6,769	-3.5%	4,147	2,662	5,878	12,687	-1.2%
2018	2,440	1,561	2,528	6,529	-3.5%	4,058	2,716	6,211	12,985	2.3%
2019	2,602	1,575	2,387	6,564	0.5%	3,922	2,363	6,167	12,452	-4.1%
5-Year Annual Avg. Change (2015-2019)					-1.2%					-1.2%
5-Year Change					-5.0%					-4.9%
10-Year Annual Avg. Change (2010-2019)					-1.4%					-0.3%
10-Year Change Rate					-12.3%					-2.8%

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

HOUSEHOLDS

From 2010 to 2019, the number of households has increased 13.1% between 2010 to 2019 due to the number of construction projects that included a residential component. Downtown experienced a large 13.1% growth rate in the number of households, while Parkville, Upper Albany, and the Wethersfield Avenue Corridor experienced more a more moderate (or negative) growth rate of -2.5%, +8.0% and +2.8%, respectively.

Table 16: Number of Household Change from 2010 to 2019 by Sub-Area

Year	Downtown					Parkville				
	Census Tract 5021	Census Tract 5003	Census Tract 5005	Total	Change %	Census Tract 5029	Census Tract 5041	Census Tract 5043	Total	Change %
2010	915	967	835	2,717		1,194	719	1,091	3,004	
2011	1,065	935	827	2,827	**4.0%**	1,330	671	1,058	3,059	**1.8%**
2012	1,167	909	797	2,873	**1.6%**	1,286	634	1,066	2,986	**-2.4%**
2013	1,205	912	766	2,883	**0.3%**	1,278	665	1,061	3,004	**0.6%**
2014	1,254	855	795	2,904	**0.7%**	1,346	614	1,077	3,037	**1.1%**
2015	1,387	923	751	3,061	**5.4%**	1,374	604	1,029	3,007	**-1.0%**
2016	1,429	980	744	3,153	**3.0%**	1,273	579	1,073	2,925	**-2.7%**
2017	1,519	963	760	3,242	**2.8%**	1,238	612	1,068	2,918	**-0.2%**
2018	1,577	1,008	797	3,382	**4.3%**	1,199	606	1,064	2,869	**-1.7%**
2019	1,625	1,049	789	3,463	**2.4%**	1,236	607	1,089	2,932	**2.2%**
5-Year Annual Avg. Change (2015-2019)					**2.7%**					**-0.3%**
5-Year Change					**27.5%**					**-2.4%**
10-Year Annual Avg. Change (2010-2019)					**3.1%**					**-0.6%**
10-Year Change Rate					**13.1%**					**-2.5%**

Year	Upper Albany					Wethersfield				
	Census Tract 5014	Census Tract 5035	Census Tract 5037	Total	Change %	Census Tract 5001	Census Tract 5002	Census Tract 5024	Total	Change %
2010	1,041	535	1,053	2,629		1,418	668	2,119	4,205	
2011	1,011	517	1,010	2,538	**-3.5%**	1,436	762	2,141	4,339	**3.2%**
2012	1,001	498	920	2,419	**-4.7%**	1,451	781	2,183	4,415	**1.8%**
2013	1,059	512	906	2,477	**2.4%**	1,392	804	2,187	4,383	**-0.7%**
2014	1,017	525	903	2,445	**-1.3%**	1,322	869	2,204	4,395	**0.3%**
2015	1,022	469	901	2,392	**-2.2%**	1,299	838	2,184	4,321	**-1.7%**
2016	1,059	508	920	2,487	**4.0%**	1,364	806	2,195	4,365	**1.0%**
2017	979	563	929	2,471	**-0.6%**	1,405	812	2,073	4,290	**-1.7%**
2018	1,016	551	918	2,485	**0.6%**	1,422	832	2,156	4,410	**2.8%**
2019	1,050	595	938	2,583	**3.9%**	1,435	795	2,213	4,443	**0.7%**
5-Year Annual Avg. Change (2015-2019)					**-0.2%**					**0.6%**
5-Year Change					**-1.7%**					**5.7%**
10-Year Annual Avg. Change (2010-2019)					**2.0%**					**0.7%**
10-Year Change Rate					**8.0%**					**2.8%**

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

VEHICLE OWNERSHIP

From 2010 to 2019, all four (4) districts experienced positive growth in vehicle ownership. Downtown Hartford had the largest increase at 41.7%, Upper Albany at 24.7% increase, Parkville at 22.8%, and the Wethersfield Avenue Corridor at 3.2%.

Table 17: Vehicle Ownership Change from 2010 to 2019 by Sub-Area

Year	Downtown					Parkville				
	Census Tract 5021	Census Tract 5003	Census Tract 5005	Total	Change %	Census Tract 5029	Census Tract 5041	Census Tract 5043	Total	Change %
2010	1,107	520	462	2,089		1,068	762	893	2,723	
2011	1,263	421	494	2,178	**4.3%**	1,104	581	874	2,559	**-6.0%**
2012	1,340	472	424	2,236	**2.7%**	1,098	554	867	2,519	**-1.6%**
2013	1,331	441	410	2,182	**-2.4%**	1,064	503	885	2,452	**-2.7%**
2014	1,267	436	477	2,180	**-0.1%**	1,218	379	982	2,579	**5.2%**
2015	1,438	541	504	2,483	**13.9%**	1,341	387	1,005	2,733	**6.0%**
2016	1,452	598	533	2,583	**4.0%**	1,246	400	1,027	2,673	**-2.2%**
2017	1,551	549	543	2,643	**2.3%**	1,240	454	1,098	2,792	**4.5%**
2018	1,719	616	493	2,828	**7.0%**	1,316	450	1,176	2,942	**5.4%**
2019	1,742	659	560	2,961	**4.7%**	1,574	577	1,193	3,344	**13.7%**
5-Year Annual Avg. Change (2015-2019)					**4.5%**					**5.3%**
5-Year Change					**19.3%**					**22.4%**
10-Year Annual Avg. Change (2010-2019)					**4.0%**					**2.5%**
10-Year Change Rate					**41.7%**					**22.8%**

Year	Upper Albany					Wethersfield				
	Census Tract 5014	Census Tract 5035	Census Tract 5037	Total	Change %	Census Tract 5001	Census Tract 5002	Census Tract 5024	Total	Change %
2010	645	290	1,067	2,002		1,235	572	2,215	4,022	
2011	585	240	942	1,767	**-11.7%**	1,270	508	2,121	3,899	**-3.1%**
2012	469	142	890	1,501	**-15.1%**	1,299	601	2,280	4,180	**7.2%**
2013	576	209	892	1,677	**11.7%**	1,231	579	2,212	4,022	**-3.8%**
2014	619	289	840	1,748	**4.2%**	1,033	629	2,210	3,872	**-3.7%**
2015	595	378	887	1,860	**6.4%**	989	674	1,954	3,617	**-6.6%**
2016	681	510	913	2,104	**13.1%**	1,180	833	1,962	3,975	**9.9%**
2017	737	536	893	2,166	**2.9%**	1,205	736	1,806	3,747	**-5.7%**
2018	603	564	945	2,112	**-2.5%**	1,272	869	1,961	4,102	**9.5%**
2019	770	663	1,063	2,496	**18.2%**	1,301	783	2,066	4,150	**1.2%**
5-Year Annual Avg. Change (2015-2019)					**7.9%**					**3.7%**
5-Year Change					**34.2%**					**14.7%**
10-Year Annual Avg. Change (2010-2019)					**3.0%**					**0.5%**
10-Year Change Rate					**24.7%**					**3.2%**

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

VEHICLE OWNERSHIP PER HOUSEHOLD

Given that in most districts the number of households did not change significantly from 2010 to 2019, and all four (4) districts had an increase in vehicle ownership during the same period of time, vehicle ownership per household in the area is generally rising. Upper Albany has the largest increase of 26.9% and Parkville follows at 25.8%. There are 11.6% increase and 2.3% decrease observed in Downtown Hartford and the Wethersfield Avenue Corridor.

Table 18: Vehicle Ownership per Household Change from 2010 to 2019 by Sub-Area

Year	Downtown					Parkville				
	Census Tract 5021	Census Tract 5003	Census Tract 5005	No. of Vehicles per Household	Change %	Census Tract 5029	Census Tract 5041	Census Tract 5043	No. of Vehicles per Household	Change %
2010	1.21	0.54	0.55	0.77		0.89	1.06	0.82	0.91	
2011	1.19	0.45	0.60	0.77	**0.2%**	0.83	0.87	0.83	0.84	**-7.7%**
2012	1.15	0.52	0.53	0.78	**1.0%**	0.85	0.87	0.81	0.84	**0.8%**
2013	1.10	0.48	0.54	0.76	**-2.8%**	0.83	0.76	0.83	0.82	**-3.2%**
2014	1.01	0.51	0.60	0.75	**-0.8%**	0.90	0.62	0.91	0.85	**4.0%**
2015	1.04	0.59	0.67	0.81	**8.1%**	0.98	0.64	0.98	0.91	**7.0%**
2016	1.02	0.61	0.72	0.82	**1.0%**	0.98	0.69	0.96	0.91	**0.5%**
2017	1.02	0.57	0.71	0.82	**-0.5%**	1.00	0.74	1.03	0.96	**4.7%**
2018	1.09	0.61	0.62	0.84	**2.6%**	1.10	0.74	1.11	1.03	**7.2%**
2019	1.07	0.63	0.71	0.86	**2.3%**	1.27	0.95	1.10	1.14	**11.2%**
5-Year Annual Avg. Change (2015-2019)					**1.3%**					**5.9%**
5-Year Change					**5.4%**					**25.5%**
10-Year Annual Avg. Change (2010-2019)					**1.2%**					**2.7%**
10-Year Change Rate					**11.2%**					**25.8%**

Year	Upper Albany					Wethersfield				
	Census Tract 5014	Census Tract 5035	Census Tract 5037	No. of Vehicles per Household	Change %	Census Tract 5001	Census Tract 5002	Census Tract 5024	No. of Vehicles per Household	Change %
2010	0.62	0.54	1.01	0.76		0.87	0.86	1.05	0.96	
2011	0.58	0.46	0.93	0.70	**-8.6%**	0.88	0.67	0.99	0.90	**-6.1%**
2012	0.47	0.29	0.97	0.62	**-10.9%**	0.90	0.77	1.04	0.95	**5.4%**
2013	0.54	0.41	0.98	0.68	**9.1%**	0.88	0.72	1.01	0.92	**-3.1%**
2014	0.61	0.55	0.93	0.71	**5.6%**	0.78	0.72	1.00	0.88	**-4.0%**
2015	0.58	0.81	0.98	0.78	**8.8%**	0.76	0.80	0.89	0.84	**-5.0%**
2016	0.64	1.00	0.99	0.85	**8.8%**	0.87	1.03	0.89	0.91	**8.8%**
2017	0.75	0.95	0.96	0.88	**3.6%**	0.86	0.91	0.87	0.87	**-4.1%**
2018	0.59	1.02	1.03	0.85	**-3.0%**	0.89	1.04	0.91	0.93	**6.5%**
2019	0.73	1.11	1.13	0.97	**13.7%**	0.91	0.98	0.93	0.93	**0.4%**
5-Year Annual Avg. Change (2015-2019)					**5.8%**					**2.9%**
5-Year Change					**24.3%**					**11.6%**
10-Year Annual Avg. Change (2010-2019)					**3.0%**					**-0.1%**
10-Year Change Rate					**26.9%**					**-2.3%**

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

MEDIAN HOUSEHOLD INCOME

From 2010 to 2019, all four (4) districts had a positive growth in median household income. Downtown Hartford had the largest increase in median household income at 44.8%, and Parkville follows at 39.8% increase. Upper Albany had a 13.8% change in median household income and Wethersfield Avenue Corridor's change is 1.5%. In the past five (5) years (2015-2019), Parkville had the most significant median household income annual increase percentage (11.1%) among these four (4) districts, while Downtown's increase rate was 4.4% per year from 2010 to 2019.

Table 19: Median Household Income Change from 2010 to 2019 by Sub-Area

Year	Downtown					Parkville				
	Census Tract 5021	Census Tract 5003	Census Tract 5005	Median Household Income	Change %	Census Tract 5029	Census Tract 5041	Census Tract 5043	Median Household Income	Change %
2010	78,380	20,438	17,083	38,920		29,130	24,858	21,929	25,492	
2011	74,886	15,188	16,510	38,064	-2.2%	24,545	26,941	23,433	24,686	-3.2%
2012	80,990	19,813	20,089	44,739	17.5%	25,733	43,750*	24,083	24,985	1.2%
2013	74,837	19,567	25,345	44,203	-1.2%	22,467	28,341	20,164	22,954	-8.1%
2014	82,663	20,426	21,696	47,649	7.8%	24,268	22,885	21,517	23,013	0.3%
2015	70,202	21,498	38,641	47,773	0.3%	24,663	24,327	21,574	23,538	2.3%
2016	79,712	22,943	42,381	53,259	11.5%	26,250	24,402	21,240	24,046	2.2%
2017	73,147	23,368	41,218	50,876	-4.5%	32,273	25,857	21,250	26,893	11.8%
2018	78,371	23,633	40,337	53,093	4.4%	36,597	27,353	25,526	30,539	13.6%
2019	82,355	24,325	45,481	56,375	6.2%	43,600	36,743	25,958	35,628	16.7%
5-Year Annual Avg. Change (2015-2019)					4.4%					11.1%
5-Year Change					18.0%					51.4%
10-Year Annual Avg. Change (2010-2019)					4.4%					4.1%
10-Year Change Rate					44.8%					39.8%

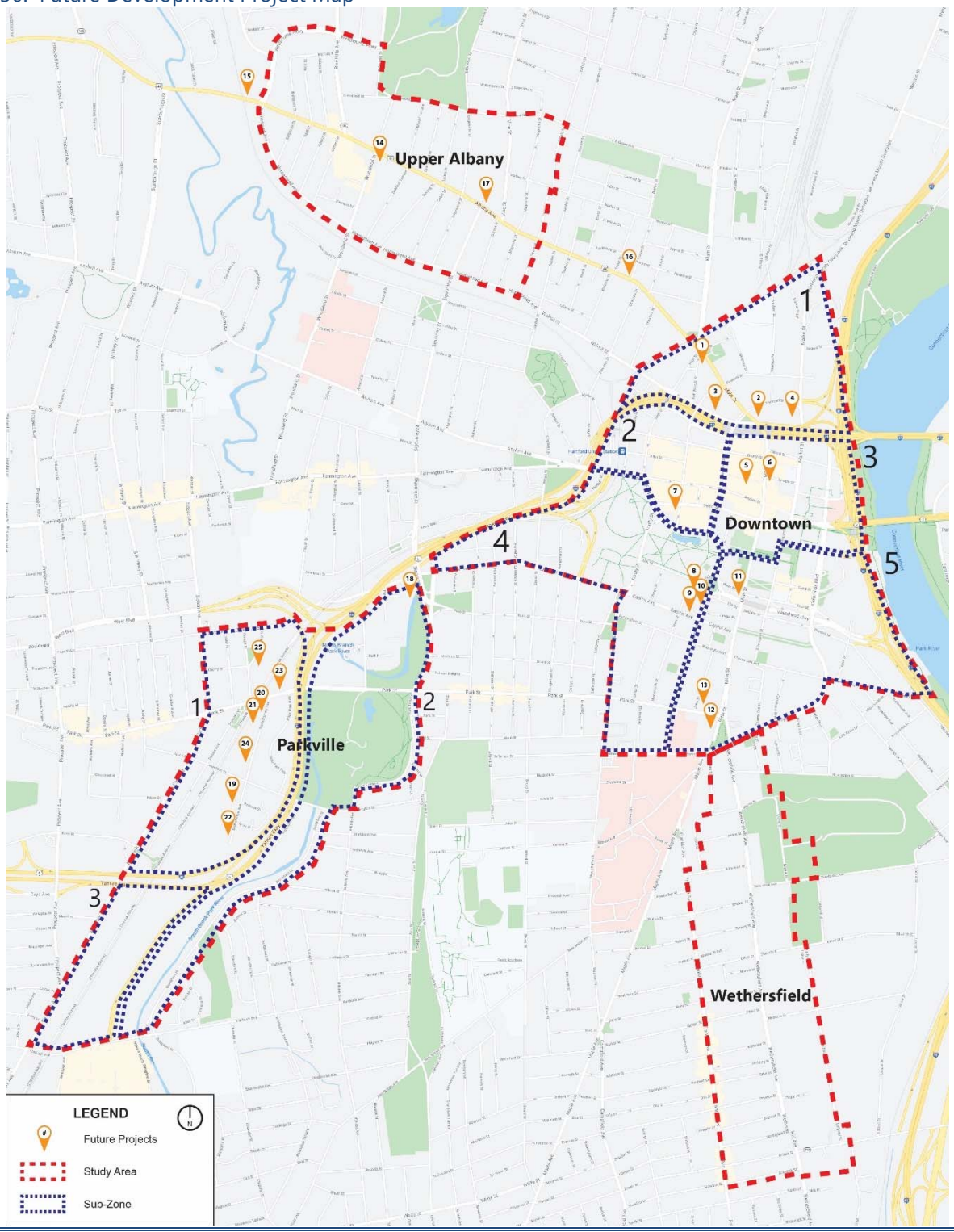
Year	Upper Albany					Wethersfield				
	Census Tract 5014	Census Tract 5035	Census Tract 5037	Median Household Income	Change %	Census Tract 5001	Census Tract 5002	Census Tract 5024	Median Household Income	Change %
2010	19,063	20,938	38,917	27,397		20,487	28,750	34,299	28,760	
2011	18,266	21,308	35,769	25,851	-5.6%	23,889	28,684	31,788	28,629	-0.5%
2012	16,114	20,071	31,635	22,832	-11.7%	22,166	29,609	32,245	28,466	-0.6%
2013	15,032	21,802	35,833	24,040	5.3%	22,055	30,395	30,700	27,898	-2.0%
2014	20,181	22,708	35,037	26,210	9.0%	22,593	28,867	29,633	27,364	-1.9%
2015	19,077	32,375	35,625	27,918	6.5%	25,302	27,870	30,664	28,510	4.2%
2016	18,328	35,326	36,694	28,594	2.4%	28,529	26,827	32,083	30,002	5.2%
2017	21,128	30,208	39,276	30,020	5.0%	28,616	23,750	32,771	29,703	-1.0%
2018	20,046	33,641	42,778	31,458	4.8%	30,184	25,455	31,250	29,813	0.4%
2019	23,500	35,030	37,353	31,187	-0.9%	28,438	24,943	31,179	29,178	-2.1%
5-Year Annual Avg. Change (2015-2019)					2.8%					0.6%
5-Year Change					11.7%					2.3%
10-Year Annual Avg. Change (2010-2019)					1.6%					0.2%
10-Year Change Rate					13.8%					1.5%

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

Future Development

Below is a map depicting the 25 projects that are slated within the next ten (10) years.

Figure 30: Future Development Project Map



Source: Google Maps, THA Consulting, Inc, 2022

Table 20: Future Development Project Details

No.	Project Name	Location	Start Date	End Date	Resd. Unit	Retail SF	Rest. SF	Office SF	Mfv. SF	Entmt. Art SF	Development Site	Parking Spaces Displaced	Parking Spaces Added
Downtown													
	Downtown Sub-Zone 1												
1	Arrowhead Redevelopment	1355 Main Street	2022	2024	23	0	3,000	0	0	0	vacant 4-story bldg./grass	0	0
2	DONO / North Crossings (Phase 1)	1212 Main Street	2020	Summer 2022	270	5,500	5,500	0	0	0	Downtown Lot 6	(318)	300
3	DONO / North Crossings (Phase 2)	58 Chapel Street	Spring 2022	2024	532	0	0	0	0	0	Downtown Lot 5	(600)	541
4	The Millenium	50 Morgan Street	2021	2023	64	5,000	0	2,500	0	0	Residential building/garage	0	0
	Downtown Sub-Zone 3												
5	Pratt Street Redevelop Plan	196 Trumbull Street 55,63,69,73,99 Pratt Street	Spring 2022	2026	375	15,000	25,000	10,000	0	0	Renovation and reuse of 6 adjacent properties	0	0
6	Sage Allen Apartments	21 Temple Street	2024	2027	40	0	0	0	0	0	Redevelopment of 43 student housing units	0	0
	Downtown Sub-Zone 2												
7	Former Fire Headquarters (City)	275 Pearl Street	2022	2024	30	0	4,000	0	0	0	Former Fire house & offices 35,770 sq ft building	0	0
	Downtown Sub-Zone 4												
8	Bushnell South Redevelopment	65 Elm Street	2023	2025	80	0	0	0	0	0	Downtown Lot 50	(80)	0
9	Bushnell South Redevelopment	100 Capital Ave	2024	2026	80	0	0	0	0	0	Downtown Lot 50	(144)	0
10	Bushnell South Redevelopment	55 Elm Street	Spring 2022	Spring 2024	164	0	14,700	1,700	0	0	Downtown Lot 50	0	0
	Downtown Sub-Zone 5												
11	Corner Stone Building (City)	525 Main Street	Winter 2022	2023	51	1,500	5,100	0	0	0	Downtown Lot 105 and bldg.	(35)	0
12	Park & Main (Phase 1)	87 Main Street	2019	Summer 2021	39	3,200	5,675	0	0	0	Grass	0	35
13	Park & Main (Phase 2)	20 Park Street	2020	Fall 2021	87	4,500	11,675	0	0	0	Vacant lot	0	91
Upper Albany													
14	Albany-Woodland Redevelopment	1161 Albany Ave	2022	2024	50	5,500	14,000	4,000	0	0	Grass vacant lot	0	122
15	Village at Park River (Westbrook Village)	1550 Albany Ave	2020	2024	410	30,000	30,000	20,000	0	0	Public Housing / Mixed use	0	299
16	270 Albany Ave	270 Albany Ave	2023	2025	12	1,000	2,500	0	0	0	Adaptive Reuse	0	29
17	614 Albany Ave	614 Albany Ave	2022	2023	0	0	0	0	0	0	Convert to Public Parking	0	30
Parkville													
	Parkville Sub-Zone 2												
18	Spartan Towers Renovation	25 Sigourney Street	2022	2026	0	0	0	450,000	0	0	Office Tower w/garage parking	0	175
	Parkville Sub-Zone 1												
19	Parkville Apartment Adaptive Reuse	237 Hamilton Street	2023	2025	189	0	0	0	0	0	Parkville Lot 18	(100)	200
20	17-35 Bartholomew	17 Bartholomew Ave	2023	2025	68	0	15,500	0	0	0	Parkville Lot 14/Residential bldg.	(75)	352
21	Spaghetti Warehouse	45 Bartholomew Ave	2023	2025	0	0	0	22,500	0	0	Parkville Lot 15	0	0
22	Mill Building Adaptive Reuse	169 Bartholomew Ave	2023	2025	0	0	0	23,400	70,030	0	Old Mill Building	0	0
23-A	Parkville Market Phase 1	1400 Park Street	2019	2022	0	27,000	12,000	16,000	0	0	Old building	0	30
23-B	Parkville Market Phase 2	1390 Park Street	2022	2024	0	25,000	0	0	0	0	Old building	0	0
24	Advanced Manufacturing Facility	81 Bartholomew Ave	2023	2025	0	0	0	15,000	134,772	0	Old building	0	0
25	Real Art Ways	56 Arbor St	2022	2024	0	0	0	36,250	0	108,750	Old factory building	0	0
		Total			**2,564**	**123,200**	**148,650**	**601,350**	**204,802**	**108,750**		**(1,352)**	**2,204**

Source: Hartford Department of Development Services, THA Consulting, Inc, 2022

DOWNTOWN DEVELOPMENT

Figure 31: Downtown Future Development Projects Location Map

Source: Google Maps, THA Consulting, Inc, 2022

Table 21: Future Development Projects in Downtown

No.	Project Name	Location	Start Date	End Date	Resd. Unit	Retail SF	Rest. SF	Office SF
Downtown Sub-Zone 1								
1	Arrowhead Redevelopment	1355 Main Street	2022	2024	23	0	3,000	0
2	DONO / North Crossings (Phase 1)	1212 Main Street	2020	Summer 2022	270	5,500	5,500	0
3	DONO / North Crossings (Phase 2)	58 Chapel Street	Spring 2022	2024	532	0	0	0
4	The Millenium	50 Morgan Street	2021	2023	64	5,000	0	2,500
Downtown Sub-Zone 3								
5	Pratt Street Redevelop Plan	196 Trumbull Street 55,63,69,73,99 Pratt Street	Spring 2022	2026	375	15,000	25,000	10,000
6	Sage Allen Apartments	21 Temple Street	2024	2027	40	0	0	0
Downtown Sub-Zone 2								
7	Former Fire Headquarters (City)	275 Pearl Street	2022	2024	30	0	4,000	0
Downtown Sub-Zone 4								
8	Bushnell South Redevelopment	65 Elm Street	2023	2025	80	0	0	0
9	Bushnell South Redevelopment	100 Capital Ave	2024	2026	80	0	0	0
10	Bushnell South Redevelopment	55 Elm Street	Spring 2022	Spring 2024	164	0	14,700	1,700
Downtown Sub-Zone 5								
11	Corner Stone Building (City)	525 Main Street	Winter 2022	2023	51	1,500	5,100	0
12	Park & Main (Phase 1)	87 Main Street	2019	Summer 2021	39	3,200	5,675	0
13	Park & Main (Phase 2)	20 Park Street	2020	Fall 2021	87	4,500	11,675	0
Total					**1,835**	**34,700**	**74,650**	**14,200**

Source: Hartford Department of Development Services, THA Consulting, Inc, 2022

Project 1: Arrowhead Redevelopment

Arrowhead Redevelopment is located on 1355 Main Street, at the corner of Main and Ann Uccello streets. This historic site has been staying vacant for a long period of time, and it is owned by the City.[3] The vision for redevelopment includes apartments over retail space, which includes 23 residential units and 3,000 SF retail. The Arrowhead redevelopment project is anticipated to start in 2022 and be completed in 2024. We understand this development will not displace any existing parking spaces and does not include any new parking spaces.

Arrowhead Redevelopment Site

Existing Arrowhead Café Building

[3] Hartford Courant - City of Hartford seeks developer for city-owned properties near Arrowhead Cafe building: https://www.courant.com/business/hc-biz-hartford-arrowhead-block-developer-study-20210115-zq4f3gdbunbq3liilvlz4m3zui-story.html

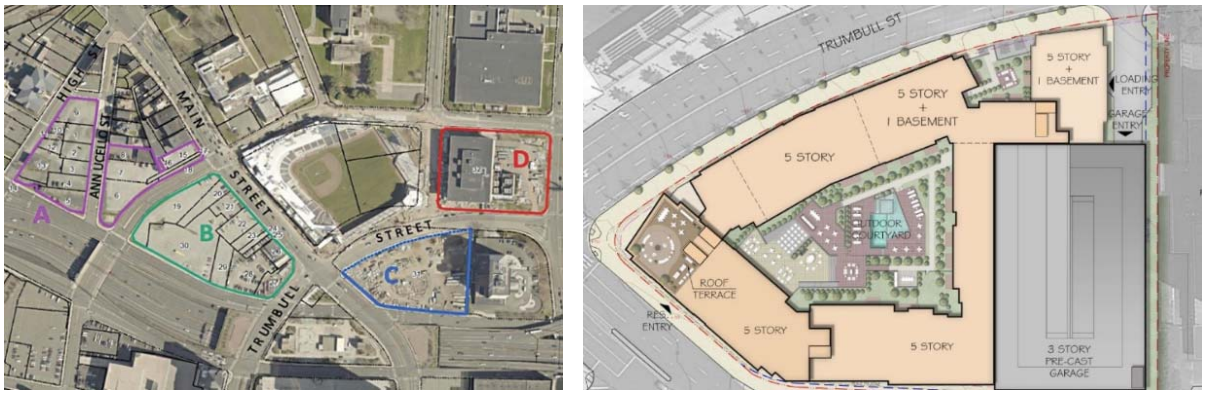
Project 2: DONO / North Crossing (Phase 1)

North Crossing includes two phases, Phase 1 is located at 1212 Main Street, and Phase 2 is located at 58 Chapel Street. This project will be one of Hartford's largest redevelopment projects in decades, which includes apartments, parking garages, retail and entertainment space. The project will be developed by Stamford-based company, RMS Cos., and they view the project as being the connector for the historic center of the downtown and the north side of the city, crossing over Interstate 84.[4] North Crossing Phase 1 includes 270 mixed-income studio, one- and two-bedroom apartments. 11,000 square feet of restaurant, shop, and entertainment venue space.

North Crossing Project Renderings

Project 3: North Crossing (Phase 2)

The North Crossing Phase 2 includes 532 residential rental units and a 541-space parking garage. The North Crossing Phase 2 is anticipated to start in the Spring of 2022 and be completed in 2024. We understand this development will displace 600 public parking spaces that are owned by the Hartford Parking Authority. In addition, the development includes 541 new parking spaces resulting in a net loss of 59 parking spaces.



North Crossing Project Location by Phase

[4] Hartford Courant - Hartford's Downtown North development has a new name: https://www.courant.com/business/hc-biz-hartford-downtown-north-new-name-20210322-qcqxxr75ubg4hjjal6cqrrddfm-story.html

Project 4: The Millennium

The Millennium is located at 50 Morgan Street, a 425-space parking garage is adjacent to the property and provides parking to both on-site residents and public. Pre-COVID, the garage's occupancy level was approximately 53%, which left approximately 200 available spaces.

Shelbourne Global Solutions, LLC has partnered with Axela Group to purchase the former Radisson/Red Lion hotel. They plan to fully convert the 18-story building into studio, one and two-bedroom market-rate apartments and rebranding the property as The Millennium Apartments. The top eight (8) floors (96 rooms) were renovated by the previous owner and are currently occupied. Work on the eight (8) lower floors (64 units) and building amenities will begin in 2022.[5]

Existing Millennium Residential Building

Project 5: Pratt Street Redevelop Plan

The Pratt Street Redevelop Plan contains multiple sites: 196 Trumbull Street, and 55,63,69,73,99 Pratt Street. The project includes 375 residential units, approximately 25,000 SF retail, 15,000 SF restaurant and 10,000 SF office.

Construction will begin in spring 2022 on the conversion of 99 Pratt St. into 97 studio and one-bedroom apartments, with pre-leasing starting in six to seven months.[6]

Pratt Street Revitalization Rendering

[5] Shelbourne Global Solutions, LLC partners with Axela Group to close on 50 Morgan St.: https://nerej.com/shelbourne-partners-with-axela-to-close-on-50-morgan-st-for-22m

[6] Hartford's Pratt Street aims for 'vintage hipster' vibe with new programs planned: https://www.courant.com/community/hartford/hc-news-hartford-pratt-street-redevelopment-20210412-ppn32je4i5birpdt2q2pnxooiq-story.html

Project 6: Sage Allen Apartments

The Sage Allen Apartments project is located on 21 Temple Street. This building was once a fashionable, world-class department store, originally built in 1898 with its notable street clock on the corner. The Sage Allen Apartments currently contains 43 student housing units, Shelbourne and LAZ will renovate this building's existing units to create 83 micro units.

Sage Allen Apartments

Project 7: Former Fire Headquarters (City)

The Hartford former Fire Station is located on 275 Pearl Street, which is a three-story brick building, built in 1918, expanded to its current footprint in 1926 and needs extensive repair. Between 2016 to 2020, about $40,000 has been spent on repairs and maintenance at the former fire station, according to city officials.[7]

Existing Fire Headquarter Building

[7] Hartford to close historic downtown firehouse after near-century run: https://www.courant.com/community/hartford/hc-news-hartford-fire-house-closing-20200106-yaoeifqslfbdfgau4djp5ruyuy-story.html

Project 8: Bushnell South Redevelopment – 65 Elm Street

The Bushnell Park South project includes Elm, Clinton, West, Washington, Hudson, and Buckingham Streets and Capitol Avenue, which are within a couple of blocks of Main Street and abut Bushnell Park. Redevelopment of this area will form a connection with downtown and repurpose under-utilized real estate.[8] The development will be mixed-use retail and commercial, apartment rental and new home ownership.

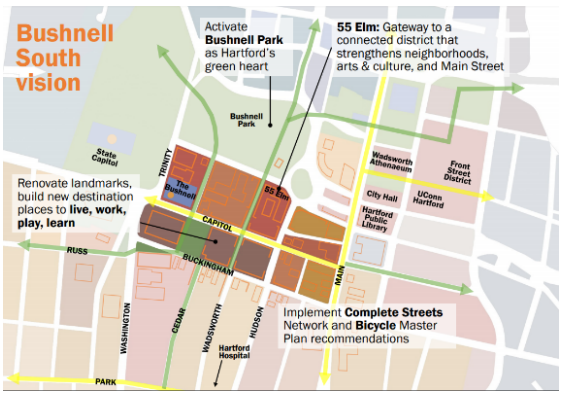
The demolition of a state health department laboratory and major renovations to the State Office Building opened a window of opportunity to transform an area of the city that is currently filled with a number of parking lots into housing and significant economic development. CRDA is partnering with the city, the neighborhood, and the Bushnell Center for Performing Arts for its revitalization.

The Bushnell South Planning Consortium is developing a comprehensive master plan and real estate development framework to provide a guide for future development of properties and parking lots surrounding the Bushnell Center for the Performing Arts. The plan is to transform high-opportunity, empty blocks into a new, mixed-use, mid-rise neighborhood and arts and entertainment district, linking Main Street to the Capitol Avenue, and Park Street to Bushnell Park.[9]

The Bushnell South Development project includes the following components:[10]

- Approximately 1,200 households, 1,800+ residents
- Over 63,000 SF Retail, cultural, and commercial space
- New public gathering places
- Over one mile of updated pedestrian-friendly walks and streets
- Approximately $400+ million development construction value
- Approximately $100+ million public investment
    - Streetscape, public green space, district parking
    - Development subsidy

In the next five (5) years, 55, 65 Elm Street and 100 Capital Avenue will be developed, which includes 324 residential units, approximately 14,700 SF retail and 1,700 SF office. 65 Elm Street project is part of the 55 Elm St project, which will include 80 residential units.



Bushnell South Vision *Bushnell South Redevelopment Projects Rendering*

[8] CRDA - Bushnell Park South: https://crdact.net/project/neighborhoods/bushnell-park-south/
[9] Bushnell South Neighborhood Development: https://bushnell.org/about/bushnell-south-neighborhood-development
[10] Bushnell South Master Plan: https://bushnell.org/TheBushnell/media/Bushnell-Media/Development/GC_Bushnell_PublicPresentation_210623.pdf

Project 9: Bushnell South Redevelopment – 100 Capital Ave

100 Capital Avenue project is part of the 55 Elm St project, which will include 80 residential units.

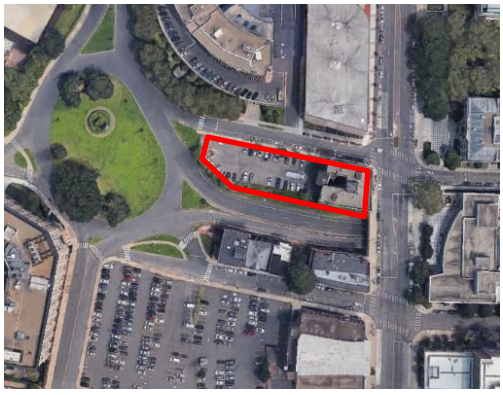
West Street Vision

Project 10: Bushnell South Redevelopment – 55 Elm Street

The 55 Elm Street project is the gateway to a connected district that strengthens neighborhoods, arts and culture, and Main Street and includes 164 apartments, with the possibility that up to 70 units would be built so that they could be used as hotel rooms. The apartments at 55 Elm will be mixed-income, with 80% market rate and 20% affordable to low- and moderate-income tenants.

Project 11: Cornerstone Building

The Cornerstone building is located on 525 Main Street, which is a 33,000 SF office building built in 1926 and owned by the City. The building also includes 35 parking spaces to the rear along Wells Street.[11] The building will be converted to a residential building with 51 units.



Cornerstone Building Site

Existing Cornerstone Building

[11] City of Hartford seeks proposals for downtown building on Main Street: https://www.courant.com/business/hc-biz-downtown-hartford-block-for-sale-20191029-jahcac4zezdl5pyswkubfhrszi-story.html

Project 13: Park & Main (Phase 1)

The Park & Main project is located on Park Street and Main Street. It is a mixed-use project with 126 residential units with 20% affordable units (25 units), and 25,050 SF of commercial. Phase 1 is located at 87 Main Street and contains 39 units and 8,875 SF commercial.

Park & Main Mixed-Use Project Renderings

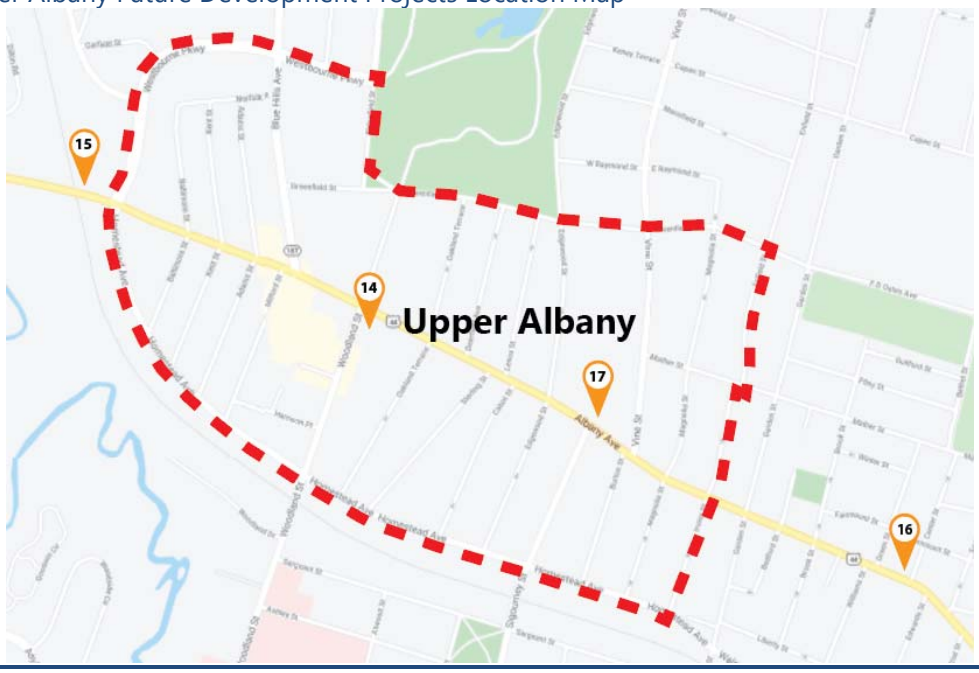
Project 12: Park & Main (Phase 2)

Phase 2 is located at 20 Park Street and contains 87 units and 16,175 SF commercial. Both phases will be finished in Fall 2021.

Park & Main Mixed-Use Project Location

UPPER ALBANY DEVELOPMENT

Figure 32: Upper Albany Future Development Projects Location Map



Source: Google Maps, THA Consulting, Inc, 2022

Albany Ave Street Improvement

Table 22: Future Development Projects in Upper Albany

No.	Project Name	Location	Start Date	End Date	Resd. Unit	Retail SF	Rest. SF	Office SF
14	Albany-Woodland Redevelopment	1161 Albany Ave	2022	2024	50	5,500	14,000	4,000
15	Village at Park River (Westbrook Village)	1550 Albany Ave	2020	2024	410	30,000	30,000	20,000
16	270 Albany Ave	270 Albany Ave	2023	2025	12	1,000	2,500	0
17	614 Albany Ave	614 Albany Ave	2022	2023	0	0	0	0
Total					**472**	**36,500**	**46,500**	**24,000**

Source: Hartford Department of Development Services, THA Consulting, Inc, 2022

Project 14: Albany-Woodland Redevelopment

The 1161 Albany Ave redevelopment project is part of the Upper Albany Master Plan[12]. The mixed-use redevelopment project includes 50 residential units, approximately 14,000 SF retail, 5,500 SF restaurant and 4,000 SF office with 122 on-site parking spaces.

Albany-Woodland Redevelopment Project Rendering

Project 15: Village at Park River (Westbrook Village)

Village at Park River is a transformative redevelopment of Westbrook Village, a 40-acre former public housing site, into a brand-new mixed-use community tailored to meet the diverse needs of the Upper Albany Neighborhood and contribute to its re-establishment as a premier gateway into the City of Hartford.

The first and second phase of Village at Park River are completed and occupied, and they are now leasing phase III. This project totals six phases when complete, which will consist of over 410 units of mixed-income townhouse-style homes, approximately 80,000 SF of new office and retail space, bike paths, community gardens and playgrounds, a community building with fitness center and a meeting space, and a central park.

Village at Park River Townhouses

[12] Kenneth Boroson Architects Upper Albany Master Plan: https://www.kbarch.com/master-plan-upper-albany

Project 16: 270 Albany Ave

270 Albany Ave was a former brewery and tavern that was listed on Hartford's first Endangered Buildings List in 2015 and regrettably continues to languish on a major street. This vacant and blighted building is located on Albany Avenue. The City has prioritize offering this property for sale to a developer who will restore it back into a contributing resource in one of Hartford oldest historic neighborhoods.

Existing 270 Albany Ave Building

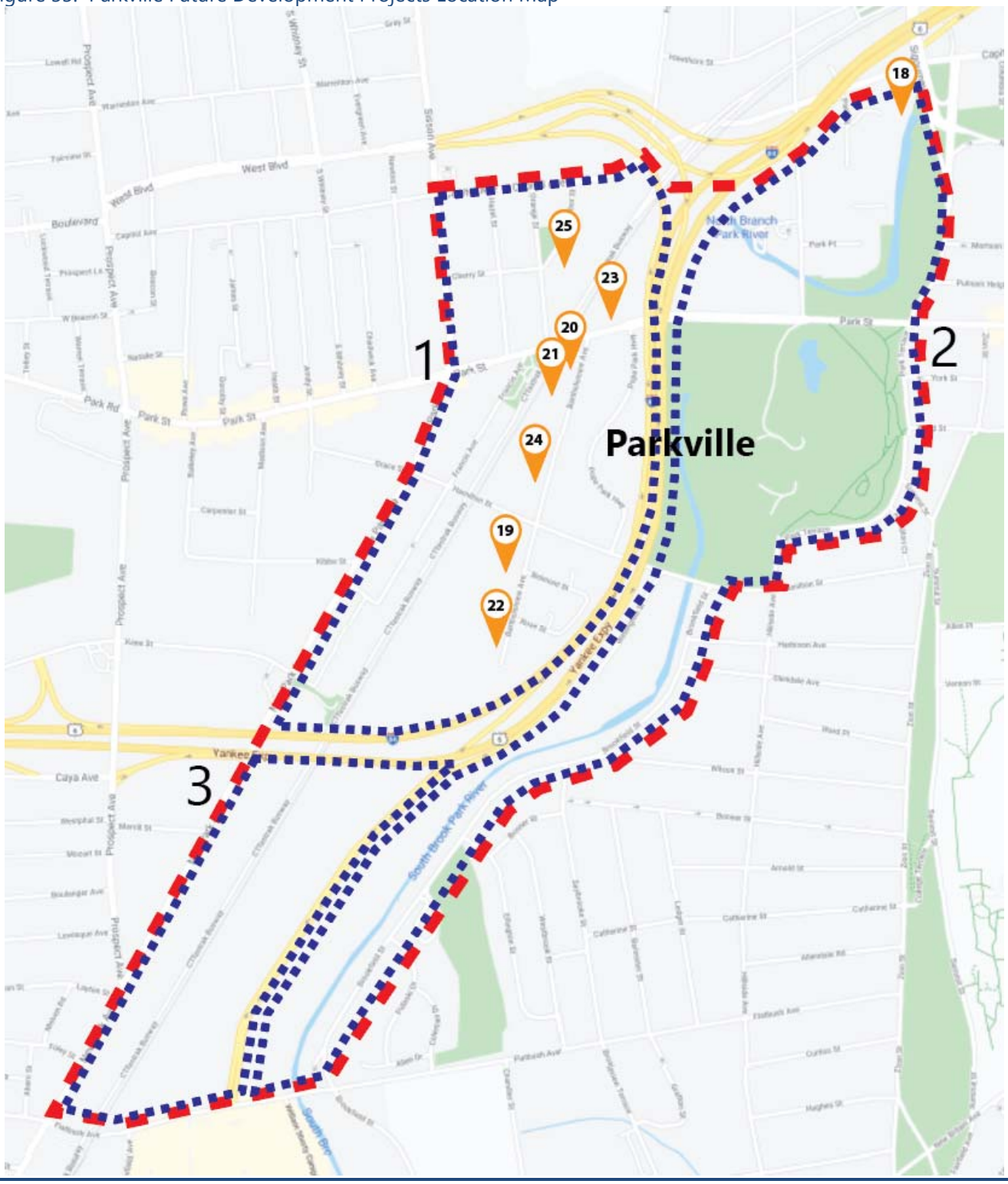
Project 17: 614 Albany Ave

The 614 Albany Ave site is owned by the City and contains a basketball court and two (2) vacant parking lots. The City would like to convert this site to a 30-space municipal parking lot to accommodate potential parking demand in the Upper Albany neighborhood.

Existing 614 Albany Ave Site

PARKVILLE DEVELOPMENT

Figure 33: Parkville Future Development Projects Location Map



Source: Google Maps, THA Consulting, Inc, 2022

Table 23: Future Development Projects in Parkville

No.	Project Name	Location	Start Date	End Date	Resd. Unit	Retail SF	Rest. SF	Office SF
Parkville Sub-Zone 2								
18	Spartan Towers Renovation	25 Sigourney Street	Fall 2021	Fall 2026	0	0	0	450,000
Parkville Sub-Zone 1								
19	Parkville Remote Business HUB Adaptive Reuse	237 Hamilton Street	2022	2024	189	0	10,000	15,000
20	17-35 Bartholomew	17 Bartholomew Ave	2022	2024	68	0	15,500	0
21	Spaghetti Warehouse	45 Bartholomew Ave	2023	2025	30	0	0	3,100
22	Mill Building Adaptive Reuse	169 Bartholomew Ave	2023	2025	129	0	0	3,800
23-A	Parkville Market Phase 1	1400 Park Street	2019	2022	0	4,420	11,880	3,800
23-B	Parkville Market Phase 2	1390 Park Street	2022	2023	0	25,000	7,000	3,500
24	Advanced Manufacturing Facility	81 Bartholomew Ave	2023	2025	0	0	0	15,000
25	Real Art Ways	56 Arbor St	2022	2024	0	0	0	36,250
Total					**416**	**29,420**	**44,380**	**530,450**

Source: Hartford Department of Development Services, THA Consulting, Inc, 2022

Project 18: Spartan Towers Renovation

The Spartan Tower is located on 25 Sigourney Street. The 467,000-square-foot building has been vacant since 2018. The developer sees the office tower as a gateway to a revival in the city's Parkville neighborhood and could become a hub for information technology and other companies that support the area's mainstay insurance, health care and aerospace companies[13].

Existing Spartan Towers Office Building

Project 19: Parkville Remote Business HUB Adaptive Reuse

The Parkville Remote Business HUB is located on 237 Hamilton Street. The proposed project and adaptive reuse of the former Whitney Manufacturing Company building will become the new hub of advanced manufacturing for the geographical region. The redevelopment of the factory space signals the start of a grander transformation of Hartford's Parkville Industrial Historic District. Sections of the building shall become representative of a larger vision and community atmosphere built around three core ideas: live, work, and play.

The proposed development plan consists of a ground floor space allocated for business, mercantile, and restaurant use, which includes approximately 10,000 SF retail and 15,000 SF office. Floors two through five will contain 189

[13] Under new owners, vacant state office building at 25 Sigourney St.: https://www.courant.com/business/hc-biz-25-sigourney-street-sale-20200224-dfu2opt7bndunbfygivuxlwqva-story.html

residential apartment units. Additionally, numerous residential amenities will be provided such as fitness and business centers, smaller event spaces, a large interior community room and outdoor roof terraces.[14] The project will displace approximately 100 spaces on-site parking and replicate on the replicated on the 175 Bartholomew Ave with 200 spaces.

Remote Business HUB Adaptive Reuse Rendering

Project 20: 17-35 Bartholomew

The mixed-use redevelopment project is located on17-35 Bartholomew Avenue, which includes 68 units high-end rental apartments, and 15,500 SF retail on the ground level. This is a Public-Private Partnership (P3) project, and a 352-space garage will be built on site adjacent to the mixed-use building. The site is adjacent to the CTfastrack Parkville Station, and the City anticipates of utilizing the property for Transit Oriented Development.

The property was subsequently sold to a business partnership and a private parking lot was constructed. Because of its location, this surface lot functions as a gateway to surrounding businesses and retail operations. Improvements to this lot, including adjustments to internal circulation and planted islands would further define this as a safe and inviting destination in support of the adjacent businesses. The reconfigured parking would also allow the establishment of 24 diagonal public on-street parking spaces. By offering immediate and accessible parking to patrons, a "downtown" feel is created along the initial entry point.[15]

Existing 17-35 Bartholomew Residential Building

[14] Crosskey Architects – 237 Hamilton St: https://crosskey.com/projects/historic-preservation/237-hamilton-street/
[15] Parkville Municipal Development Plan, dated May 26, 2009

Project 21: Spaghetti Warehouse

Spaghetti Warehouse is a 1900s boiler plant on Bartholomew Avenue in Parkville, and it will be redeveloped as a 30-unit affordable apartment building.

Project 22: Mill Building Adaptive Reuse

This project is an adaptive reuse of the existing mill building at 169 Bartholomew Avenue with 129 micro apartment units, and 3,800 SF of office.

Spaghetti Warehouse

Mill Building

Project 23: Parkville Market Phase 1 and 2

Parkville Market is the first food hall in Connecticut, which is housed in the former capitol city lumber co. and located in one of Hartford's most up-and-coming neighborhoods - Parkville. The project contains two (2) phases.

Parkville Market Phase 1 is located on 1400 Park Street. It is a mixed-use project with 4,420 SF of retail, 11,880 SF of restaurant and 3,800 SF of office. Phase 2 is located at 1390 Park Street and contains 25,000 SF of retail, 7,000 SF of restaurant, and 3,500 SF of office. Phase 1 will be finished in 2022, while Phase 2 will be finished in 2023.

Currently, Parkville Market Phase 1 contains 21 restaurants, 3 full-service bars, with weekly live music performances, trivia, comedy shows, wine tastings and other events.

Parkville Market

Project 24: 81 Bartholomew Ave

81 Bartholomew Ave is a two-story red-brick complex built by the Pope Tube Company in 1895. Currently, this site is slated to be an Advanced Manufacturing Center with 10% office space included.

Project 25: 56 Arbor St

The factory complex at 34-56 Arbor Street was four-story red-brick factory building with flat roof built in 1917 for the Underwood Computing Machine Company. Currently, the building has approximately 145,000 SF, and the anticipated use for 56 Arbor St will be a mix of artistic, entertainment and office uses.

81 Bartholomew Ave

56 Arbor St

FUTURE PARKING CONDITIONS

Using the parking inventory data collected, the pre-COVID and recovery demand data, growth rates derived from U.S. Census data, and the future development projects information outlined herein, we projected the future parking supply, demand, and adequacy over the next 10 years.

DOWNTOWN SUB-ZONE 1

Estimated Future Parking Inventory

To estimate the future parking adequacy, the first step is to determine the future parking inventory. We started with the inventory in 2019, just prior to the pandemic. Then, for each development project within the sub-zone, we subtracted any spaces displaced at the development project estimated start year and we added any spaces added at the development project estimated completion year. The following table outlines the future projected parking inventory for Downtown Sub-Zone 1.

Table 24: Future Parking Inventory – Downtown Sub-Zone 1

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
PARKING INVENTORY BY FACILITY TYPE													
On-Street	165	165	165										
Off-Street - Public Parking (Publicly Owned)	814	814	814										
Off-Street - Public Parking (Privately Owned)	1,243	1,243	1,243										
Off-Street - Private Parking	1,850	1,850	1,850										
TOTAL INVENTORY BASELINE	**4,072**	**4,072**	**4,072**										
ESTIMATED IMPACT FROM DEVELOPMENT ON PARKING INVENTORY													
Arrowhead Redevelopment													
DONO / North Crossings(Phase 1)		(318)		300									
DONO / North Crossings(Phase 2)				(600)		541							
The Millenium													
TOTAL ADJUSTED INVENTORY	**4,072**	**3,754**	**3,754**	**3,454**	**3,454**	**3,995**	**3,995**	**3,995**	**3,995**	**3,995**	**3,995**	**3,995**	**3,995**
ESTIMATED CURRENT AND FUTURE PARKING INVENTORY BY FACILITY TYPE													
On-Street	165	165	165	165	165	165	165	165	165	165	165	165	165
Off-Street - Public Parking (Publicly Owned)	814	814	814	214	214	214	214	214	214	214	214	214	214
Off-Street - Public Parking (Privately Owned)	1,243	925	925	925	925	925	925	925	925	925	925	925	925
Off-Street - Private Parking	1,850	1,850	1,850	2,150	2,150	2,691	2,691	2,691	2,691	2,691	2,691	2,691	2,691
TOTAL ADJUSTED PARKING INVENTORY	**4,072**	**3,754**	**3,754**	**3,454**	**3,454**	**3,995**	**3,995**	**3,995**	**3,995**	**3,995**	**3,995**	**3,995**	**3,995**

Source: THA Consulting, Inc, 2022

As shown above, the 2019 parking inventory is projected to slightly decrease by 2031. Please note, there is a loss of 918 parking spaces that were used by the general public. Given the size of the North Crossings development projects, we are not certain how many of the parking spaces added will be available for general public parking, therefore all of the parking spaces added are reflected in the Off-Street Private Parking figures.

Estimated Future Parking Demand

Using the 2019 and 2021 estimated parking demand which was derived using historical data provided by the HPA and local parking operators, we estimated the 2020 parking demand by evenly splitting the difference between the 2019 estimated demand and the 2021 estimated demand.

In order to project "normal" growth for this Sub-Zone, we assumed the demand in 2022 would equal the estimated demand for 2020. We applied a 2.6% annual growth rate to the estimated demand for all other years projected which is equivalent to the 5-year average population increase.

The estimated impact to demand for each development project was calculated using a shared parking model. A shared parking analysis can help to determine the extent to which parking spaces can be shared by more than one user group without conflict so that the parking facilities can be used more efficiently, and the amount of parking needed can be reduced. We reflected the additional demand for each development project on the estimated completion year.

Table 25: Projected Future Parking Demand – Downtown Sub-Zone 1

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
PARKING DEMAND BY FACILITY TYPE													
On-Street	124	103	83										
Off-Street - Public Parking (Publicly Owned)	391	213	34										
Off-Street - Public Parking (Privately Owned)	712	419	127										
Off-Street - Private Parking	628	368	109										
TOTAL DEMAND BASELINE	**1,855**	**1,104**	**353**										
Annual Growth Rate (Normal Growth)				50.0%	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%
ESTIMATED IMPACT FROM DEVELOPMENT ON PARKING DEMAND													
Normal Growth				751	34	37	46	48	49	50	51	53	54
Arrowhead Redevelopment						30							
DONO / North Crossings(Phase 1)				210									
DONO / North Crossings(Phase 2)						310							
The Millenium					60								
TOTAL ADJUSTED DEMAND	**1,855**	**1,104**	**353**	**1,314**	**1,408**	**1,784**	**1,831**	**1,878**	**1,927**	**1,977**	**2,029**	**2,081**	**2,135**
ESTIMATED CURRENT AND FUTURE PARKING DEMAND BY FACILITY TYPE													
On-Street	124	103	83	103	106	109	111	114	117	120	123	127	130
Off-Street - Public Parking (Publicly Owned)	391	213	34	213	278	315	324	332	341	350	359	368	378
Off-Street - Public Parking (Privately Owned)	712	419	127	419	430	441	453	465	477	489	502	515	528
Off-Street - Private Parking	628	368	109	578	593	919	943	967	992	1,018	1,045	1,072	1,100
TOTAL ADJUSTED PARKING DEMAND	**1,855**	**1,104**	**353**	**1,314**	**1,408**	**1,784**	**1,831**	**1,878**	**1,927**	**1,977**	**2,029**	**2,081**	**2,135**

Source: THA Consulting, Inc, 2022

Based on the assumptions previously listed, we anticipate the parking demand to return to pre-COVID levels around 2025.

Estimated Future Parking Adequacy

As a final step to estimating the future parking adequacy, we subtracted the estimated parking demand from the estimated ***effective*** parking inventory. If the result is positive, there is a surplus of parking and if the result is negative, there is a deficit or shortage. To determine the effective parking inventory, we multiply the parking inventory to the "cushion" or effective supply factor. For the purpose of this analysis, we applied a 15% cushion for all on-street parking areas, and a 10% cushion for all other off-street parking areas.

Table 26: Projected Future Parking Adequacy – Downtown Sub-Zone 1

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
ESTIMATED ADEQUACY (SURPLUS OR SHORTAGE) BY FACILITY TYPE													
On-Street	17	37	58	37	34	32	29	26	23	20	17	14	10
Off-Street - Public Parking (Publicly Owned)	341	520	699	(20)	(86)	(123)	(131)	(139)	(148)	(157)	(166)	(175)	(185)
Off-Street - Public Parking (Privately Owned)	407	413	706	413	402	391	380	368	356	343	331	318	304
Off-Street - Private Parking	1,037	1,297	1,556	1,357	1,342	1,503	1,479	1,455	1,430	1,404	1,377	1,350	1,322
TOTAL ESTIMATED PARKING ADEQUACY	**1,802**	**2,267**	**3,018**	**1,787**	**1,693**	**1,803**	**1,756**	**1,709**	**1,660**	**1,610**	**1,559**	**1,506**	**1,452**

Source: THA Consulting, Inc, 2022

Overall, we anticipate a parking surplus in the Downtown Sub-Zone 1, however, there is a projected shortage of spaces within the publicly owned off-street facilities. Based on the above table, the City should strongly consider securing or developing additional parking assets in this area in order to ensure that there are enough public parking resources available to support daily use as well as any other new development projects.

DOWNTOWN SUB-ZONE 2

Estimated Future Parking Inventory

As previously described, to determine the future parking inventory we started with the inventory in 2019, just prior to the pandemic, then we subtracted any spaces displaced, and added any new parking spaces added for each development project. The following table outlines the future projected parking inventory for this area.

Table 27: Future Parking Inventory – Downtown Sub-Zone 2

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
PARKING INVENTORY BY FACILITY TYPE													
On-Street	335	335	335										
Off-Street - Public Parking (Publicly Owned)	900	900	900										
Off-Street - Public Parking (Privately Owned)	3,396	3,396	3,396										
Off-Street - Private Parking	484	484	484										
TOTAL INVENTORY BASELINE	**5,115**	**5,115**	**5,115**										
ESTIMATED IMPACT FROM DEVELOPMENT ON PARKING INVENTORY													
Former Fire Headquarters (City)													
TOTAL ADJUSTED INVENTORY	**5,115**	**5,115**	**5,115**	**5,115**	**5,115**	**5,115**	**5,115**	**5,115**	**5,115**	**5,115**	**5,115**	**5,115**	**5,115**
ESTIMATED CURRENT AND FUTURE PARKING INVENTORY BY FACILITY TYPE													
On-Street	335	335	335	335	335	335	335	335	335	335	335	335	335
Off-Street - Public Parking (Publicly Owned)	900	900	900	900	900	900	900	900	900	900	900	900	900
Off-Street - Public Parking (Privately Owned)	3,396	3,396	3,396	3,396	3,396	3,396	3,396	3,396	3,396	3,396	3,396	3,396	3,396
Off-Street - Private Parking	484	484	484	484	484	484	484	484	484	484	484	484	484
TOTAL ADJUSTED PARKING INVENTORY	**5,115**	**5,115**	**5,115**	**5,115**	**5,115**	**5,115**	**5,115**	**5,115**	**5,115**	**5,115**	**5,115**	**5,115**	**5,115**

Source: THA Consulting, Inc, 2022

As shown above the parking inventory is projected to remain stable through 2031.

Estimated Future Parking Demand

Using the 2019 and 2021 estimated parking demand which was derived using historical data provided by the HPA and local parking operators, we estimated the 2020 parking demand by evenly splitting the difference between the 2019 estimated demand and the 2021 estimated demand.

In order to project "normal" growth for this Sub-Zone, we assumed the demand in 2022 would equal the estimated demand for 2020. We applied a 2.6% annual growth rate for all other years projected which is equivalent to the 5-year average population increase.

The estimated impact to demand for each development project was calculated using a shared parking model which was previously described. We reflected the demand impact in line with the development project completion year.

Table 28: Projected Future Parking Demand – Downtown Sub-Zone 2

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
PARKING DEMAND BY FACILITY TYPE													
On-Street	251	209	168										
Off-Street - Public Parking (Publicly Owned)	675	662	648										
Off-Street - Public Parking (Privately Owned)	2,950	2,133	1,317										
Off-Street - Private Parking	115	94	73										
TOTAL DEMAND BASELINE	**3,991**	**3,098**	**2,205**										
Annual Growth Rate (Normal Growth)				50.0%	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%
ESTIMATED IMPACT FROM DEVELOPMENT ON PARKING DEMAND													
Normal Growth				893	80	83	86	88	90	93	95	98	100
Former Fire Headquarters (City)						40							
TOTAL ADJUSTED DEMAND	**3,991**	**3,098**	**2,205**	**3,098**	**3,179**	**3,301**	**3,387**	**3,475**	**3,565**	**3,658**	**3,753**	**3,850**	**3,950**
ESTIMATED CURRENT AND FUTURE PARKING DEMAND BY FACILITY TYPE													
On-Street	251	209	168	209	215	220	226	232	238	244	251	257	264
Off-Street - Public Parking (Publicly Owned)	675	662	648	662	679	736	755	775	795	816	837	859	881
Off-Street - Public Parking (Privately Owned)	2,950	2,133	1,317	2,133	2,189	2,245	2,304	2,364	2,425	2,488	2,553	2,619	2,687
Off-Street - Private Parking	115	94	73	94	96	99	101	104	107	110	112	115	118
TOTAL ADJUSTED PARKING DEMAND	**3,991**	**3,098**	**2,205**	**3,098**	**3,179**	**3,301**	**3,387**	**3,475**	**3,565**	**3,658**	**3,753**	**3,850**	**3,950**

Source: THA Consulting, Inc, 2022

Based on the assumptions previously listed, we anticipate the parking demand to almost return to pre-COVID levels by 2031.

Estimated Future Parking Adequacy

As a final step to estimating the future parking adequacy, we subtracted the estimated parking demand from the estimated ***effective*** parking inventory. To determine the effective parking inventory, we multiply the parking inventory to the "cushion" or effective supply factor. For the purpose of this analysis, we applied a 15% cushion for all on-street parking areas, and a 10% cushion for all other off-street parking areas.

If the result is positive, there is a surplus and if the result is negative, there is a deficit or shortage.

Table 29: Projected Future Parking Adequacy – Downtown Sub-Zone 2

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
ESTIMATED ADEQUACY (SURPLUS OR SHORTAGE) BY FACILITY TYPE													
On-Street	34	75	117	75	70	64	59	53	47	41	34	28	21
Off-Street - Public Parking (Publicly Owned)	135	149	162	149	131	74	55	35	15	(6)	(27)	(49)	(71)
Off-Street - Public Parking (Privately Owned)	107	923	1,740	923	868	811	753	693	631	568	504	437	369
Off-Street - Private Parking	321	342	363	342	339	337	334	331	329	326	323	320	317
TOTAL ESTIMATED PARKING ADEQUACY	**596**	**1,489**	**2,382**	**1,489**	**1,408**	**1,286**	**1,200**	**1,112**	**1,022**	**929**	**834**	**736**	**636**

Source: THA Consulting, Inc, 2022

Overall, we anticipate a parking surplus in the Downtown Sub-Zone 2, however, there is a projected shortage of spaces within the publicly owned off-street facilities. Based on the above table, the City should strongly consider securing or developing additional parking assets in this area in order to ensure that there are enough public parking resources available to support daily use as well as any other new development projects.

DOWNTOWN SUB-ZONE 3

Estimated Future Parking Inventory

As previously described, to determine the future parking inventory we started with the inventory in 2019, just prior to the pandemic, then we subtracted any spaces displaced, and added any new parking spaces added for each development project. The following table outlines the future projected parking inventory for this area.

Table 30: Future Parking Inventory – Downtown Sub-Zone 3

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
PARKING INVENTORY BY FACILITY TYPE													
On-Street	266	266	266										
Off-Street - Public Parking (Publicly Owned)	3,675	3,675	3,675										
Off-Street - Public Parking (Privately Owned)	3,994	3,994	3,994										
Off-Street - Private Parking	764	764	764										
TOTAL INVENTORY BASELINE	**8,699**	**8,699**	**8,699**										
ESTIMATED IMPACT FROM DEVELOPMENT ON PARKING INVENTORY													
Pratt Street Redevelop Plan													
Sage Allen Apartments													
TOTAL ADJUSTED INVENTORY	**8,699**	**8,699**	**8,699**	**8,699**	**8,699**	**8,699**	**8,699**	**8,699**	**8,699**	**8,699**	**8,699**	**8,699**	**8,699**
ESTIMATED CURRENT AND FUTURE PARKING INVENTORY BY FACILITY TYPE													
On-Street	266	266	266	266	266	266	266	266	266	266	266	266	266
Off-Street - Public Parking (Publicly Owned)	3,675	3,675	3,675	3,675	3,675	3,675	3,675	3,675	3,675	3,675	3,675	3,675	3,675
Off-Street - Public Parking (Privately Owned)	3,994	3,994	3,994	3,994	3,994	3,994	3,994	3,994	3,994	3,994	3,994	3,994	3,994
Off-Street - Private Parking	764	764	764	764	764	764	764	764	764	764	764	764	764
TOTAL ADJUSTED PARKING INVENTORY	**8,699**	**8,699**	**8,699**	**8,699**	**8,699**	**8,699**	**8,699**	**8,699**	**8,699**	**8,699**	**8,699**	**8,699**	**8,699**

Source: THA Consulting, Inc, 2022

As shown above the parking inventory is projected to remain stable through 2031.

Estimated Future Parking Demand

Using the 2019 and 2021 estimated parking demand which was derived using historical data provided by the HPA and local parking operators, we estimated the 2020 parking demand by evenly splitting the difference between the 2019 estimated demand and the 2021 estimated demand.

In order to project "normal" growth for this Sub-Zone, we assumed the demand in 2022 would equal the estimated demand for 2020. We applied a 2.6% annual growth rate for all other years projected which is equivalent to the 5-year average population increase.

The estimated impact to demand for each development project was calculated using a shared parking model which was previously described. We reflected the impact in line with the development project completion year.

Table 31: Projected Future Parking Demand – Downtown Sub-Zone 3

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
PARKING DEMAND BY FACILITY TYPE													
On-Street	239	200	160										
Off-Street - Public Parking (Publicly Owned)	3,325	2,186	1,047										
Off-Street - Public Parking (Privately Owned)	3,707	2,622	1,537										
Off-Street - Private Parking	19	16	13										
TOTAL DEMAND BASELINE	**7,290**	**5,023**	**2,756**										
Annual Growth Rate (Normal Growth)				50.0%	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%
ESTIMATED IMPACT FROM DEVELOPMENT ON PARKING DEMAND													
Normal Growth				2,267	131	134	137	141	154	159	163	168	172
Pratt Street Redevelop Plan								380					
Sage Allen Apartments									30				
TOTAL ADJUSTED DEMAND	**7,290**	**5,023**	**2,756**	**5,023**	**5,154**	**5,288**	**5,425**	**5,946**	**6,131**	**6,290**	**6,453**	**6,621**	**6,793**
ESTIMATED CURRENT AND FUTURE PARKING DEMAND BY FACILITY TYPE													
On-Street	239	200	160	200	205	210	215	221	227	233	239	245	251
Off-Street - Public Parking (Publicly Owned)	3,325	2,186	1,047	2,186	2,243	2,301	2,361	2,802	2,905	2,980	3,058	3,137	3,219
Off-Street - Public Parking (Privately Owned)	3,707	2,622	1,537	2,622	2,690	2,760	2,832	2,905	2,981	3,058	3,138	3,219	3,303
Off-Street - Private Parking	19	16	13	16	16	17	17	18	18	19	19	20	20
TOTAL ADJUSTED PARKING DEMAND	**7,290**	**5,023**	**2,756**	**5,023**	**5,154**	**5,288**	**5,425**	**5,946**	**6,131**	**6,290**	**6,453**	**6,621**	**6,793**

Source: THA Consulting, Inc, 2022

Based on the assumptions previously listed, we are uncertain how quickly the parking demand will return to pre-COVID levels as this area is heavily impacted by office use.

Estimated Future Parking Adequacy

As a final step to estimating the future parking adequacy, we subtracted the estimated parking demand from the estimated ***effective*** parking inventory. To determine the effective parking inventory, we multiply the parking inventory to the "cushion" or effective supply factor. For the purpose of this analysis, we applied a 15% cushion for all on-street parking areas, and a 10% cushion for all other off-street parking areas.

If the result is positive, there is a surplus and if the result is negative, there is a deficit or shortage.

Table 32: Projected Future Parking Adequacy – Downtown Sub-Zone 3

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
ESTIMATED ADEQUACY (SURPLUS OR SHORTAGE) BY FACILITY TYPE													
On-Street	(13)	27	67	27	21	16	11	5	(1)	(7)	(13)	(19)	(25)
Off-Street - Public Parking (Publicly Owned)	(18)	1,122	2,261	1,122	1,065	1,007	947	505	403	327	250	170	89
Off-Street - Public Parking (Privately Owned)	(112)	973	2,058	973	905	835	763	689	614	537	457	376	292
Off-Street - Private Parking	669	672	675	672	671	671	670	670	669	669	668	668	667
TOTAL ESTIMATED PARKING ADEQUACY	**526**	**2,793**	**5,059**	**2,793**	**2,662**	**2,528**	**2,391**	**1,870**	**1,685**	**1,526**	**1,363**	**1,195**	**1,023**

Source: THA Consulting, Inc, 2022

Overall, we anticipate a parking surplus in the Downtown Sub-Zone 3, however, there is a projected shortage of spaces within the on-street parking areas. Based on the above table, the City may want to consider securing additional parking assets in this area in order to ensure that there are enough public parking resources available to support daily use as well as any other new development projects.

DOWNTOWN SUB-ZONE 4

Estimated Future Parking Inventory

As previously described, to determine the future parking inventory we started with the inventory in 2019, just prior to the pandemic, then we subtracted any spaces displaced, and added any new parking spaces added for each development project. The following table outlines the future projected parking inventory for this area.

Table 33: Future Parking Inventory – Downtown Sub-Zone 4

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
PARKING INVENTORY BY FACILITY TYPE													
On-Street	443	443	443										
Off-Street - Public Parking (Publicly Owned)	0	0	0										
Off-Street - Public Parking (Privately Owned)	332	332	332										
Off-Street - Private Parking	4,307	4,307	4,307										
TOTAL INVENTORY BASELINE	**5,082**	**5,082**	**5,082**										
ESTIMATED IMPACT FROM DEVELOPMENT ON PARKING INVENTORY													
Bushnell South Redevelopment					(80)								
Bushnell South Redevelopment						(144)							
Bushnell South Redevelopment													
TOTAL ADJUSTED INVENTORY	**5,082**	**5,082**	**5,082**	**5,082**	**5,002**	**4,858**	**4,858**	**4,858**	**4,858**	**4,858**	**4,858**	**4,858**	**4,858**
ESTIMATED CURRENT AND FUTURE PARKING INVENTORY BY FACILITY TYPE													
On-Street	443	443	443	443	443	443	443	443	443	443	443	443	443
Off-Street - Public Parking (Publicly Owned)	0	0	0	0	0	0	0	0	0	0	0	0	0
Off-Street - Public Parking (Privately Owned)	332	332	332	332	332	332	332	332	332	332	332	332	332
Off-Street - Private Parking	4,307	4,307	4,307	4,307	4,227	4,083	4,083	4,083	4,083	4,083	4,083	4,083	4,083
TOTAL ADJUSTED PARKING INVENTORY	**5,082**	**5,082**	**5,082**	**5,082**	**5,002**	**4,858**	**4,858**	**4,858**	**4,858**	**4,858**	**4,858**	**4,858**	**4,858**

Source: THA Consulting, Inc, 2022

As shown above the parking inventory is projected to slightly decline over the next 10 years. Also note, there are no publicly owned off-street parking facilities within this sub-zone.

Estimated Future Parking Demand

Using the 2019 and 2021 estimated parking demand which was derived using historical data provided by the HPA and local parking operators, we estimated the 2020 parking demand by evenly splitting the difference between the 2019 estimated demand and the 2021 estimated demand.

In order to project "normal" growth for this Sub-Zone, we assumed the demand in 2022 would equal the estimated demand for 2020. We applied a 2.6% annual growth rate for all other years projected which is equivalent to the 5-year average population increase.

The estimated impact to demand for each development project was calculated using a shared parking model which was previously described. We reflected the impact in line with the development project completion year.

Table 34: Projected Future Parking Demand – Downtown Sub-Zone 4

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
PARKING DEMAND BY FACILITY TYPE													
On-Street	399	332	266										
Off-Street - Public Parking (Publicly Owned)	0	0	0										
Off-Street - Public Parking (Privately Owned)	64	34	3										
Off-Street - Private Parking	1,964	1,198	432										
TOTAL DEMAND BASELINE	**2,427**	**1,564**	**701**										
Annual Growth Rate (Normal Growth)				50.0%	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%
ESTIMATED IMPACT ON PARKING DEMAND													
Normal Growth				863	41	42	47	49	52	53	55	56	58
Bushnell South Redevelopment							50						
Bushnell South Redevelopment								50					
Bushnell South Redevelopment						160							
TOTAL ADJUSTED DEMAND	**2,427**	**1,564**	**701**	**1,564**	**1,605**	**1,806**	**1,903**	**2,003**	**2,055**	**2,108**	**2,163**	**2,219**	**2,277**
ESTIMATED CURRENT AND FUTURE PARKING DEMAND BY FACILITY TYPE													
On-Street	399	332	266	332	341	350	359	368	378	388	398	408	419
Off-Street - Public Parking (Publicly Owned)	0	0	0	0	0	160	214	270	277	284	291	299	307
Off-Street - Public Parking (Privately Owned)	64	34	3	34	35	35	36	37	38	39	40	41	42
Off-Street - Private Parking	1,964	1,198	432	1,198	1,229	1,261	1,294	1,328	1,362	1,398	1,434	1,471	1,509
TOTAL ADJUSTED PARKING DEMAND	**2,427**	**1,564**	**701**	**1,564**	**1,605**	**1,806**	**1,903**	**2,003**	**2,055**	**2,108**	**2,163**	**2,219**	**2,277**

Source: THA Consulting, Inc, 2022

Based on the assumptions previously listed, we are uncertain how quickly the parking demand will return to pre-COVID levels as this area is heavily impacted by office use. However, we want to note that the planned development projects at "Bushnell South" do not include a parking component and will likely be dependent on the very limited public parking resources in the vicinity.

Estimated Future Parking Adequacy

As a final step to estimating the future parking adequacy, we subtracted the estimated parking demand from the estimated ***effective*** parking inventory. To determine the effective parking inventory, we multiply the parking inventory to the "cushion" or effective supply factor. For the purpose of this analysis, we applied a 15% cushion for all on-street parking areas, and a 10% cushion for all other off-street parking areas.

If the result is positive, there is a surplus and if the result is negative, there is a deficit or shortage.

Table 35: Projected Future Parking Adequacy – Downtown Sub-Zone 4

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
ESTIMATED ADEQUACY (SURPLUS OR SHORTAGE) BY FACILITY TYPE													
On-Street	(22)	44	111	44	36	27	18	8	(1)	(11)	(21)	(31)	(42)
Off-Street - Public Parking (Publicly Owned)	0	0	0	0	0	(160)	(214)	(270)	(277)	(284)	(291)	(299)	(307)
Off-Street - Public Parking (Privately Owned)	234	265	296	265	264	263	262	262	261	260	259	257	256
Off-Street - Private Parking	1,912	2,678	3,444	2,678	2,575	2,413	2,381	2,347	2,312	2,277	2,241	2,204	2,165
TOTAL ESTIMATED PARKING ADEQUACY	**2,124**	**2,988**	**3,851**	**2,988**	**2,875**	**2,544**	**2,447**	**2,347**	**2,295**	**2,242**	**2,187**	**2,131**	**2,073**

Source: THA Consulting, Inc, 2022

Overall, we anticipate a parking surplus in the Downtown Sub-Zone 4, **however, there is a projected shortage of spaces within the on-street and publicly owned off-street parking areas as there are not ANY publicly owned off-street parking facilities to absorb the demand associated with planned future development projects**. Based on the above table, we encourage the City to strongly consider securing additional parking assets in this area as soon as possible in order to ensure that there are enough public parking resources available to support daily use as well as the planned development projects.

DOWNTOWN SUB-ZONE 5

Estimated Future Parking Inventory

As previously described, to determine the future parking inventory we started with the inventory in 2019, just prior to the pandemic, then we subtracted any spaces displaced, and added any new parking spaces added for each development project. The following table outlines the future projected parking inventory for this area.

Table 36: Future Parking Inventory – Downtown Sub-Zone 5

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
PARKING INVENTORY BY FACILITY TYPE													
On-Street	791	791	791										
Off-Street - Public Parking (Publicly Owned)	1,794	1,794	1,794										
Off-Street - Public Parking (Privately Owned)	100	100	100										
Off-Street - Private Parking	3,189	3,189	3,189										
TOTAL INVENTORY BASELINE	**5,874**	**5,874**	**5,874**										
ESTIMATED IMPACT FROM DEVELOPMENT ON PARKING INVENTORY													
Corner Stone Building (City)				(35)									
Park & Main (Phase 1)			35										
Park & Main (Phase 2)			91										
TOTAL ADJUSTED INVENTORY	**5,874**	**5,874**	**6,000**	**5,965**	**5,965**	**5,965**	**5,965**	**5,965**	**5,965**	**5,965**	**5,965**	**5,965**	**5,965**
ESTIMATED CURRENT AND FUTURE PARKING INVENTORY BY FACILITY TYPE													
On-Street	791	791	791	791	791	791	791	791	791	791	791	791	791
Off-Street - Public Parking (Publicly Owned)	1,794	1,794	1,794	1,759	1,759	1,759	1,759	1,759	1,759	1,759	1,759	1,759	1,759
Off-Street - Public Parking (Privately Owned)	100	100	100	100	100	100	100	100	100	100	100	100	100
Off-Street - Private Parking	3,189	3,189	3,315	3,315	3,315	3,315	3,315	3,315	3,315	3,315	3,315	3,315	3,315
TOTAL ADJUSTED PARKING INVENTORY	**5,874**	**5,874**	**6,000**	**5,965**	**5,965**	**5,965**	**5,965**	**5,965**	**5,965**	**5,965**	**5,965**	**5,965**	**5,965**

Source: THA Consulting, Inc, 2022

As shown above the parking inventory is projected to slightly increase over the next 10 years.

Estimated Future Parking Demand

Using the 2019 and 2021 estimated parking demand which was derived using historical data provided by the HPA and local parking operators, we estimated the 2020 parking demand by evenly splitting the difference between the 2019 estimated demand and the 2021 estimated demand.

In order to project "normal" growth for this Sub-Zone, we assumed the demand in 2022 would equal the estimated demand for 2020. We applied a 2.6% annual growth rate for all other years projected which is equivalent to the 5-year average population increase.

The estimated impact to demand for each development project was calculated using a shared parking model which was previously described. We reflected the impact in line with the development project completion year.

Table 37: Projected Future Parking Demand – Downtown Sub-Zone 5

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
PARKING DEMAND BY FACILITY TYPE													
On-Street	593	494	396										
Off-Street - Public Parking (Publicly Owned)	712	593	475										
Off-Street - Public Parking (Privately Owned)	100	95	90										
Off-Street - Private Parking	1,306	961	615										
TOTAL DEMAND BASELINE	**2,711**	**2,143**	**1,575**										
Annual Growth Rate (Normal Growth)				50.0%	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%
ESTIMATED IMPACT ON PARKING DEMAND													
Normal Growth				568	62	65	67	69	71	72	74	76	78
Corner Stone Building (City)					70								
Park & Main (Phase 1)			80										
Park & Main (Phase 2)			160										
TOTAL ADJUSTED DEMAND	**2,711**	**2,143**	**1,815**	**2,383**	**2,515**	**2,580**	**2,647**	**2,716**	**2,787**	**2,859**	**2,934**	**3,010**	**3,088**
ESTIMATED CURRENT AND FUTURE PARKING DEMAND BY FACILITY TYPE													
On-Street	593	494	396	494	507	520	534	548	562	577	592	607	623
Off-Street - Public Parking (Publicly Owned)	712	593	475	593	679	696	714	733	752	772	792	812	833
Off-Street - Public Parking (Privately Owned)	100	95	90	95	97	100	103	105	108	111	114	117	120
Off-Street - Private Parking	1,306	961	855	1,201	1,232	1,264	1,297	1,330	1,365	1,400	1,437	1,474	1,512
TOTAL ADJUSTED PARKING DEMAND	**2,711**	**2,143**	**1,815**	**2,383**	**2,515**	**2,580**	**2,647**	**2,716**	**2,787**	**2,859**	**2,934**	**3,010**	**3,088**

Source: THA Consulting, Inc, 2022

Based on the assumptions previously listed, we anticipate parking demand will return to pre-COVID levels around 2026 due to the impact from normal growth and new development.

Estimated Future Parking Adequacy

As a final step to estimating the future parking adequacy, we subtracted the estimated parking demand from the estimated ***effective*** parking inventory. To determine the effective parking inventory, we multiply the parking inventory to the "cushion" or effective supply factor. For the purpose of this analysis, we applied a 15% cushion for all on-street parking areas, and a 10% cushion for all other off-street parking areas.

If the result is positive, there is a surplus and if the result is negative, there is a deficit or shortage.

Table 38: Projected Future Parking Adequacy – Downtown Sub-Zone 5

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
ESTIMATED ADEQUACY (SURPLUS OR SHORTAGE) BY FACILITY TYPE													
On-Street	79	178	277	178	165	152	138	125	110	96	81	65	50
Off-Street - Public Parking (Publicly Owned)	903	1,021	1,140	990	904	887	869	850	831	812	792	771	750
Off-Street - Public Parking (Privately Owned)	(10)	(5)	0	(5)	(7)	(10)	(13)	(15)	(18)	(21)	(24)	(27)	(30)
Off-Street - Private Parking	1,564	1,910	2,129	1,783	1,752	1,720	1,687	1,653	1,619	1,583	1,547	1,510	1,471
TOTAL ESTIMATED PARKING ADEQUACY	**2,536**	**3,104**	**3,545**	**2,946**	**2,814**	**2,749**	**2,682**	**2,613**	**2,542**	**2,470**	**2,395**	**2,319**	**2,241**

Source: THA Consulting, Inc, 2022

Overall, we anticipate a parking surplus in the Downtown Sub-Zone 5, however, the results above include the Convention Center Parking Garage.

UPPER ALBANY

Estimated Future Parking Inventory

As previously described, to determine the future parking inventory we started with the inventory in 2019, just prior to the pandemic, then we subtracted any spaces displaced, and added any new parking spaces added for each development project. The following table outlines the future projected parking inventory for this area.

Table 39: Future Parking Inventory – Upper Albany

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
PARKING INVENTORY BY FACILITY TYPE													
On-Street	140	140	140										
Off-Street - Public Parking (Publicly Owned)	0	0	0										
Off-Street - Public Parking (Privately Owned)	0	0	0										
Off-Street - Private Parking	1,392	1,392	1,392										
TOTAL INVENTORY BASELINE	**1,532**	**1,532**	**1,532**										
ESTIMATED IMPACT FROM DEVELOPMENT ON PARKING INVENTORY													
Albany-Woodland Redevelopment						122							
*Village at Park River aka Westbrook Village**						*299*							
*270 Albany Ave**							*29*						
614 Albany Ave					30								
TOTAL ADJUSTED INVENTORY	**1,532**	**1,532**	**1,532**	**1,532**	**1,562**	**1,684**	**1,684**	**1,684**	**1,684**	**1,684**	**1,684**	**1,684**	**1,684**
ESTIMATED CURRENT AND FUTURE PARKING INVENTORY BY FACILITY TYPE													
On-Street	140	140	140	140	140	140	140	140	140	140	140	140	140
Off-Street - Public Parking (Publicly Owned)	0	0	0	0	30	30	30	30	30	30	30	30	30
Off-Street - Public Parking (Privately Owned)	0	0	0	0	0	0	0	0	0	0	0	0	0
Off-Street - Private Parking	1,392	1,392	1,392	1,392	1,392	1,514	1,514	1,514	1,514	1,514	1,514	1,514	1,514
TOTAL ADJUSTED PARKING INVENTORY	**1,532**	**1,532**	**1,532**	**1,532**	**1,562**	**1,684**	**1,684**	**1,684**	**1,684**	**1,684**	**1,684**	**1,684**	**1,684**

Source: THA Consulting, Inc, 2022

As shown above the parking inventory is projected to slightly increase over the next 10 years and the number of publicly-owned parking assets in this area is extremely low (140 parking spaces at this time and only 170 spaces if the City converts 614 Albany to a 30-space public parking lot).

Estimated Future Parking Demand

Using the 2019 and 2021 estimated parking demand which was derived using historical data provided by the HPA and local parking operators, we estimated the 2020 parking demand by evenly splitting the difference between the 2019 estimated demand and the 2021 estimated demand.

In order to project "normal" growth for this Sub-Area, we assumed the demand in 2022 would equal the estimated demand for 2020. We applied a 0.5% annual growth rate for all other years projected which is equivalent to the 2019 population growth for this area.

The estimated impact to demand for each development project was calculated using a shared parking model which was previously described. We reflected the impact in line with the development project completion year.

Table 40: Projected Future Parking Demand – Upper Albany

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
PARKING DEMAND BY FACILITY TYPE													
On-Street	112	123	134										
Off-Street - Public Parking (Publicly Owned)	0	0	0										
Off-Street - Public Parking (Privately Owned)	0	0	0										
Off-Street - Private Parking	433	455	477										
TOTAL DEMAND BASELINE	**545**	**578**	**611**										
Annual Growth Rate (Normal Growth)				0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
ESTIMATED IMPACT ON PARKING DEMAND													
Normal Growth				3	3	3	4	4	4	4	4	4	4
Albany-Woodland Redevelopment						130							
*Village at Park River aka Westbrook Village**						*630*							
*270 Albany Ave**							*30*						
614 Albany Ave													
TOTAL ADJUSTED DEMAND	**545**	**578**	**611**	**615**	**618**	**751**	**755**	**759**	**763**	**768**	**772**	**776**	**780**
ESTIMATED CURRENT AND FUTURE PARKING DEMAND BY FACILITY TYPE													
On-Street	112	123	134	135	136	145	145	146	147	148	148	149	150
Off-Street - Public Parking (Publicly Owned)	0	0	0	0	0	0	0	0	0	0	0	0	0
Off-Street - Public Parking (Privately Owned)	0	0	0	0	0	0	0	0	0	0	0	0	0
Off-Street - Private Parking	433	455	477	480	482	493	495	498	501	503	506	509	512
TOTAL ADJUSTED PARKING DEMAND	**545**	**578**	**611**	**615**	**618**	**637**	**641**	**644**	**648**	**651**	**655**	**658**	**662**

Source: THA Consulting, Inc, 2022

Based on the assumptions previously listed, we anticipate parking demand will continue to steadily increase due to the impact from normal growth and new development in and surrounding this area.

Estimated Future Parking Adequacy

As a final step to estimating the future parking adequacy, we subtracted the estimated parking demand from the estimated ***effective*** parking inventory. To determine the effective parking inventory, we multiply the parking inventory to the "cushion" or effective supply factor. For the purpose of this analysis, we applied a 15% cushion for all on-street parking areas, and a 10% cushion for all other off-street parking areas.

If the result is positive, there is a surplus and if the result is negative, there is a deficit or shortage.

Table 41: Projected Future Parking Adequacy – Upper Albany

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
ESTIMATED ADEQUACY (SURPLUS OR SHORTAGE) BY FACILITY TYPE													
On-Street	7	(4)	(15)	(16)	(17)	(26)	(26)	(27)	(28)	(29)	(29)	(30)	(31)
Off-Street - Public Parking (Publicly Owned)	0	0	0	0	27	27	27	27	27	27	27	27	27
Off-Street - Public Parking (Privately Owned)	0	0	0	0	0	0	0	0	0	0	0	0	0
Off-Street - Private Parking	820	798	776	773	771	870	867	865	862	859	857	854	851
TOTAL ESTIMATED PARKING ADEQUACY	**827**	**794**	**760**	**757**	**781**	**871**	**868**	**864**	**861**	**858**	**854**	**851**	**847**

Source: THA Consulting, Inc, 2022

Overall, we anticipate a parking surplus in the Upper Albany Study Area, however, even with the addition of a new public surface lot at 614 Albany Avenue, we anticipate an overall public parking shortage. Due to the current absence of any off-street public parking areas and only one small lot planned for the future, the City should consider securing additional parking assets in this area in order to ensure that there are enough public parking resources available to support daily use as well as any other new development projects.

PARKVILLE SUB-ZONE 1

Estimated Future Parking Inventory

To estimate the future parking adequacy, the first step is to determine the future parking inventory. We started with the inventory in 2019, just prior to the pandemic. Then, for each development project within the sub-zone, we subtracted any spaces displaced at the development project estimated start year and we added any spaces added at the development project estimated completion year. The following table outlines the future projected parking inventory for Parkville Sub-Zone 1.

Table 42: Future Parking Inventory – Parkville Sub-Zone 1

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
PARKING INVENTORY BY FACILITY TYPE													
On-Street	205	205	205										
Off-Street - Public Parking (Publicly Owned)	9	9	9										
Off-Street - Public Parking (Privately Owned)	0	0	0										
Off-Street - Private Parking	1,326	1,326	1,326										
TOTAL INVENTORY BASELINE	**1,540**	**1,540**	**1,540**										
ESTIMATED IMPACT FROM DEVELOPMENT ON PARKING INVENTORY													
Parkville Remote Business HUB Adaptive Reuse				(100)		200							
17-35 Bartholomew				(75)		352							
Spaghetti Warehouse													
Mill Building Adaptive Reuse													
Parkville Market Phase 1	30												
Parkville Market Phase 2													
81 Bartholomew Ave													
56 Arbor Street													
TOTAL ADJUSTED INVENTORY	**1,570**	**1,570**	**1,570**	**1,395**	**1,395**	**1,947**	**1,947**	**1,947**	**1,947**	**1,947**	**1,947**	**1,947**	**1,947**
ESTIMATED CURRENT AND FUTURE PARKING INVENTORY BY FACILITY TYPE													
On-Street	205	205	205	205	205	205	205	205	205	205	205	205	205
Off-Street - Public Parking (Publicly Owned)	9	9	9	9	9	9	9	9	9	9	9	9	9
Off-Street - Public Parking (Privately Owned)	0	0	0	0	0	0	0	0	0	0	0	0	0
Off-Street - Private Parking	1,356	1,326	1,326	1,151	1,151	1,703	1,703	1,703	1,703	1,703	1,703	1,703	1,703
TOTAL ADJUSTED PARKING INVENTORY	**1,570**	**1,540**	**1,540**	**1,365**	**1,365**	**1,917**	**1,917**	**1,917**	**1,917**	**1,917**	**1,917**	**1,917**	**1,917**

Source: THA Consulting, Inc, 2022

As shown above, the 2019 parking inventory is projected to increase by 2031. Please note, the increase is solely within privately owned parking facilities.

Estimated Future Parking Demand

Using the 2019 and 2021 estimated parking demand which was derived using historical data provided by the HPA and local parking operators, we estimated the 2020 parking demand by evenly splitting the difference between the 2019 estimated demand and the 2021 estimated demand.

In order to project "normal" growth for this Sub-Zone, we assumed the demand in 2022 would equal the estimated demand for 2020. We applied a 0.4% annual growth rate to the estimated demand for all other years projected which is equivalent to the 5-year average population increase.

The estimated impact to demand for each development project was calculated using a shared parking model. A shared parking analysis can help to determine the extent to which parking spaces can be shared by more than one user group without conflict so that the parking facilities can be used more efficiently, and the amount of parking needed can be reduced. We reflected the additional demand for each development project on the estimated completion year.

Table 43: Projected Future Parking Demand – Parkville Sub-Zone 1

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
PARKING DEMAND BY FACILITY TYPE													
On-Street	51	46	41										
Off-Street - Public Parking (Publicly Owned)	3	4	5										
Off-Street - Public Parking (Privately Owned)	0	0	0										
Off-Street - Private Parking	655	609	563										
TOTAL DEMAND BASELINE	**709**	**659**	**609**										
Annual Growth Rate (Normal Growth)				0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%
ESTIMATED IMPACT ON PARKING DEMAND													
Normal Growth				2	3	3	4	5	5	5	5	5	5
Parkville Remote Business HUB Adaptive Reuse						210							
17-35 Bartholomew						110							
Spaghetti Warehouse							30						
Mill Building Adaptive Reuse							90						
Parkville Market Phase 1				90									
Parkville Market Phase 2					120								
81 Bartholomew Ave													
56 Arbor Street													
TOTAL ADJUSTED DEMAND	**709**	**659**	**609**	**701**	**824**	**1,147**	**1,271**	**1,275**	**1,280**	**1,285**	**1,289**	**1,294**	**1,299**
ESTIMATED CURRENT AND FUTURE PARKING DEMAND BY FACILITY TYPE													
On-Street	51	46	41	41	41	41	162	162	163	163	164	165	165
Off-Street - Public Parking (Publicly Owned)	3	4	5	5	5	5	5	5	5	5	5	5	5
Off-Street - Public Parking (Privately Owned)	0	0	0	0	0	0	0	0	0	0	0	0	0
Off-Street - Private Parking	655	609	563	655	777	1,100	1,104	1,108	1,112	1,116	1,120	1,124	1,128
TOTAL ADJUSTED PARKING DEMAND	**709**	**659**	**609**	**701**	**824**	**1,147**	**1,271**	**1,275**	**1,280**	**1,285**	**1,289**	**1,294**	**1,299**

Source: THA Consulting, Inc, 2022

Based on the assumptions previously listed, we anticipate the parking demand continuously increase as growth and development occurs.

Estimated Future Parking Adequacy

As a final step to estimating the future parking adequacy, we subtracted the estimated parking demand from the estimated ***effective*** parking inventory. If the result is positive, there is a surplus of parking and if the result is negative, there is a deficit or shortage. To determine the effective parking inventory, we multiply the parking inventory to the "cushion" or effective supply factor. For the purpose of this analysis, we applied a 15% cushion for all on-street parking areas, and a 10% cushion for all other off-street parking areas.

Table 44: Projected Future Parking Adequacy – Parkville Sub-Zone 1

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
ESTIMATED ADEQUACY (SURPLUS OR SHORTAGE) BY FACILITY TYPE													
On-Street	123	128	133	133	133	133	13	12	11	11	10	10	9
Off-Street - Public Parking (Publicly Owned)	5	4	3	3	3	3	3	3	3	3	3	3	3
Off-Street - Public Parking (Privately Owned)	0	0	0	0	0	0	0	0	0	0	0	0	0
Off-Street - Private Parking	565	584	630	381	259	433	429	425	421	417	413	409	404
TOTAL ESTIMATED PARKING ADEQUACY	**694**	**717**	**767**	**517**	**395**	**568**	**444**	**440**	**435**	**430**	**426**	**421**	**416**

Source: THA Consulting, Inc, 2022

Overall, we anticipate a parking surplus in the Parkville Sub-Zone 1. Based on the above table, the City should strongly consider securing or developing additional parking assets in this area in order to ensure that there are enough public parking resources available to support daily use as well as any other new development projects.

PARKVILLE SUB-ZONE 2

Estimated Future Parking Inventory

As previously described, to determine the future parking inventory we started with the inventory in 2019, just prior to the pandemic, then we subtracted any spaces displaced, and added any new parking spaces added for each development project. The following table outlines the future projected parking inventory for this area.

Table 45: Future Parking Inventory – Parkville Sub-Zone 2

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
PARKING INVENTORY BY FACILITY TYPE													
On-Street	87	87	87										
Off-Street - Public Parking (Publicly Owned)	130	130	130										
Off-Street - Public Parking (Privately Owned)	0	0	0										
Off-Street - Private Parking	2,022	2,022	2,022										
TOTAL INVENTORY BASELINE	**2,239**	**2,239**	**2,239**										
ESTIMATED IMPACT FROM DEVELOPMENT ON PARKING INVENTORY													
Spartan Towers Renovation								175					
TOTAL ADJUSTED INVENTORY	**2,239**	**2,239**	**2,239**	**2,239**	**2,239**	**2,239**	**2,239**	**2,414**	**2,414**	**2,414**	**2,414**	**2,414**	**2,414**
ESTIMATED CURRENT AND FUTURE PARKING INVENTORY BY FACILITY TYPE													
On-Street	87	87	87	87	87	87	87	87	87	87	87	87	87
Off-Street - Public Parking (Publicly Owned)	130	130	130	130	130	130	130	130	130	130	130	130	130
Off-Street - Public Parking (Privately Owned)	0	0	0	0	0	0	0	0	0	0	0	0	0
Off-Street - Private Parking	2,022	2,022	2,022	2,022	2,022	2,022	2,022	2,197	2,197	2,197	2,197	2,197	2,197
TOTAL ADJUSTED PARKING INVENTORY	**2,239**	**2,239**	**2,239**	**2,239**	**2,239**	**2,239**	**2,239**	**2,414**	**2,414**	**2,414**	**2,414**	**2,414**	**2,414**

Source: THA Consulting, Inc, 2022

As shown above the parking inventory is projected to remain relatively stable through 2031.

Estimated Future Parking Demand

Using the 2019 and 2021 estimated parking demand which was derived using historical data provided by the HPA and local parking operators, we estimated the 2020 parking demand by evenly splitting the difference between the 2019 estimated demand and the 2021 estimated demand.

In order to project "normal" growth for this Sub-Zone, we assumed the demand in 2022 would equal the estimated demand for 2020. We applied a 2.6% annual growth rate for all other years projected which is equivalent to the 5-year average population increase.

The estimated impact to demand for each development project was calculated using a shared parking model which was previously described. We reflected the demand impact in line with the development project completion year.

Table 46: Projected Future Parking Demand – Parkville Sub-Zone 2

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
PARKING DEMAND BY FACILITY TYPE													
On-Street	15	18	22										
Off-Street - Public Parking (Publicly Owned)	2	3	4										
Off-Street - Public Parking (Privately Owned)	0	0	0										
Off-Street - Private Parking	894	922	950										
TOTAL DEMAND BASELINE	**911**	**943**	**976**										
Annual Growth Rate (Normal Growth)				0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%
ESTIMATED IMPACT ON PARKING DEMAND													
Normal Growth				4	4	4	4	4	8	8	8	8	8
Spartan Towers Renovation								1,145					
TOTAL ADJUSTED DEMAND	**911**	**943**	**976**	**979**	**983**	**986**	**990**	**2,138**	**2,146**	**2,154**	**2,162**	**2,169**	**2,177**
ESTIMATED CURRENT AND FUTURE PARKING DEMAND BY FACILITY TYPE													
On-Street	15	18	22	22	22	22	22	22	22	22	22	22	23
Off-Street - Public Parking (Publicly Owned)	2	3	4	4	4	4	4	4	4	4	4	4	4
Off-Street - Public Parking (Privately Owned)	0	0	0	0	0	0	0	0	0	0	0	0	0
Off-Street - Private Parking	894	922	950	953	957	960	964	2,112	2,120	2,127	2,135	2,143	2,151
TOTAL ADJUSTED PARKING DEMAND	**911**	**943**	**976**	**979**	**983**	**986**	**990**	**2,138**	**2,146**	**2,154**	**2,162**	**2,169**	**2,177**

Source: THA Consulting, Inc, 2022

Based on the assumptions previously listed, we anticipate the parking demand will exceed pre-COVID levels by 2022.

Estimated Future Parking Adequacy

As a final step to estimating the future parking adequacy, we subtracted the estimated parking demand from the estimated ***effective*** parking inventory. To determine the effective parking inventory, we multiply the parking inventory to the "cushion" or effective supply factor. For the purpose of this analysis, we applied a 15% cushion for all on-street parking areas, and a 10% cushion for all other off-street parking areas.

If the result is positive, there is a surplus and if the result is negative, there is a deficit or shortage.

Table 47: Projected Future Parking Adequacy – Parkville Sub-Zone 2

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
ESTIMATED ADEQUACY (SURPLUS OR SHORTAGE) BY FACILITY TYPE													
On-Street	59	56	52	52	52	52	52	52	52	52	52	51	51
Off-Street - Public Parking (Publicly Owned)	115	114	113	113	113	113	113	113	113	113	113	113	113
Off-Street - Public Parking (Privately Owned)	0	0	0	0	0	0	0	0	0	0	0	0	0
Off-Street - Private Parking	926	898	870	866	863	859	856	(135)	(143)	(150)	(158)	(166)	(173)
TOTAL ESTIMATED PARKING ADEQUACY	**1,100**	**1,067**	**1,035**	**1,031**	**1,028**	**1,024**	**1,021**	**30**	**22**	**14**	**7**	**(1)**	**(9)**

Source: THA Consulting, Inc, 2022

Overall, we anticipate a small parking shortage in the Parkville Sub-Zone 2, however, there is a sizeable projected shortage of spaces within the privately owned off-street facilities. Based on the above table, the City should strongly consider securing or developing additional parking assets in this area in order to ensure that there are enough public parking resources available to support daily use as well as any other new development projects.

PARKVILLE SUB-ZONE 3

Estimated Future Parking Inventory

As previously described, to determine the future parking inventory we started with the inventory in 2019, just prior to the pandemic, then we subtracted any spaces displaced, and added any new parking spaces added for each development project. The following table outlines the future projected parking inventory for this area.

Table 48: Future Parking Inventory – Parkville Sub-Zone 3

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
PARKING INVENTORY BY FACILITY TYPE													
On-Street	154	154	154										
Off-Street - Public Parking (Publicly Owned)	0	0	0										
Off-Street - Public Parking (Privately Owned)	0	0	0										
Off-Street - Private Parking	960	960	960										
TOTAL INVENTORY BASELINE	**1,114**	**1,114**	**1,114**										
ESTIMATED IMPACT FROM DEVELOPMENT ON PARKING INVENTORY													
No future development projects assumed as part of this analysis													
TOTAL ADJUSTED INVENTORY	**1,114**	**1,114**	**1,114**	**1,114**	**1,114**	**1,114**	**1,114**	**1,114**	**1,114**	**1,114**	**1,114**	**1,114**	**1,114**
ESTIMATED CURRENT AND FUTURE PARKING INVENTORY BY FACILITY TYPE													
On-Street	154	154	154	154	154	154	154	154	154	154	154	154	154
Off-Street - Public Parking (Publicly Owned)	0	0	0	0	0	0	0	0	0	0	0	0	0
Off-Street - Public Parking (Privately Owned)	0	0	0	0	0	0	0	0	0	0	0	0	0
Off-Street - Private Parking	960	960	960	960	960	960	960	960	960	960	960	960	960
TOTAL ADJUSTED PARKING INVENTORY	**1,114**	**1,114**	**1,114**	**1,114**	**1,114**	**1,114**	**1,114**	**1,114**	**1,114**	**1,114**	**1,114**	**1,114**	**1,114**

Source: THA Consulting, Inc, 2022

As shown above the parking inventory is projected to remain stable through 2031.

Estimated Future Parking Demand

Using the 2019 and 2021 estimated parking demand which was derived using historical data provided by the HPA and local parking operators, we estimated the 2020 parking demand by evenly splitting the difference between the 2019 estimated demand and the 2021 estimated demand.

In order to project "normal" growth for this Sub-Zone, we assumed the demand in 2022 would equal the estimated demand for 2020. We applied a 2.6% annual growth rate for all other years projected which is equivalent to the 5-year average population increase.

The estimated impact to demand for each development project was calculated using a shared parking model which was previously described. We reflected the impact in line with the development project completion year.

Table 49: Projected Future Parking Demand – Parkville Sub-Zone 3

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
PARKING DEMAND BY FACILITY TYPE													
On-Street	50	44	39										
Off-Street - Public Parking (Publicly Owned)	0	0	0										
Off-Street - Public Parking (Privately Owned)	0	0	0										
Off-Street - Private Parking	272	272	272										
TOTAL DEMAND BASELINE	**322**	**316**	**311**										
Annual Growth Rate (Normal Growth)				0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%
ESTIMATED IMPACT ON PARKING DEMAND													
Normal Growth				1	1	1	1	1	1	1	1	1	1
No future development projects assumed as part of this analysis													
TOTAL ADJUSTED DEMAND	**322**	**316**	**311**	**312**	**313**	**314**	**315**	**316**	**317**	**318**	**320**	**321**	**322**
ESTIMATED CURRENT AND FUTURE PARKING DEMAND BY FACILITY TYPE													
On-Street	50	44	39	39	39	39	39	39	39	39	40	40	40
Off-Street - Public Parking (Publicly Owned)	0	0	0	0	0	0	0	0	0	0	0	0	0
Off-Street - Public Parking (Privately Owned)	0	0	0	0	0	0	0	0	0	0	0	0	0
Off-Street - Private Parking	272	272	272	273	274	275	276	277	278	279	280	281	282
TOTAL ADJUSTED PARKING DEMAND	**322**	**316**	**311**	**312**	**313**	**314**	**315**	**316**	**317**	**318**	**320**	**321**	**322**

Source: THA Consulting, Inc, 2022

Based on the assumptions previously listed, we anticipate the parking demand will reach pre-COVID levels by 2031.

Estimated Future Parking Adequacy

As a final step to estimating the future parking adequacy, we subtracted the estimated parking demand from the estimated ***effective*** parking inventory. To determine the effective parking inventory, we multiply the parking inventory to the "cushion" or effective supply factor. For the purpose of this analysis, we applied a 15% cushion for all on-street parking areas, and a 10% cushion for all other off-street parking areas.

If the result is positive, there is a surplus and if the result is negative, there is a deficit or shortage.

Table 50: Projected Future Parking Adequacy – Parkville Sub-Zone 3

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
ESTIMATED ADEQUACY (SURPLUS OR SHORTAGE) BY FACILITY TYPE													
On-Street	81	87	92	92	92	92	92	92	92	91	91	91	91
Off-Street - Public Parking (Publicly Owned)	0	0	0	0	0	0	0	0	0	0	0	0	0
Off-Street - Public Parking (Privately Owned)	0	0	0	0	0	0	0	0	0	0	0	0	0
Off-Street - Private Parking	592	592	592	591	590	589	588	587	586	585	584	583	582
TOTAL ESTIMATED PARKING ADEQUACY	**673**	**679**	**684**	**683**	**682**	**681**	**680**	**679**	**678**	**676**	**675**	**674**	**673**

Source: THA Consulting, Inc, 2022

Overall, we anticipate a parking surplus in the Parkville Sub-Zone 3.

TASK D – PARKING MANAGEMENT

INTRODUCTION

This section represents the findings and recommendations associated with Task D – Parking Management and Recommendations. The purpose of both the task and this section is to review the policies and procedures related to both the public on-street and off-street parking system and make recommendations to improve management, utilization, and oversight of the parking system. The outcome is "best practice" strategies to maximize the utilization and sharing of existing parking to mitigate, to the extent possible, the need for additional parking. This review includes the following elements:

- Parking management and enforcement, including hours of operation, time regulations, paid parking approaches and areas, and policy options to support the goals of the parking system and the overall recommendations of the parking study.
- Evaluating peer cities to define benchmarks, areas for modernization, and best management practices to improve the Hartford parking system.
- Shared parking policies, practices, and opportunities to support a more balanced approach to parking management and travel demand into and around the Hartford downtown area and the primary study areas of the parking study.
- Residential parking conditions, including impacts of current parking regulations, recommendations for residential parking, and best practices to consider moving forward.
- Opportunities to leverage existing parking technology and recommendations to invest in additional technologies to support the goals of the parking system and overall recommendations of the parking study.
- Opportunities for increased revenue to reinvest in the parking system, transportation demand management initiatives, or other downtown improvements.

The goals of this task include:

- Using shared parking and management strategies to mitigate, to the extent possible, the need for additional parking
- Create management, outreach, and communication strategies that are tailored to the needs of the individual study areas
- Evaluate operational, technological, and pricing strategies that can help balance public parking demand and supply
- Improve the user experience for HPA and public parking customers, as well as area residents, employees, business owners and visitors
- Define right-sized parking strategies that leverage existing assets and improve the provision of public parking

These elements will be used to identify any strategies to improve the maximization of the study areas parking assets to improve user convenience, optimize utilization, and generate operating income to support parking infrastructure, Traffic Demand Management (TDM) initiatives or downtown economic development. The recommendations in this document build off the findings from Task B (Public Engagement) and Task C (Current and Future Projected Parking Conditions) and will be used to guide overall recommendations and strategies related to public parking in the subsequent tasks in the Hartford Parking Study.

The task included the following activities:

- A review of data and policies and ordinances governing parking within the project's study areas.
- Utilizing the outcomes from public engagement to support contextualized recommendations for each study area.
- Conducting a peer review to define metrics, goals, and opportunities for the Hartford parking system to improve.
- Evaluating residential parking demands through a limited review of current demands versus capacity.
- Defining shared parking opportunities based on existing and projected needs.

The following sections provide the general findings and specific recommendations for each of the analysis areas.

Existing Policies and Procedures

The Hartford parking system is made up of a combination of public and private parking assets, with the Hartford Parking Authority (HPA) managing a combination of on-street and off-street parking. While the HPA manages the entirety of the on-street system, their control of the off-street public parking system (see Table 1 in Task C) is much smaller. There are a number of off-street facilities available to the public managed by private parking operators and/or landowners. More so, there are even more private parking facilities that are only available to on-site tenants or reserved parking, not available to the public. This disparity in ownership and control of the parking system limits the influence the HPA and the City can have on influencing parking policy throughout the area.

The following sections define the existing parking policies and procedures by study area.

Downtown, DoNo, and Bushnell

Most of the public parking management activities today take place in this district, including paid and regulated on-street parking, public off-street parking, enforcement, and limited shared parking.

On-Street Parking

The HPA manages more than 2,000 on-street parking spaces in the downtown area, including a variety of metered and unmetered parking, time limits, and price points. There are several meter zones, including:

- Downtown Central Zone, which includes over 450 spaces, with a price of $2 per hour and a maximum time limit of two hours
- A Four-Hour Parking Zone, which includes over 400 spaces, with an escalating price point of $1 per hour for the first two hours, $2 per hour for the third hour, and $3 per hour for the fourth (for a total of $7 for a four-hour stay
- A Ten-Hour Parking Zone, which includes nearly 200 spaces, with a price of $1 per hour
- Nearly 800 two-hour meters throughout the remainder of the area that are priced at $1 per hour

The on-street parking system is managed using Flowbird parking meters, set in a Pay-By-Plate configuration. Recently, the system has been upgraded with the addition of the Woonerf mobile payment application, which has been received well within the community. Within the downtown area, the HPA is beginning to implement zonal-based two hour time limits using their License Plate Recognition (LPR) enforcement system.
The system is only operational in paid parking mode from Monday through Friday, 8am to 6pm. All other times and holidays are provided free of charge and are actively marketed as such to incentivize use during non-peak hours.

Off-Street Parking

There are a number of public parking facilities in the Downtown, DoNo, and Bushnell areas. Most of these are managed by the private sector. The HPA manages one parking structure – the MAT Garage – which is operational until 11:30pm seven days per week. The garage has a little more than 900 spaces with an hourly rate of $3 and a daily maximum of $18. After 6pm, the entrance rate is a flat $6.50. Monthly rates include $160 for a normal permit and $75 for an evening only permit. Garage access is controlled by Amano McGann equipment.

Enforcement

The HPA enforces the on-street parking system Monday through Friday from 8am to 6pm. Parking is generally free and unregulated after those hours. The enforcement is conducted using LPR equipped vehicles that patrol the metered parking areas. The combination of Pay-by-Plate configuration and LPR enforcement is intended to streamline the enforcement process by automating the observations of vehicles.

Residential Parking

The HPA manages and enforces a number of residential parking areas. Portions of the South End neighborhood (within the Downtown, DoNo, and Bushnell study area) are designated as residential permit parking, as well as several that are directly adjacent including Clay Arsenal, Frog Hollow, and Asylum Hill.

Shared Parking

There are no specific examples of shared parking in the Downtown, DoNo, and Bushnell study area, but the privately-owned public parking system (as well as the HPA and City public parking facilities) serve as a de facto shared parking system that is available to anyone in the area – commuter, employee, employer, resident, etc. – and supports the core of the downtown area.

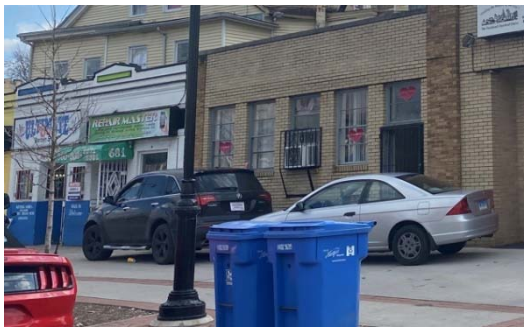
UPPER ALBANY

Compared to the previous study area, there is considerably less parking management activity in the Upper Albany area. Because of this lower-level of parking enforcement and management, people tend to park all day in public parking spaces in the Upper Albany corridor. The HPA gets 311 calls throughout the day complaining about parking issues in these areas, especially people blocking sidewalks, blocking crosswalks, and double parking.

On March 18th, THA performed additional observations of the parking conditions in the Upper Albany study area and noted significant illegal parking conditions including double parking, vehicles parked on or too close to corners and cross walks, and parking that obstructed sidewalks. These conditions negatively impact pedestrian safety in the study area and parking enforcement hours should be extended in the early evening hours when commercial activity in the area is active to address these conditions. Parking enforcement in the study area should also be increased and remain consistent to convey that illegal parking that impacts pedestrian safety is not acceptable. The increased enforcement effort should be accompanied with an information campaign communicating to study area stakeholders as to why parking enforcement is increasing and the associated benefits. In addition, a "warming" grace period can be undertaken during the initial step up of enforcement to reduce any negative community reaction.

On-Street Parking

There are dedicated on-street parking spaces along the primary commercial corridor, Albany Avenue, but they are generally unregulated with no pricing or time limits. The public engagement portion of this project identified a need for paid parking on the corridor as a means of regulating parking and promoting turnover. Additionally, the City and HPA intend to add more loading zones in this area to help reduce double parking and support business needs.



The HPA is currently conducting two limited pilot studies of paid parking along Albany Avenue. The pilots will be conducted along portions of the corridor for a three-month period and a 6-month period to evaluate the ability to improve turnover on-street and support business needs. In their initial configuration, the pilot tests only implemented paid parking on one-side of the street, with no payment required on the opposite block face. This could have limited the effectiveness and observations from this pilot effort.

Off-Street Parking

There are no defined public parking areas in the Upper Albany study area, with all off-street parking intended to support specific businesses and/or destinations.

Enforcement

Enforcement in the Upper Albany study area is generally restricted to the residential parking areas and the new paid parking pilot, and occurs less frequently than in the Downtown area. Like the other study areas, enforcement activity only occurs from 8am to 6pm, Monday through Friday.

Residential Parking

The HPA manages and enforces the Upper Albany residential parking area, which is located within this study area.

Shared Parking

There are no specific examples of shared parking in the Upper Albany study area.

PARKVILLE

Much like the previous study area, there is very little public parking management activity in the Parkville area. Because of this lower-level of parking enforcement and management, people tend to park all day in public parking spaces in the Parkville district. The HPA gets 311 calls throughout the day complaining about parking issues in these areas, especially people blocking sidewalks, blocking crosswalks, and double parking.

On March 18th, THA performed additional observations of the parking conditions in the Parkville study area and noted significant illegal parking conditions including double parking, vehicles parked on or too close to corners and cross walks, and parking that obstructed sidewalks. These conditions negatively impact pedestrian safety in the study area and parking enforcement hours should be extended in the early evening hours when commercial activity

in the area is active to address these conditions. Parking enforcement in the study area should also be increased and remain consistent to convey that illegal parking that impacts pedestrian safety is not acceptable. The increased enforcement effort should be accompanied with an information campaign communicating to study area stakeholders as to why parking enforcement is increasing and the associated benefits. In addition, a "warming" grace period can be undertaken during the initial step up of enforcement to reduce any negative community reaction.

On-Street Parking

There are some dedicated on-street spaces located along Park Street, Park Avenue, and Bartholomew Avenue in the heart of the study area. These spaces are time regulated in some areas, with a combination of one- and two-hour time limits. The City and HPA intend to add more loading zones in this area to help reduce double parking and support business needs.

Off-Street Parking

There are no defined public parking areas in the Parkville study area, with all off-street parking intended to support specific businesses and/or destinations.

Enforcement

Outside of the time regulated parking on the primary commercial corridors, there is very little to enforce within this study area. Like the other study areas, enforcement activity only occurs from 8am to 6pm, Monday through Friday.

Residential Parking

There are no residential parking areas within the Parkville study area.

Shared Parking

There are no specific examples of shared parking in the Parkville study area.

WETHERSFIELD AVENUE CORRIDOR

Much like the previous study area, there is very little public parking management activity in the Wethersfield Avenue Corridor area.

On-Street Parking

There are dedicated on-street spaces located along Franklin Avenue, the study areas primary commercial corridor. These spaces are time regulated in some areas, with mostly two-hour time limits.

Off-street Parking

There are no defined public parking areas in the Wethersfield Avenue Corridor study area, with all off-street parking intended to support specific businesses and/or destinations. There are very large private parking areas on the east side of the study area.

Enforcement

Outside of the time regulated parking on the primary commercial corridors there is very little to enforce within this study area. Like the other study areas, enforcement activity only occurs from 8am to 6pm, Monday through Friday.

Residential Parking

There are no residential parking areas within the Wethersfield Avenue Corridor study area.

Shared Parking

There are no specific examples of shared parking in the Wethersfield Avenue Corridor study area.

PEER COMMUNITIES

In addition to evaluating the existing parking management conditions in the various study areas, the project team also benchmarked the HPA's parking policies against several peer communities, defined by the City of Hartford. The table below compares on-and off-street parking rates along with the hours of enforcement for each community.

Table 51: Peer Community Parking Rates/Hours

		Hartford, CT	New Haven, CT	Providence, RI	Stamford, CT	Cambridge, MA	New Rochelle, NY	Worcester, MA
On-Street	**Low**	$1	$1	$1.25	$1.25	$1.00	$1.00	$1
	High	$2	$1.50	$1.25	$1.25	$1.50	$1.00	$2
Off-Street	**Hourly**	$3	$2 - $4	-	$1	$4 for the first hour $2 for each add'l hour	$1.00	$4 for the 1st hour $1 for each add'l hour
	Daily	$18	$18	-	$16	$30	$16	15
Hours of Enforce-ment	**Hours**	8am – 6pm	8am – 9pm*	8am – 6pm	8am – 8pm	Varies by area	8am – 6pm* (12am in some areas)	8am – 8pm
	Days	Mon – Fri	Mon - Sat	Mon - Sat	Mon - Sat		Mon - Sat	Mon - Sat

**Posted time limits only enforced 8am-5pm*

PARKING MANAGEMENT & POLICY FRAMEWORK

Advanced parking management strategies should be rooted in policies and supportive philosophies that guide the parking program and its impacts on community growth, mobility enhancement, and economic development. The core of any parking management strategy should be remaining open and flexible to opportunities that present themselves with changing community demographics, mobility elements, parking behavior, and changes in available tools and technologies. This policy framework introduces primary policy concepts and elements that should govern the growth of the HPA and City of Hartford parking program.

The following three criteria serve as a guide for the development and implementation of advanced parking management concepts:

1. Parking Management - The goal of parking management within the community could be active collaboration between the City, stakeholders, and the private sector to efficiently provide parking as a shared resource for all users at all times. The HPA should strive to create and/or control more market share within the public parking system to help influence and establish equitable parking options for Hartford residents, businesses, and visitors.
2. Economic Development - The parking management program should be structured to support a more efficient use of assets throughout the community, supporting a more effective use of space and contributing to opportunities to create growth and infill development throughout the Downtown and surrounding districts.
3. Mobility Enhancements - The parking system should integrate directly with mobility investments in the community to support a park-once environment where patrons can reduce needs for single-occupant vehicle trips to move between destinations and districts in the Downtown. Balancing access into and around the Hartford community will require a focused synergy between parking and mobility.

The following sections provide a combination of "best management" practices and specific recommendations for the HPA parking management program. These include operational and management enhancements, analytics and communication strategies, pricing policies, and supportive program elements intended to benefit the Hartford community and the specific districts within this study. All recommendations are summarized at the end of this document.

PARKING MANAGEMENT

The HPA is the primary public parking management function in the Downtown Hartford community and surrounding neighborhoods. With a combination of off-street and on-street parking, the HPA aims to provide equitable public parking options for residents, businesses, employees, and visitors. As defined in the previous section, the higher prevalence of private parking assets in the Downtown and surrounding neighborhoods limits the ability for the HPA to define the parking market and implement community-driven solutions.

Based on the tools available for the HPA today (as well as the recommendations from this study, the following criteria for parking management should be considered.

On-Street Parking & Curb Management

The on-street system (as part of a larger curb management system) needs to be managed to support adjacent business needs. One clear consistent theme from the public engagement process was a need for on-street time limit regulations to support access/turnover for adjacent uses, which was echoed throughout several of the study areas. This could include designation of short-term parking spaces for restaurant pick-up or delivery. Competition for these spaces will only get more intense as the dynamic need for curb space usage increases.

The HPA and the City should also closely monitor the capacity for on-street parking within the downtown and adjacent neighborhoods. The continued loss of spaces for alternate curb lane activity could have a negative impact on the already limited public parking supply, creating more confusion and frustration for patrons. In some instances, the creation of new multi-modal amenities, like the City's bike lane program, are creating new travel options while eliminating parking supply. The HPA and the City should look for opportunities to define new public parking assets in underutilized street right-of-way, as appropriate and available. This topic is covered further in our section on Task F.

Parking Enforcement

The approach to parking enforcement will need to change to support the vibrant growth throughout the community. Currently the HPA has six total parking enforcement officers (PEOs), and seven vehicles are equipped with LPR-readers. The organization is in the process of adding eight more PEOs (for a total of 14) and three more LPR-equipped enforcement vehicles. The goal of this increase is to help elevate enforcement in areas that are currently underserved and improve compliance within the parking system. The HPA should work to ensure that parking enforcement is provided as a ratio of one PEO per 300 to 400 managed on-street parking spaces, at a minimum. That means as the on-street system is expanded in places like Upper Albany to include more paid and residential parking areas, the corresponding enforcement staff will need to increase as well.

The HPA should also consider modifications to the times and approaches of enforcement and time regulations throughout the areas, based on data-driven analytics. This could include:

- The HPA should review the enforcement schedules and routing and make a more data-driven and analytical approach to deploying existing and expanded PEO staff to create a more consistent environment in those

areas with the highest demands. Commentary from public outreach indicated that the approach to enforcement wasn't always applied consistently throughout the community.

- Expanded enforcement hours where the hours of enforcement more closely resemble the times for peak demands in an area.
- Creating parking zones where people can't park in the same zone for more than two hours. This would be linked to the use of LPR-equipped vehicles and would promote more turnover in areas of high demand. Careful consideration will need to be given to the parameters of the parking zone, with the established time thresholds set to influence the desired behaviors (i.e., cars are not allowed to return for a certain period of time or cars are not allowed to return to that zone for the remainder of the day).
- Based on field observations and comments from the public outreach, an apparent problem is people illegally parking in front of driveways, on sidewalks, and in crosswalks. The HPA could consider making those infractions more expensive to dissuade this behavior. Combined with an increased enforcement presence, the approach could shift these patterns throughout the community. In some neighborhoods, this approach may be difficult until the HPA is able to establish more off-street parking supply (whether through investment or leasing, as described later in this report).

Data Analytics

The HPA and the City of Hartford have shown a desire and willingness to implement data-driven practices within the parking system. Additionally, the public outreach component of this study detailed a desire from the community to see positive outcomes from this data-driven approach to parking management. The attendees – whether representing the entire community or specific districts – were eager to see time limits, enforcement, and management applied based on need and activity in an area. This could include adjusting pricing and regulations on an ongoing basis to ensure that the HPA program continued to evolve with community needs.

Using practical and usable data provides for a more effective approach to implementing changes within the parking system. With that in mind, the following table provides a summary of data that could be collected, analyzed, and used for decision-making purposes.

Table 52: Data Collection/Analytics Considerations

Policy Area	Data Stream	Adjustment Thresholds
Parking Pricing	Using occupancy data to define how much to charge based on demands (prices will go up and down)	Occupancies below 65% should see decreased pricing. Occupancies above 90% should see increased pricing. Occupancies within 5% of those targets are considered on the cusp of needing price changes and should be monitored. Occupancies between 70% and 85% should see rates held constant.
Time Regulations	Using occupancy, duration, and citations to define how long people can park and when regulations should be set	Reviewing parking durations and corresponding policies and citations should provide guidance on how and when to adjust time regulations. For example, in a section of street with two-hour time limits, if the average duration is routinely three hours and citations indicate a trend of overstaying time limits, regulations should likely be adjusted up (or patrons should be educated of off-street options). Using average durations from data collection (manual or LPR) will provide the guidance needed to set effective regulations.
Hours of Enforcement	Using occupancy, citations, and customer input to define the need to manage parking, before or after traditional hours	Using occupancy thresholds defined in the parking pricing description above, HPA and the City can effectively monitor nighttime demands, especially in the vicinity of commercial areas. Consistent parking occupancies at or above 85% after enforcement hours is an indication that enforcement hours should be extended.
Permit Pricing / Allocation	Using occupancy, commitments, and access information, the off-street system should be managed to customized oversell rates for the parking garages	The off-street facilities should target occupancy levels at 85% or above during peak conditions. This should be inclusive of both committed/permitted spaces and transient spaces. Measuring actual usage requires clearly defined credentials by user/company. Defining usage patterns could change based on work environment (Post-COVID). If trends over time indicate that permit users are not maximizing utilization of their spaces, HPA and the City should consider additional oversell or encouraging higher transient usage.
Commercial Loading Zones	The application and management of loading zones should be based on proximate delivery space and usage of loading zones. Corresponding policy and price should be adjusted as well	Occupancies below 65% should see decreased pricing. Occupancies above 90% should see increased pricing. Occupancies within 5% of those targets are considered on the cusp of needing price changes and should be monitored. Occupancies between 70% and 85% should see rates held constant.

Communications & Transparency

The HPA has worked diligently to build relationships throughout the Hartford community in order to help implement parking practices that are community-driven and support the needs of its constituents. Signage, marketing, and education efforts in Frog Hollow are a great example of this approach to community engagement. HPA should build on this approach and create a focused arm of the organization to keep the community engaged and involved in implementation processes. Comments from the public outreach component of this study indicated a strong desire for the HPA to enhance sharing of parking information, including parking system changes, wayfinding and signage, and creation of a more consistent and recognizable communications campaign and brand.

Today's use of the HPA website, social media, and local media provide good coverage and visibility. However, the introduction of a Communications and Media Specialist could prove fruitful with new initiatives underway. For example. as new paid parking pilot areas are defined, the community around those areas needs to be engaged in both the implementation process and the evaluation of success.

Conducting neighborhood level engagement – even if it is done once annually – brings legitimacy to proposed changes and contextualizes the issues for that neighborhood. As the HPA expands primary management efforts beyond the Downtown Hartford area (in support of continued community growth), it will be critical to initiate and leverage these relationships to ensure a successful transition.

The recommendations identified throughout this task memo and the larger report are intended to provide the City and the HPA a roadmap to better provide public parking, support a successful multi-modal environment, and help achieve the growth and economic development goals desired throughout the community. Each section has provided data points and measurable inputs to better gauge the effectiveness of the improvements. One additional layer of evaluation could prove particularly effective in helping the City and HPA measure and manage success. The introduction of a Parking Advisory Committee, made up of individuals representing the varied interested of the community (Downtown, Upper Albany, Parksville, and the Wethersfield Avenue Corridor) would help to define champions within the community and help provide partnership and oversight for the implementation of recommendations.

The Parking Advisory Committee could be an excellent forum for coordinating the necessary interaction and communication between Hartford's municipal leadership, the downtown and local stakeholders, and parking management personnel. This committee would meet on a regular basis and potentially include representatives from Hartford's Parking Authority, residents, business owners, BID representatives, landlords, and other City officials, etc. The purpose of the committee would be to review, discuss, and identify parking issues or concerns with the intent of directly addressing problems and making recommendations and improvements related to both on and off-street parking and formulating policy related to overall transportation and parking programs in the City. This includes, but is not limited to, vehicles, bicycles, pedestrian traffic, as well as the operations and services provided by local public transportation providers directly impacting the downtown and its constituents; to provide a communication link between users of the parking services and those responsible for providing such programs and enforcing the regulations governing them.

The HPA could also consider a re-branding campaign in conjunction with elevated community outreach. This does not require new logos or media presence, but an enhanced approach to communication both digitally and statically. This could include refreshing an approach to signage at the street level to make messaging more visible and understandable. This could also include creating appropriate marketing and messaging campaigns in conjunction with these changes. A good Communications and Media Specialist should be able to provide appropriate and specific guidance for each implementation step.

A good example of how to use advanced messaging would be in the immediate period following his study where the HPA messages the increased approach to enforcement, addition of PEOs, and the community benefits intended from this addition. Additionally, the HPA may want to consider using initial warning periods to help transition into new approaches to enforcement.

Finally, the HPA should consider the creation and annual distribution of an annual report that highlights primary changes year over year, documents involvement and investment in the community, and provides year-over-year data summaries that communicate the intended goals of the program.

Parking Wayfinding System

An additional step in improving communications with the Hartford community would be to enhance wayfinding signage associated with the public parking system. A previous Downtown Hartford study completed by iQuilt Partnership in 2012 identified that a proper parking wayfinding and signage program could greatly improve all aspects of a coordinated public parking program. Ideal parking wayfinding would include a comprehensive signage system in a standardized format that clearly communicates the location of parking destinations to visitors. The role of the parking wayfinding system is to assist visitors to easily find downtown parking facilities. Additionally, a wayfinding system could help reduce vehicle traffic and extraneous vehicular circulation.

To be effective, the signage and wayfinding for a parking system must be clear, concise, and simple. While the creative designer may desire an aesthetic statement, plain is far better than fancy, particularly for traffic direction. Parking signage and wayfinding systems should be aesthetically complementary to Hartford's overall wayfinding system, with signage that is simple and directly conveys the location of public parking. All visitor/customer spaces should be easily identifiable to a first-time visitor without creating any confusion about who may or may not park in a given space. The signage system should include the following:

- Trailblazer signs located on streets leading to the downtown, these signs show where parking can be found.
- Site signs located at the parking lots and garage; these signs describe the type of parking available.
- All signage should have a general organizing principle that is consistent in the system.

- Directional signage for vehicles must be continuous and located in predictable locations (i.e. repeated at each point of choice) until the destination is reached.

One primary issue related to implementing wayfinding signage in Hartford is the lack of public off-street parking. With so few facilities, a wayfinding system may not be effective in helping to balance demands and allocating parking traffic in an efficient manner. Because of the existing lack of public parking managed by HPA, this recommendation may be best implemented after implementing initial shared parking recommendations that look to partner the HPA and the private sector to support a more comprehensive public parking system.

PRICING STRATEGIES

A critical component of the policy and practice evaluation is to look at current and potential pricing strategies (static, variable, or demand-based pricing) to incentivize the wider use of all parking locations. The purpose of an appropriate pricing structure and strategy is to maximize public parking utilization and balance access into and around the Downtown Hartford area. The HPA is focused upon this goal and has already established incremental changes to the existing pricing structure and developed a tiered parking fee schedule for public parking assets.

The previous section defined the existing pricing structure for on- and off-street parking, which is currently found in the Downtown, DoNo, and Bushnell study area. The parking rates in these areas were last adjusted in 2019 and currently include a combination of price points, progressive pricing structures, and time limits to support the diverse needs within the area. The inclusion of a paid parking pilot in Upper Albany is the first expansion of paid parking outside of the downtown area. The permanence of that paid parking will be defined by how well it is received in the area, the impacts to foot traffic on adjacent businesses, and key performance indicators like citation issuance, time duration of parking, turnover, and overall customer satisfaction.

Defining When and How to Change Parking

The first critical steps in implementing a paid parking program in new areas or expanding paid parking in existing areas are to conduct useful data analytics and implement a transparent communications process that defines how and when paid parking needs to be adjusted. Section 22-61 of the Hartford Municipal Code states the following:

> *Whenever the parking of vehicles on any street or part thereof cannot, in the opinion of the traffic authority, be adequately and efficiently regulated and controlled otherwise, he may authorize the installation of parking meters and designate parking meter zones, fix the zone parking fee and the legal parking time in such zones, and also fix the hours during which the use of parking meters shall be required.*

This ordinance statement begins to define the criteria for installation of paid parking, which is the presence of congestion or lack of turnover related to the unregulated use of parking. In order for this ordinance statement to have more factual basis, the inclusion of data thresholds that clearly define the how and why of needed parking management. For example, the following criteria would clearly begin to state the need for improved parking management:

- **Parking Duration** – if stays in a commercial area begin to exceed **2-3 hours** on a normal basis, the access to adjacent businesses begins to be severely limited and could have an adverse effect on local business

success. An initial response would be to implement parking time limits which would begin to support more efficient turnover in the area.

- **Parking Occupancy** – if the utilization of a segment of a commercial corridor begins to **exceed 85%** consistently, parking becomes harder to find and limits the success of the adjacent businesses who depend on easy access. The logical response to this problem would be to implement paid parking, with the prices set high enough to change behaviors and balance parking demands between the on-street and off-street systems.

Collecting this information isn't always easy but advances in technology have begun to reduce the time and staff needed to both collect and process information. The HPA currently has seven LPR-equipped vehicles that could be used in a dual-function to both enforce parking violations and collect information that can be converted into useful parking information. Each license plate that is collected on a normal enforcement shift also contains associated GPS coordinates, time stamps, and dates that can be used to supplement the parking data collection process.

Extracting the data from this system isn't intuitive at first glance, but there are opportunities to work with the current vendors' tools to provide some levels of current and predictive analysis. The HPA should define practices for using this data and designate a staff member to manage these data streams. Additional discussion on this recommendation is provided in the Equipment & Technology section of this report.

The second part of the initial critical steps is to develop a transparent process for implementing paid parking, managing parking in an area, and making changes to the system. Fortunately, the HPA Parking Director has made a point to include local business and neighborhood associations in the planning process in advance of implementing new programs. The Albany Avenue Paid Parking Pilot is an example of this engagement, where the HPA worked with local merchants' associations to define when and how to implement the pilot and has clearly stated the metrics that will be evaluated to define success or failure of the program, including changes in violations, turnover, and business activity.

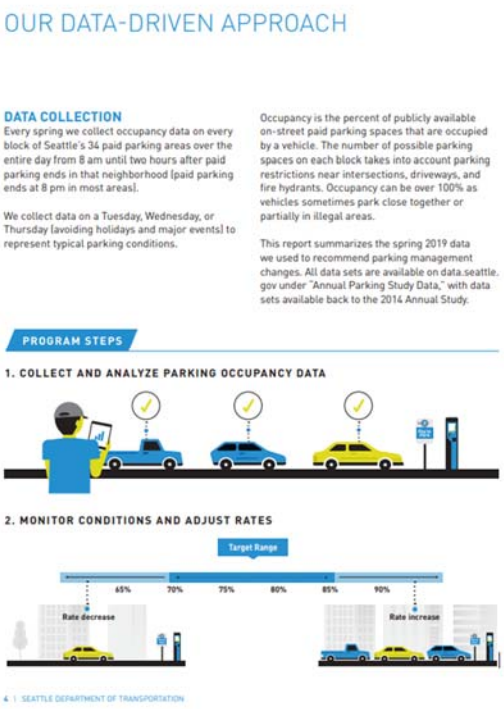
Expanding upon these existing practices, the HPA should consider conducting regular engagement with the various associations within the downtown and adjacent study areas. This engagement would include planning discussions to define the metrics that influence parking changes, education about the intent of the planned changes, and implementation steps along the way. The outcome will be a more informed constituent base that understands the need for changes, rather than having them thrust upon them.

An example of this process is the Seattle Department of Transportation's (SDOT) approach to implement a Performance Based Pricing Strategy over a decade ago (and continues to this day). Their process included the following steps:

1. An inclusive planning process to define the parameters of the program, existing conditions, thresholds for change, and overall intent of the pricing strategies (managing demand, not generating revenue).
2. Ongoing neighborhood level planning after the completion of the planning process meant to reach a wider audience that may not have been included in step one.
3. Annual data collection efforts that measured before and after changes for each pricing change. Prior to the advancement in parking technologies this was conducted manually, but the program has been able to leverage data streams to reduce the collection burden.
4. An annual report that clearly defines the changes in demand levels, pricing impacts, and proposed changes each year.

As an example of the success of this strategy, during the initial phases of COVID, the City and SDOT reduced parking prices to zero to support local businesses. Rather than setting the rates back to their pre-pandemic levels, SDOT used the transparent principles of their program to adjust parking prices monthly as demand came back into the community. In other communities where paid parking was suspended, there was pushback about re-instating. In Seattle, the community understood the importance of the program and the steps to renew pricing levels.

Figure 34: Examples from SDOT's 2019 Annual Parking Study


OUR DATA-DRIVEN APPROACH
DATA COLLECTION
Every spring we collect occupancy data on every block of Seattle's 34 paid parking areas over the entire day from 8 am until two hours after paid parking ends in that neighborhood (paid parking ends at 8 pm in most areas).
We collect data on a Tuesday, Wednesday, or Thursday (avoiding holidays and major events) to represent typical parking conditions.
Occupancy is the percent of publicly available on-street paid parking spaces that are occupied by a vehicle. The number of possible parking spaces on each block takes into account parking restrictions near intersections, driveways, and fire hydrants. Occupancy can be over 100% as vehicles sometimes park close together or partially in illegal areas.
This report summarizes the spring 2019 data we used to recommend parking management changes. All data sets are available on data.seattle.gov under "Annual Parking Study Data," with data sets available back to the 2014 Annual Study.
PROGRAM STEPS
1. COLLECT AND ANALYZE PARKING OCCUPANCY DATA
2. MONITOR CONDITIONS AND ADJUST RATES
Target Range
65%
70%
75%
80%
85%
90%
Rate decrease
Rate increase

Paid Parking Policy Considerations

Beyond the guidelines to focus on promoting data-driven changes and communicating effectively within the Hartford community, the following recommendations have been developed specifically for paid parking in the study area, including either existing or potential paid parking areas.

Demand-Based Pricing Policies

With the implementation of a data-driven parking system, the HPA will be well suited to adjust parking pricing based on need and demand going forward. One element that can be expanded in the Hartford area is the implementation of demand-based pricing practices that could improve the performance of the Hartford parking system. More efficient and effective distribution of parking demands will lead to reduced congestion, better access decisions, and a more balanced utilization of the entire parking and mobility systems. The following principles should be implemented as HPA and the City move to a more data-driven pricing model for both the on-street and off-street systems.

Table 53: Types of Demand-Based Parking Pricing

Type of pricing structure	Description
Dynamic or variable pricing	Differing parking prices based on observed or historical demands. Each transaction in an area is still governed by time limits and is set to a specific per hour price level.
Progressive pricing	Prices for parking fluctuate by length of transaction. Time limits are effectively eliminated and duration of stay decisions are monetized. For example, a two-hour transaction could be $2 per hour, while a three-hour transaction would be $2 per hour for the first two hours and then $3 per hour for the third hour. The intent is to remove arbitrary restrictions and direct behavior through price.
Discount pricing	For areas or facilities that are underutilized, the application of discount pricing (when combined with escalating prices in high demand areas) could incentivize higher use of the facilities.
Event pricing	On-street parking rates around large event centers should have policies in place to charge event rates with special conditions. For example, for events at the XL Center, rates could be set to a higher flat rate within one to two blocks around the stadium, with no time limit. This rate would cover an hour before the event until enforcement begins again the next morning. The Newark Parking Authority adjusts it is on-street rates during event nights to align more with off-street parking in the entertainment districts of the City. On-street rates in the district range from $10-25 from 6pm -12am during event depending on the popularity / attendance of the event. Event parking rates are effective in the 'Entertainment District' of downtown Newark. These are the streets surrounding NJPAC, the Prudential Center, and Symphony Hall. These parking rates are effective during all events, Monday-Sunday, and holidays.

The HPA will need to define how to apply these pricing principles based on area demands that are monitored by the data analytics practices defined in previous sections of this report. For example, as demand levels in heavily commercial areas increase, it may be beneficial to apply dynamic pricing structures that support a more balanced approach to parking demand allocation. Main commercial corridors could be priced higher than adjacent support or residential streets to help balance demands and keep spaces available and turning over for adjacent businesses.

In the event that the City or the HPA would like to provide discounted parking for residents, a combination of pay-by-phone applications, virtual permitting, and license-plate based payment/enforcement could be configured to provide a discounted rate for residents. The goal would be to initiate parking management practices – not generate revenue – and the provision of discounted parking would provide equitable solutions for residents while providing the tools the City and HPA need to manage demands throughout growing commercial areas.

In addition to the various types of parking defined in the previous table, the following program elements will need to be implemented into governing ordinances to allow for more flexible adjustments to the parking system. Its critical to establish these elements before the implementation of dynamic pricing to help ensure that adjustments are not slowed by the need to get re-approval for rate structures or adjustment periods.

Table 54: Components of a Demand-Based Parking Program

Program Elements	Definition
Adjustment periods	Predefine adjustment periods for rates, including necessary time for data collection and analytics. Initially, HPA and the City should strive to do this annually.
Rate ceiling and floors	HPA and the City should define a minimum and maximum rate that program managers can work within to guide the annual rate setting process. Based on an existing rate of $2 per hour, HPA and the City should institute a ceiling of $6 per hour and a floor of $1 per hour.
Rate adjustment intervals	HPA and the City should predefine the adjustment interval so that annual rate changes are predictable and affordable. Based on existing rates, HPA and the City should institute a rate adjustment interval of $0.50 to $1 per hour.

Commercial Benefit Districts

One of the newer tools identified in parking management toolboxes is the concept of a parking benefit district. The concept is that in an area with diverse needs – commercial, office, evening, residential – the advanced management of parking can lead to a collaborative process with successful outcomes for both the managing agency and the affected constituents. The premise is focused on the application of wide-scale paid parking that supports better access, promotes balanced use of on-street, off-street, and fringe parking assets, and creates a more convenient and understandable parking environment. The benefit component of the district allows for reinvestment of parking revenues into the district to support parking, maintenance, mobility, and aesthetic improvements. The HPA is very supportive of the reinvestment of parking revenues back into the community for the betterment of those areas. Specific investments could include cleaning, marketing, and purchasing/leasing off-street parking to create new public parking assets for patrons.

One of the critical elements associated with benefit districts is defining how revenues are collected and used within the district. For most locations, the collection of revenue is generated from the introduction of parking meters in commercial areas to support access to business and turnover of on-street spaces. Other benefit districts extend into the adjacent side streets and neighborhoods, using a combination of metered parking and/or mobile payment technologies to collect revenue. In the event that paid parking extends into neighborhoods, the residents of the neighborhoods would be exempt from hourly or daily payment with the introduction of residential permit parking (preferably with virtual permitting).

A portion of the revenue collected from these sources would then serve to form the basis of the reinvestment. The managing entity (in this case HPA and the City) would need to cover operating costs before assigning any remaining net revenue for reinvestment. The structure and reinvestment of the remaining net revenue is based on how a community desires to utilize meter revenues. For example, the City of Columbus, OH reinvests the remainder of the net revenue after collecting operating costs and a nominal maintenance reserve.

Once the reinvestment structure is determined, HPA and the City will need to define the actual use for benefit district revenues. The three primary uses in existing benefit districts today include:

- Parking Improvements – this includes investment in new parking, shared parking, parking technologies, wayfinding/marketing enhancements, and overall parking management activities.
- Mobility Enhancements – this includes investment in enhanced walking, biking, and micromobility enhancements, transit system enhancements, and micro-transit opportunities. For example, Columbus is using benefit district revenues to support employee-based shuttling to reduce demands for parking, provide more equitable options for employees, and reduce the street network burden during peak periods.
- Aesthetic and Pedestrian Enhancements – this includes investment in streetscape, pedestrian safety, and connectivity improvements. An example would be improvements to Albany Avenue to support lessened traffic, improved pedestrian and cycling improvements, and enhanced user experience.

The governing body associated with a benefit district, in conjunction with the managing agency, usually define the use of funds collaboratively. The benefit district would require a collaborative effort between HPA and the City. Ideally there would be an elected board that works with HPA and the City to implement the program, message the importance of paid parking, and decide how distributed revenues would be implemented.

Case Study – Columbus, OH

The City of Columbus, Ohio recently implemented a parking benefit district in its Short North neighborhood. The intention of the benefit district was to manage spillover impacts from area businesses, provide space for employees to park when demands were low in neighborhoods, and create a revenue stream that could support enhanced transportation options for residents, businesses, and employees in the area. The ultimate goal is to balance access, parking demands, and the ability to support both community growth and preservation of neighborhood character.

Parking demands on High Street, a heavily-visited commercial and arts corridor, were beginning to impact adjacent side streets, especially with employee parking. Resident frustration led to the implementation of a demand-based parking program that included paid street parking for visitors and employees of the commercial district and residential permit parking. The residents pay a heavily discounted rate while the patrons and employees pay an hourly rate based on demands. The hourly payments are handled through a mobile payment app and the residential permits use virtual permitting. Revenues from both transactions are re-invested into mobility improvements intended to reduce the amount of employee traffic in the area through park and ride and shuttling activities.

Paid Parking in Residential Areas

Implementing paid parking in residential areas requires a greater level of review and management as the intent isn't directly the same as in commercial areas. While both are rooted in managing parking demands and promoting space availability, the true intent in a neighborhood area is to manage the impacts of spillover demands from commercial areas. Much like implementing time limited parking in neighborhood areas, paid parking should only be implemented in the times of day when residential demands allow for sharing of the on-street parking capacity.

Prices should be set such that spillover demands are minimized only to the capacity available, rather than promoting patrons to circulate through the neighborhoods looking for cheap parking options. The same data-driven principles

discussed in previous sections should be applied in neighborhoods. That is, if demands dictate higher prices, HPA and the City should not hesitate to raise prices to control the flow of traffic into neighborhoods.

Monetization of neighborhoods should also be limited to mobile payment options. Residents are likely not going to respond well to parking meters in their streets, so a simple combination of signage and mobile payments should allow for monetization without degrading the aesthetics of a neighborhood. The mobile payment platform also allows the neighbors to park without having to validate their vehicle, since the enforcement would be license plate based and virtual.

Considerations should also be given for how to handle the residential payment and interaction in a meaningful and thoughtful way. Virtual permitting (described in the next section) helps to reduce the burden on the residents from a physical permitting perspective. And costs for residential parking should be discounted in neighborhoods compared to the per hour rate. For example, an annual permit at $25 to $50 annually is considerably lower than the hourly price for non-residents. And with LPR and virtual permitting, this discount could even extend beyond residential areas as a benefit to the community.

The implementation of monetized parking and benefit districts will require intensive coordination with neighborhood associations. HPA and the City should use these forums to discuss the implications of implementing and not implementing paid parking in RPP districts. The intent would be to help the residents understand the mitigation impacts of implementing paid parking, as well as the returned benefits that would result from the implementation. HPA and the City would likely also need to include representatives from neighborhoods on any parking committees established to help them maintain a voice in the decision-making process.

During the public outreach component of the project, there were specific concerns about the impacts of residential parking programs, paid parking in commercial areas, and spillover impacts into unmanaged areas. The HPA should monitor residential areas as these changes are made and deploy the appropriate resources and tools to ensure that support area vitality and minimize residential impacts.

Virtual Permitting

A singular strategy that could improve enforcement, operations, and management of the commercial parking in residential areas would be the introduction of virtual permitting. In a virtual permitting environment, residents would simply register their vehicles license plate numbers rather than having to request, obtain, and display a hangtag or sticker. The same regulations on numbers of residential parking permits would apply to residents, with multiple license plates being eligible up to the maximum number of permits.

For guests, the residents would have the option to pre-register guests using either a smartphone application, the City's website, or by calling the City. In any case, they would simply communicate the guests license plate information. If using the smartphone application option, the process is typically as simple as taking a photo of the guest's license plate and confirming the correct license plate number after the system processes the data.

In the case of contractors or workers who obtain guest permits to work in neighborhood areas, many cities have allowed those vehicles to be pre-registered by the contractor or worker. Those laborers would register their vehicles plates, the length of time the job would be occurring, and the area the job (or jobs) would be occurring. This allows for more flexibility for home repairs or renovations and takes the onus off of the homeowner to manage the permit. The enforcement of virtual permits is conducted using LPR equipment (as described in the Equipment & Technology section). The enforcement staff would simply drive through the neighborhood areas and confirm the validity of permitted vehicles and presence of unregistered vehicles. During time periods where unregistered vehicles are

allowed to park for periods of time, the LPR equipment can digitally chalk the tires and evaluate whether those vehicles are staying over the defined time.

Expanding Operational Hours

In addition to the pricing strategies discussed in the previous sections, the HPA should also consider the use of expanded hours of enforcement and monetization to more closely reflect the conditions within the commercial centers in the community. Commercial districts throughout the US have recognized these challenges and have been extending hours of operations into the evenings and weekends to support business needs. In fact, all of the peer communities (Table 51) provide enforcement beyond 6pm and on Saturdays.

Without effective parking management during peak conditions, the priority parking spaces often don't function as intended. Parking controls should be provided whenever demands are consistently above 85%. Under current conditions, the HPA should consider extending enforcement in active districts until at least 8pm Monday through Friday, as well extend hours to Saturday to reflect the demand conditions in the district. This will allow for better control of the on-street parking system during active times. In conjunction with recommendations later in this report related to expanding the off-street system, this will also help further the goal of creating more market share in the public parking system and establishing better balance between on-street and off-street parking.

Location Specific Parking Recommendations

The previous sections all provided guiding thoughts on how to improve the application and delivery of parking management tools – pricing, enforcement, etc. – to support a growing and vibrant community. Below are specific recommendations by study area that use these guiding principles to support the vision for each specific area.

Downtown/DoNo/Bushnell

This area has the highest occurrences of managed parking today, with most of the HPA's public assets located within the boundaries of this district. HPA has done a good job using advanced management concepts like demand-based pricing, tiered pricing structures, and multiple payment platforms to manage demands and provide a quality customer experience.

Based on a review of pre-COVID levels of parking demand (as well as observations during the COVID-recovery period), there will likely need to be additional price escalations in the on-street system in the short-term. These escalations would continue the process of managing demand and balancing access into and around the main commercial area of the Downtown Hartford community. It is reasonable to wait until the post-COVID recovery is more definitive to implement these changes, but they will need to be considered as demand patterns return.

These pricing changes should continue to take the form of demand-based pricing, with data analytics (as defined earlier in this section) driving policy decisions. HPA should also consider expanding tools like the progressive pricing (found on Washington Street) that remove time limits and allow for longer durations with higher pricing. The Woonerf app should allow for this flexibility. These applications should be tailored to the intent of the area.

In regards to the Woonerf app, the HPA should continue to push for the use of this application as a primary payment method. As more and more patrons use the app, the HPA can begin to consider asset light concepts in the application of meters and other curbside capital investments. Asset light concepts call for the reduction in the number of physical meters serving a community, instead strategically locating fewer meters in prime pedestrian areas for those that wish to use a physical payment, allowing all others to pay through virtual means.

The HPA should also consider the extension of enforcement hours into the evening and on weekends. This change does not have to occur throughout the community, but rather in places that demand dictates. For example, in the DoNo area, there is likely a need to better manage parking for commercial/evening activity and events. In the commercial core, there is likely a need to help provide turnover and access for businesses even after the primary commuter hours have passed.

Given that there are no parking requirements today, leading to the possibility of downtown residents parking on-street overnight, the City and HPA could consider monetizing their on-street parking and allowing resident to obtain a permit for a discounted fee that would allow them to park on certain streets from say 4pm to 8am and on weekends. This could alleviate some frustrations related to lack of parking in and around residential areas, provide an equitable resource for residents, and allow for continued parking management advances for HPA.

In addition to pricing changes for on-street parking, the HPA should also consider the monetization of other curbside activities including commercial/passenger loading, goods and food delivery, and street transformations like streeteries, parklets, and other activation areas. This monetization is not intended to dissuade these activities, but rather define the intrinsic value of the curb and support the HPA's goal of re-investment in the community. Monetization will make different street uses more competitive and allow for those which promote the greatest economic value for the area to secure a greater amount of space.

For off-street parking, the HPA should continue to use its guiding language to define prices and maintain market competitiveness. That guiding language sets the HPA prices at 90% of market rates. The HPA should continue to do market surveys to ensure it is pricing parking appropriately while also providing equitable options for the community. As the HPA realizes additional parking supply (either through construction or application of shared parking leases) they can begin to drive more of the market pricing in the area – a concern of stakeholders of this project.

Upper Albany

During the life of this project, the HPA has implemented a pilot test of paid parking in Upper Albany along portions of Albany Avenue. The HPA should evaluate the results of this pilot and consider the implementation of paid parking permanently if the results of the pilot are successful. In an effort to improve communications and data transparency, the HPA should share the results of the pilot and use that communication to improve the provision of paid parking going forward. The HPA may want to consider the implementation of reduced pricing for residents, using the tools available in the Woonerf app or through a virtual permitting system tied into the LPR system.

Double parking was noted as a critical issue both during outreach and during field observations. HPA should consider the implementation of additional loading zones to support loading needs and remove the occurrence of double parking.

The HPA should also consider (and test) time of day parking rates to encourage turnover and support access to businesses. Extended hours of enforcement would also provide a valuable tool for managing and balancing demand and supporting turnover during non-traditional demand periods. The realization of off-street public parking would also help the area balance overall congestion and demand throughout the commercial core.

The HPA should also consider the expansion of residential public parking (RPP) in the areas adjacent to Albany Avenue using the existing RPP format. HPA should evaluate the opportunities to implement paid parking for commercial uses in these neighborhoods to help support community needs as well as generate revenues for reinvestment through a commercial benefit district.

Parkville

The HPA should consider the introduction of paid parking pilots in Parkville, similar to the current version found in Upper Albany. This pilot would help to evaluate whether advanced parking management in Parkville would help to support business needs and the growing economic investment in the area. The realization of off-street public parking would also help the area balance overall congestion and demand throughout the commercial core. The HPA may want to consider the implementation of reduced pricing for residents, using the tools available in the Woonerf app or through a virtual permitting system tied into the LPR system. Extended hours of enforcement would also provide a valuable tool for managing and balancing demand and supporting turnover during non-traditional demand periods.

The HPA should also consider the expansion of residential public parking (RPP) in the areas adjacent to commercial corridors in Parkville using the existing RPP format. HPA should evaluate the opportunities to implement paid parking for commercial uses in these neighborhoods to help support community needs as well as generate revenues for reinvestment through a commercial benefit district.

Wethersfield Avenue Corridor

No specific changes are recommended for this area now, but the recommendations outlined in this document should be considered as the area develops.

RIGHT-SIZED PARKING CONSIDERATIONS

In the past decade, a movement has grown in the parking and planning communities to "right-size" codes, ordinances, and policies related to the provision of parking. Parking codes and ordinances meant to help protect communities from an influx of cars parking in wayward areas have actually worked against the design of functional, walkable development and streets. While Hartford has taken steps to remove minimum parking requirements and move towards a denser walkable urban environment, the development community has continued to build at a suburban rate, creating an extensive private off-street parking system that is largely underutilized.

WHAT DOES RIGHT-SIZED PARKING MEAN?

Developing context-appropriate codes and regulations that are designed to capture the character and intent of an area, rather than applying blanket policies to an entire area out of context. Right-sized parking policy:

- Supports economic development by reducing barriers to building mixed-use developments in urban centers;
- Reduces housing costs as well as household monthly expenditures allowing a larger demographic to participate in the urban, infill housing market;
- Encourages use of transit, rideshare, bike and walk;
- Reduces vehicle miles traveled (VMT) and greenhouse gases (GHG).

The City of Hartford has already taken steps to create a right-sized parking environment by removing parking minimum requirements for most types of new development within the urban components of the community. The primary question to ask is:

> ***Are these measures effective in achieving the goal of right-sizing parking? Or are there additional steps that need to be considered?***

The following sections will review:

- Current development requirements and compare them to peer communities and national best practices
- Residential parking demand and characteristics from a limited review of parking characteristics on representative sites
- Considerations to modify existing right-sized parking approaches and improve efficiency of the parking system

CURRENT CONDITIONS

The City of Hartford zoning regulations exempt the Downtown district (DT-1, DT-2, and DT-3) districts from providing minimum parking as defined in Figure 7.2-a Required Off-Street Automobile Parking of their ordinance. This is inclusive of Residential & Lodging Uses, Civic & Institutional Uses, Open Space Uses, Retail Uses, Service Uses, Adult Uses, Employment Uses, Infrastructure Uses, and Industrial Uses.

Through this exemption, the City has removed the requirement to build a minimum number of spaces and allow the developer to define how much parking is needed on a case-by-case basis. However, private financing requirements often require the same level of parking that has been exempted to realize the development, negating the desire to right-size parking through the absence of minimum parking requirements.

The following sub-sections look at how Hartford's peer communities handle similar situations.

New Haven, CT

New Haven also uses district level designations to reduce parking requirements for new development, with the following examples:

1. In General Business, Neighborhood Center Mixed-Use, and Village Center Districts, residential requirements are reduced to half of typical parking requirements. Non-residential uses greater than 2,000 SF are only required two spaces per 1,000 SF (rather than the specific requirement in other areas). Shared parking is allowed between both residential and non-residential uses.
2. In the Central Business District there are no parking requirements except for the following uses: Hospitals, Health Care or Nursing Homes, Dwellings, and non-Restaurant establishments that serve alcohol.
3. In the Commercial Gateway District, **parking maximums** are applied and are as follows:

    a. 1 parking space per residential unit
    b. 7 parking spaces per classroom for daycare
    c. 0.5 parking spaces per seat for restaurants
    d. 1 space per 1,000 SF for all other commercial uses

    For any development proposing more than the maximum spaces a travel demand management study must be submitted, at least one space per every 25 spaces must be designated for electric vehicle charging, and there must be designated shared spaces. There are also requirements for passenger loading.

New Haven is also in the process of considering the removal of all parking minimums as part of a larger statewide effort to reform zoning and create more equitable regulations that promote affordable development.

Providence, RI

Providence has a flexible zoning code that provides reductions and varied requirements based on district or development type, with the following examples:

Parking Exemptions/Reductions

1. The downtown (D-1) district is exempt from all vehicle and bicycle parking requirements
2. In the TOD district, the first 5,000 SF are exempt from parking requirements
3. Development considered a "neighborhood commercial establishment" are exempt from parking requirements
4. Several other districts have exemptions based on the desired character of the district, including R-P, C-1, C-2, and C-3 districts.
5. There are definitions to effectively "grandfather" requirements for sites that were developed prior to the ordinance, removing the need for existing uses and businesses to meet new code requirements.
6. Shared parking reductions are allowed (and encouraged) using a reduction table similar to the one found in the Hartford development code.

Parking Maximums

1. There are established parking maximums for surface parking lots to "prevent excess parking and the negative effects of over-paving". There is no parking maximum for parking structures.
2. For mixed-use retail centers or office parks, the total number of defined parking spaces shall not exceed 135% of the required minimum.
3. The TOD District establishes a maximum of one space per dwelling unit, a maximum of one space per 15 dwelling units in a multi-family dwelling, and a maximum of one space per 300 SF of floor area for non-residential uses.

Stamford, CT

Stamford defines parking requirement reductions and modifications based on district designation, with the following examples:

1. The MX-D Mixed Use Development District has reduced requirements for dwellings (1.25 – 1.5/ unit based on number of bedrooms), defined minimum (2/1000 SF) and maximum (3/ 1000 SF) values for office uses, and no requirements for retail uses. Shared parking is encouraged amongst the mixed developments.
2. The TCDD Transportation Center Design District has reduced requirements for dwellings (1.25 – 1.5/ unit based on number of bedrooms), defined minimum (2/1000 SF) and maximum (2.5/ 1000 SF) values for office uses, and no requirements for retail uses. Shared parking is encouraged amongst the mixed developments.
3. In other districts, the zoning ordinance provides the flexibility for the Zoning Board to reduce minimum parking requirements on a case-by-case basis. These reductions would require an application for reduction, development of a Transportation Management Plan, a specific designation on how demand would be reduced on the site, and contribution to a Public Transportation Improvement fee in lieu program, with a cost of $5,000 per parking space reduced.

The zoning ordinance provides guidance on the provision of transient vs. reserved spaces for facilities in excess of 30 spaces. Effectively, their zoning ordinance works to create public parking supply any time a larger lot is developed in the community.

Worcester, MA

Worcester defines parking requirement reductions for the Downtown, Shrewsbury Street, and Canal District Subareas, with the following examples:

1. Each subarea has defined reduced parking requirements categorized by residential uses, general uses, business uses, and manufacturing uses. The Downtown subarea does not require any minimum parking.
2. Generally, the reduced requirements are 50-75% of the general requirements outside of the districts.
3. There are also parking maximums defined for these subareas.

Takeaways from Peer Review

The peer communities all use reduced or eliminated minimum parking requirements similar to the City of Hartford. However, some of the key differences include:

1. Not all communities eliminate minimums, but rather drastically reduce them to promote lowered parking supply throughout the districts.
2. Stamford uses a fee in lieu to help fund shared parking and community transportation.
3. Several of the communities use parking maximums (similar to Hartford's) to cap the amount of parking new developments can provide.
4. Some allow for excesses above the maximums, with the inclusion of public parking.

Residential Parking Analysis

During the data collection phase of the project, the project team collected parking occupancy data for residential developments with the intent of defining localized needs for residential developments. The following two tables summarize the findings for residential developments in Downtown/Bushnell and the Wethersfield Avenue Corridor.

Table 55: Downtown/Bushnell Residential Review

Development	Parking Inventory	Residential Units	Observed Parked Cars	Parking Occupancy	Spaces/ Units	Demand/Unit
Bushnell Tower Condo	60	317	25	42%	0.189	0.079
360 Main St, Adrians Tower	58	115	49	84%	0.504	0.426
Sheldon Oak Central	56	36	39	70%	1.556	1.083
Linden Place Residence	38	71	38	82%	0.535	0.535
Smith Towers Apartments	49	150	37	76%	0.327	0.247
Primera Iglesia Bautista de Hartford Church	85	136	71	84%	0.625	0.522
Hartford 21	358	262	242	68%	1.366	0.924

Table 56: Wethersfield Avenue Corridor Residential Review

Development	Parking Inventory	Residential Units	Observed Parked Cars	Parking Occupancy	Spaces/ Units	Demand/Unit
Armsmear (Retirement home)	32	44	23	72%	0.727	0.523
Townhomes	110	62	45	41%	1.774	0.726
Chapin Place	41	47	18	44%	0.872	0.383
29-31 Annawan St	67	59	45	67%	1.136	0.763

Key Takeaways

Based on the above tables, the following key takeaways were developed for the residential parking analysis.

1. The average spaces per unit is 0.874 spaces per unit
2. The average demand per unit is 0.565 vehicles per unit
3. For those developments that have more than one space per unit, the demand is 0.874 vehicles per unit
4. For those development that have less than one space per unit, the demand is 0.388 vehicles per unit

While some parking is still being built with these residential developments (despite the removal of minimum parking requirements), there is a definitive reduction in automobile demand for the properties. Vehicular demand is as low as 0.5 spaces per unit, signifying a move towards lowered auto-dependency in the community.

New Challenges

During the life of this study – on the heels of the global COVID-19 pandemic – a new challenge has occurred relative to residential parking within the study area. Many underutilized office spaces are being converted to residential units, often without the addition of parking for residents. This occurrence, while beneficial to the overall housing stock within the community, is only further exaggerating the residential parking issues due to lack of public parking. The City should evaluate the impacts of this post-pandemic and consider ordinance revisions that acknowledge and require parking with these conversions.

The Realities of the Hartford Parking Minimums

The data collected as part of this study indicate that the removal of parking minimums has had the desired effect of reducing automobile activity on residential sites. However, the reality is that the lack of centralized shared parking within the Hartford parking system will ultimately limit the effectiveness of this approach over time. Removed parking minimums are most effective when coupled with a strong transit system and a centralized public parking system that provides equitable options for those residents who do decide to own an automobile. For this measure to continue to be effective long-term, the HPA will need to establish a **larger public parking supply** through a combination of creative strategies including investing in new parking, leasing underutilized parking spaces from the private sector, and subsidizing parking options to create more public parking supply to support the vision of the City.

CREATING INCENTIVES TO SUPPORT CENTRALIZED SHARED PARKING

The City of Hartford has already taken the measure to remove minimum parking requirements, a progressive action that is becoming a norm in urban communities throughout the United States. The reasoning for this removal is to incentivize new development to rely on available parking rather than building on-site parking. However, many new developments still build (more precisely overbuild) parking on-site to accommodate financing and leasing demands. This results in a supply of parking in urban settings that resemble suburban uses.

Several stakeholders within the community commented on the lack of public parking and the need for unique and creative solutions to address these issues. In Upper Albany, multiple stakeholders indicated the lack of public parking along Albany Avenue was a primary contributor to the existing parking issues in that district and there was a concern that future developments without some parking strategy would further exaggerate this issue. In Downtown/DoNo/Bushnell, stakeholders indicated that the over-supply of parking from private development was a detractor from the downtown experience because the parking was unavailable publicly and contributed to confusion and a poor parking experience. And in Parkville, stakeholders were concerned that too much new growth without considerations for supportive parking would limit the appeal and growth of the area.

There are a few considerations that could negate this trend and begin to incentivize a more useful and efficient parking system, including the following.

- Implementation of development incentives to use shared parking – for those new developments that are positioned to use shared parking (e.g. location and demands match available supply), the inclusion of incentive-based zoning could push the developer to rely on shared parking. The most common type of incentive is a density bonus or variance that allows for exceptions to other zoning requirements that might encumber the full realization of desired development.

- Introduction of parking maximums with allowance for variances on the maximum if the overage is made available for public parking. This allows developers to meet the requests of financing agents and support the desired mixture and intensity of uses, while also allowing for flexible use of capacity as the development is opened. The overage made available for public parking would ideally be part of an HPA-managed shared parking supply.

- Consideration of the use of long-term lease arrangements in HPA facilities (existing and new) to help support financing needs of developments without the construction of parking. Much like the use of a fee-in-lieu of parking to support development needs, the City and the HPA could consider the application of strategic long-term leases that guarantee access to parking for an up-front fee and ongoing lease arrangements. The costs associated with both the up-front payment and the ongoing leasing would need to be competitive with (or less than) the cost to build and maintain a space over the life of the lease.

  With construction costs for parking at $25,000 to $30,000 per space on average, and operational and maintenance costs at $400 - $500 annually, the cost to the developer would need to be below this threshold. The following table provides an example of how this might look:

Table 57: Example Long-Term Lease Opportunities

	Developer Constructed	HPA Long Term Lease
Number of spaces needed	250	250
Cost to construct/lease up front	$6,875,000 ($27.5k/space)	$1,875,000 ($7.5k/space)
Annual costs (O&M vs. Lease)	$112,500 ($450/space)	$375,000 ($125/space/month)
Total 20-year cost	$9,125,000	$9,375,000

The result is a lower up-front cost to the developer and higher ongoing cost. However, that cost can be passed on to the resident or subsidized by the landlord. The HPA can accomplish this arrangement by the ability to share this pool of parking amongst multiple users, overselling the facility, and use data-driven practices to support a balanced parking system. This recommendation is highly contingent upon the HPA and City expanding the public parking system through construction and shared parking arrangements.

Modern Mitigation

Recent efforts in the planning and urban design communities have created an approach called Modern Mitigation that focuses less on vehicular capacity improvements as a result of new land use investments. Instead, the concept of modern mitigation focuses on transportation demand management (TDM) as the first choice, prioritizing traffic reduction and parking demands. Conventional approaches to development oftentimes require more investment

than is capable of the development, creates more traffic and congestion on adjacent roadways, and reduces the likelihood that non-automotive modes will find increased usage.

The primary principles of Modern Mitigation focus on the following:

- Reducing reliance on single occupant vehicle trips
- Considering parking/traffic and congestion impacts to the entire transportation system
- Applying practices that are context-sensitive
- Maintaining a predictable process
- Designing solutions for all stakeholders

The process is intended to help developers understand mitigation options, rather than simply pointing to code required parking (which don't exist in Hartford) and traffic improvements. Many communities have created TDM calculators as part of the development review process, helping developers realize multiple concepts to support demand mitigation. Some examples of measures that are used in place of parking and transportation capacity include:

- Active transportation improvements – physical transportation network improvements that encourage people to walk and/or bicycle to community destinations, including sidewalks, bike lanes, and better roadway crossings. These types of improvements serve not only the development but the community surrounding it. These are typically candidates for in-lieu-of fee funds.
- Bicycle facilities – creating bike parking/storage above code requirements, bike showers/lockers, bike share, and other cycling amenities for the development and surrounding community.
- Carpooling and ridesharing – providing development-based ridesharing subsidies, shuttling, guaranteed ride home, and carpooling programs to support reduced vehicle ownership.
- Carsharing – providing shared cars on the site of the development, incentivizing a reduction in car ownership.
- Unbundling parking – removing the inclusion of free parking in housing or office space and having tenants pay the true cost for that parking can help to reduce the reliance on the personal automobile and might incentivize better commute decision-making.
- Centralized shared parking – in the place of on-site parking, having development pay into a fee in-lieu program can help to promote more centralized parking and reduce the number of spaces contained in a community.
- Promoting transit – developers can provide subsidized transit, provide shuttles/connectors to destination areas, or contribute to the improvement of the transit system (vehicles, routes, stops, etc.).
- Affordable housing – the inclusion of affordable housing in development could trigger mitigation points that lessen the transportation and/or parking burden.
- Education, Marketing, and Information – developers can contribute funds to the City's non-automotive education programs, helping to educate users of the development and the surrounding community of the benefits of using non-vehicular means.

As the City considers the modernized recommendations associated with right-sized parking, the concepts of Modern Mitigation should be adopted to further reduce the reliance on the personal automobile in Downtown Hartford and its districts.

SHARED PARKING OPPORTUNITIES

The Downtown Hartford parking system is largely defined by its vast amount of privately owned parking. Some of this is made available to the public through private parking operators, but even more of it is primarily dedicated to private users who may or may not use all of the space within the facility. The HPA manages a very small amount of the overall parking system and thus does not have enough of a majority within the system to dictate how parking is applied within the area, including rates, space allocation, and overall management. In cases like this, the creation and expansion of shared parking within the community can begin to shift the scales towards a more robust public parking system.

The primary recommendation for HPA and the City is to begin to leverage available parking capacity throughout the study area to create a more robust public parking system. Given the way many North American cities developed between the mid-20th Century and today, it is very uncommon for a municipality to have an off-street public parking supply as large as the private sector provides. Because of this industry-wide lack of public parking, many North American cities have begun to implement community-wide shared parking programs, led by the municipality in close coordination with the private sector. The intent is to create the appearance of public parking supply by leveraging available parking spaces in private facilities.

The public entity usually provides support with management, operations, marketing, wayfinding, and enforcement. The private entity provides the capacity (at a minimum) but may also contribute to the management and operations. The benefit of expanding the shared parking system is that it will expand parking options and improve access by opening parking to the public that may have previously been restricted to specific users. The shared parking system should leverage the experience and resources of HPA with the capacity and location of private parking assets. The intent of the shared parking program is to create a much more robust approach to parking management throughout the community. HPA's role should include some combination of the following elements:

- Management and operations of the shared parking assets, including the provision of management resources, installation of technology, collection of revenue, and oversight of the parking facilities.
    - In some instances, the outright leasing of spaces might be unattainable in locations where larger parking operators control the majority of off-street parking spaces. In an effort to support more equitable transient public parking in those areas, the HPA and the City could consider subsidizing the cost of parking through validations, vouchers, or outright payments to the private operators in exchange for a designation of certain spaces as public with rates more consistent with those intended by the HPA or the City.
- Enforcement of the shared parking assets, which would require the creation of management agreements that allow HPA staff to enforce parking citations on private property.
- Implementation of wayfinding, branding, and marketing elements of the parking program consistent with today's practices within the HPA program.
- Conduct a lighting and passive security assessment for potential parking locations to be included in the shared parking supply. Numerous stakeholders indicated a concern about safety and security in parking facilities. HPA can address this in new facilities by making sure participating locations meet a common standard of care.
- Provision of liability insurance for the shared parking facilities to help reduce burden of liability on property owners.
- Security resources to help monitor and manage access onto the private facilities, maintain access for tenants, and reduce the likelihood of criminal incidents on private property.

In addition to defining the role of HPA in the shared parking system, there are a few other elements that HPA and the City will need to consider before implementation of shared parking. First, there is a need to identify changes in the development codes to incentivize use of the shared parking system. See the Right-Sized Parking section for examples on how to approach these incentives while still maintaining no parking requirements. Second, HPA and the City will need to partner with business and property owners, community and economic development organizations, and community groups to build consensus for a shared parking system. This may be best accomplished after one or more successful pilot efforts.

Case Studies

Sacramento, CA

The City of Sacramento, CA operates a shared public parking system with a combination of public and private parking facilities. The City also manages the parking for state facilities within Sacramento and for a neighboring jurisdiction. The City has developed a common brand for the shared parking system, called SacPark, and has partnered with community and business organizations on marketing and communications such as the Sacramento Downtown Partnership. The shared parking program includes large garages and small surface lots all managed under a common system with hourly, daily, event, and permit parking available through the program. Sacramento passed legislation to allow the City to enforce parking at private facilities through an agreement with the facility owner. The increased enforcement has reduced parking violations and increased parking availability.

The City of Sacramento has integrated the on and off-street parking management program with common branding and communication materials. The City of Sacramento has leveraged technology investments to improve parking management for the shared parking program. It is unlikely that individual facility owners would invest in technology such as License Plate Readers (LPR) for enforcement. Now private property owners can contract with the City to provide enforcement. The shared parking system uses consistent technology for a consistent user experience.

Case Studies

Tempe, AZ

Over the past ten years, the City of Tempe and the Downtown Tempe Authority (DTA) have identified many underutilized properties and worked out arrangements to allow for additional users from neighboring properties to park. Specifically, they have converted six lots and garages (including more than 1,800 additional spaces) that were previously used exclusively as private parking. In all cases the properties had substantial vacancy and the owners struggled with controlling illegal parking. The additional spaces have allowed the City to advertise parking more aggressively and remove a lot of the confusion that previously existed with regard to vacant parking lots with inadequate or in some cases no signage.

Once properties were identified the City would approach the owner to simply learn more about the property, including initial questions related to current uses/needs, future plans, or whether or not encumbrances were present that would prevent any changes to the operation. Often, the owner didn't know that sharing the parking or converting to public/paid parking were available options. In some instances, the parking was converted to paid public parking while in other cases an allotment of parking was brokered to another user needing more parking than what they were afforded in their lease.

A major difficulty with installing paid parking in private lots in Tempe was the difficulty of enforcing the drivers' responsibility to pay at private meters. If private operators cannot issue enforceable tickets for violations, the only legal ways to ensure compliance is to boot or tow the violators, which is expensive, inconvenient, and unpopular with both drivers and merchants. To solve this problem the city enforcement arm entered into agreements with private property owners and private operators to enforce parking. This allowed the City of Tempe and DTA to provide enforcement for private lots, ensure compliance, and promote a more efficient parking system throughout the community.

In essence, the HPA would create a role for itself as the administrative and management function of the shared parking system, helping to broker deals in some instances and managing the parking supply outright in other instances. HPA should use the following criteria when evaluating shared parking opportunities:

- The parking facility must meet all requirements as defined by city codes
- It is recommended that proposed shared facilities have at least 20-30 spaces in the facility available at all times for public parking use
- The parking facility must be within a quarter mile of primary Downtown or district destinations.
- The parking facility must be made available for paid parking
- The parking facility should be open to interface with HPA's preferred parking system vendor to ensure simple and consistent alternative payment alternatives

The first few instances of shared public parking should be considered a pilot test to help orient the community to the intended purpose of the shared parking program. Ideally, HPA and its downtown partners can communicate success of this pilot study to incentivize the expansion of the program. Given the drastic changes in commuting patterns in a post-COVID environment, there may exist very specific opportunities to leverage large parking facilities that were developed for institutional uses within the Downtown Hartford area. The HPA and the City should explore partnerships with these entities in the near term to better leverage available supply, promote better utilization from

a wider variety of users, and develop a more flexible approach to parking management that takes advantage of new approaches to working remote and in the office on a flexible basis.

A typical shared parking opportunity would include:

- HPA entering into a management agreement with the private property owner – the management agreement would define shared parking, restricted or protected parking, rates and management fees, and revenue sharing, as primary details
- HPA would install branded parking signage consistent with public parking facilities today to help influence usage of those facilities
- HPA would provide management oversight, enforcement, cleaning, safety services, as well as revenue collection and distribution
- HPA would need to create a messaging campaign to define how to use shared parking, what to look for to identify shared parking, and how the program benefits the community at large

Specific Opportunities for Shared Parking Today

There exists today in the Hartford community a strong desire and need to expand the public parking system. While some of that can be accomplished through the construction of new parking facilities, those are likely too limited to fully cover the community's needs outright. Beyond those investments, the HPA and the City should evaluate expansion through partnership and leasing opportunities, bringing underutilized supply into the public realm to help alleviate parking needs and support a more comprehensive system. In the post-COVID environment, there are likely a number of facilities that are seeing drastic changes to their demand profile that would be ideal candidates.

Based on the review of pre-COVID, current, and projected conditions found in Task C (Existing Conditions), the following recommendations are provided for the creation and acquisition of parking:

Downtown/DoNo/Bushnell

Task C identified future parking needs – either based on demand or need to supplement public parking – for the Downtown/DoNo/Bushnell area, including:

- A future need of around 200 public parking spaces in Downtown Sub-Zone 1 (see Figure 3: Downtown Sub Zone Map in Task C)
- A future need of around 100 public parking spaces in Downtown Sub-Zone 2
- A future need of around 50 on-street public parking spaces in Downtown Sub-Zone 3
- A future need of around 50 on-street public parking spaces and 100 public off-street spaces in Downtown Sub-Zone 4
- A surplus of parking in Downtown Sub-Zone 5

There are numerous opportunities to either invest in new parking that can be shared by multiple users or lease existing underutilized parking that can create new public supply with a minimal investment from the HPA or the City. These include the following options (some of which are outlined further in Task F:

- Proposed new HPA garage located at 141 Sheldon Street.
- In reality, the Downtown/DoNo/Bushnell area might not present a lot of great opportunities for leasing public parking spaces because of the presence of large parking operators who control most of the spaces and locations. Rather than try to compete with these operators, the HPA and the City should consider subsidizing smaller pockets of privately-owned parking facilities in strategic areas, helping to establish more

equitable transient parking (rather than flat-rate all day parking) that could help alleviate some of the parking pressures and create a sense of more equitable public parking. This subsidy would need to create lower-priced parking options while maintaining revenue levels for the private parking operators.

In general, the HPA should look at these sites as opportunities to increase publicly-available supply in underserved areas and introduce additional transient parking, a common theme amongst project stakeholders.

Upper Albany

Task C identified future parking needs in the Upper Albany area specifically to help strengthen and address the lack of public parking availability. The Upper Albany area has numerous opportunities to implement shared parking with private businesses. These include the following options (some of which are outlined further in Task F):

- Retail shopping centers
- Churches (on-non worship days/periods)
- Schools and academic uses (outside of academic hours)

Parksville

Task C identified future parking needs – either based on demand or need to supplement public parking – for the Parkville area, including:

- A future need to supplement public parking to support growth and daily use in Parkville Sub-Zone 1 (see Figure 5: Parkville Study Area and Sub-Zone Map in Task C)
- A future need of around 200 public parking spaces to support growth in Parkville Sub-Zone 2
- A future need to supplement public parking to support growth and daily use in Parkville Sub-Zone 3

Because of the size of the Parkville district and the and linear nature of the commercial corridors within the district, it will likely be difficult to create universal shared parking supply in one location for the entire district. With that in mind, the HPA will likely need to look in multiple locations to define new public parking supply for the district. These include the following options (some of which are outlined further in Task F):

- Retail shopping centers
- Churches (on-non worship days/periods)
- Schools and academic uses (outside of academic hours)

SURFACE PARKING EXIT STRATEGY

As transportation modes shift and the overall demographics of driving changes, there needs to be some consideration for how to plan for the future while managing for today. Many engineers and planners point to the concepts of adaptive reuse of parking facilities to provide parking today with an eye towards transition in the future. The primary issues with this approach are a) the cost to design and construct adaptive reusable parking facilities is considerably higher than normal parking, and b) the introduction new parking does not account for an oversupply of parking today.

In reality, the best approach to manage parking today with an eye for the future is to make parking more efficient now and strategically consider how to remove parking for future development. This approach, called a Surface Parking Exit Strategy, provides guidance to consolidate parking today and begin to remove parking to account for overages today and shifting demographics tomorrow. The ultimate goal is to provide an opportunity for the

community to reach its development potential while also managing the supply of surface parking – a low priority use of available land in a vibrant community like Downtown Hartford.

Surface Parking Exit Strategy Components

The introduction of a surface parking exit strategy will help HPA and the City define where to target management decisions and investment opportunities for private development. The strategy will need to be fluid to respond to changes to community preferences, the economy, and the rate of change in the transportation industry (e.g. mobility as a service and autonomous vehicles). Because of this need for fluidity, there is no one direct approach for the strategy, but rather a set of principles to consider that define the overall approach.

1. Manage private parking spaces to create public supply – this is the consolidation of a fragmented system of parking into a more holistic system managed by a single entity (see the Shared Parking section of this report).
2. Implement incentives and funding resources for the centralization of parking – these are the tools used to promote centralized parking, including incentives, right-sized parking strategies, or the application of management districts.
3. Removing surface parking spaces first – as the desire for development and redevelopment occurs throughout the district, the City and HPA should target underutilized parking facilities as opportunity sites, with the caveat that shared parking supply around that site can support growth.
4. Only build parking when truly needed – this would dictate that new public parking would only be built when absolutely necessary. In the event that the private sector wishes to build parking, the use of public-private partnerships to create public parking can help to minimize overbuilding parking and support a centralized approach to parking. If parking needs to be built, ideally it would:
    a. Be built on the fringes of developed areas so that walkability and density are not adversely affected by standalone parking.
    b. Be created with a mixed-use nature in mind, with portions of the site accommodating development and a mixture of public and private parking at a minimum.
    c. Be adaptable for connected and autonomous vehicles so that as the transportation system evolves to a more autonomous nature, the interior configuration of the garage can be migrated from human-designed to vehicle-designed with more density in parking configurations and ability to communicate with smart vehicles.

Equipment & Technology

The HPA currently has a well-rounded suite of technologies and services to both manage parking and support the customer experience. Below is a summary of the existing equipment and tools:

- Multi-space parking meters for on-street parking (Flowbird)
- Mobile phone payment application (Woonerf) supporting on-street parking
- License-plate recognition-based enforcement (Genetech)
- Parking Access Revenue Control (PARCS) equipment (Amano McGann) in off-street facilities

- Enforcement Management (VATS)

This technology serves the HPA well and provides functional management and customer service resources. There are a few things that this technology could be configured to do to provide more functionality to the HPA, including:

- Introduction of parking occupancy data collection with LPR system. The Genetech system can be configured to collect this data during normal enforcement sweeps, providing multi-functionality for HPA. Normally this data is collected in zones, which can be as granular as block faces on both sides of the street. The HPA does not need to get down to the space level. Generally, an understanding of block-level demand patterns is sufficient to define changes to policy and practice.
- Introduction of virtual permitting for residential and permit areas within the community to reduce overhead and improve operational efficiency.
- Ensuring that all technologies and applications are integrated and communicate with one another in real-time. This will help to manage operational performance and ensure consistency throughout the system.
- Reducing logistical and communication challenges between technology implementations in different parking facilities.
- Creation of a dashboard that provides improved analytics and operational review for HPA, enabling better data-driven decision making.

This last consideration is likely the most critical for the continued enhancement of the HPA. Below are some considerations for that aggregation tool and the ongoing management of data.

TECHNOLOGY-DRIVEN DATA ANALYTICS

There are several existing data streams the HPA can use for data-driven decision making, including parking meters, revenue control equipment, license-plate recognition software, and citation databases. While the HPA currently has access to these resources, their data streams are maintained in separate locations. In order to fully leverage the intended management benefits from the back-end systems, HPA should consider a data aggregation system that allows for all existing systems to input data into a centralized location. The centralized dashboard should provide the parking management team with the ability to quickly analyze data trends, identify operational challenges, and inform program changes. An ideal system would also allow for flexible customization of data inputs and reporting outputs. The HPA should have direct access to standard and custom reporting and the ability to manage this data in near real time.

Once there are processes and tools in place for collecting and viewing data, HPA and the City should define practices for analyzing data. A few key considerations include:

1. Review similar periods of time and sets of data
2. Utilize similar practices when collecting data for comparisons
3. Create a dashboard of historic outcomes and use the current and historic data points to create ongoing trends analyses
4. When analyzing changing trends, consider what outward influence would affect changes in data
5. Clearly communicate changing trends, influential data points, and outcomes to drive new policy/decisions

The creation of a position within the HPA to further this data analytics process is recommended. The staff member should be well versed in the HPA's parking management software and databases and use the information to provide data streams that inform future decisions. This position does not necessarily require a full-time employee and could be accomplished as an additional responsibility of an existing (or future) employee.

RECOMMENDATIONS

The following section provides a summary of the recommendations found throughout this report. These recommendations are defined by priority levels with the understanding that specific improvements will need to be made to support a more holistic public parking system before programmatic improvements can be completed successfully. The priorities include:

- Priority 1, which should be completed first in an effort to create more public parking supply
- Priority 2, which follow the introduction of public parking supply and aim to help improve parking behaviors
- Priority 3, which should be completed last to support continued modernization of the community parking system

The recommendations are divided into community-wide recommendations for the entire community and HPA program, as well as for each individual neighborhood district.

PRIORITY ONE

The intention of the priority one recommendations is to focus on the development of a more comprehensive public parking system through partnership with private property owners and private parking operators. Hartford is home to two of the industries largest parking operators, representing a unique opportunity to leverage their experience and expertise to help define a new approach to public parking. The following recommendations focus on the creation of new public parking, largely through the use of existing parking resources:

Community-Wide Recommendations

The following recommendations should be considered by the HPA and the City on a community-wide basis, helping to bolster the approach to the provision of public parking and customer service.

Creation of Public Parking

The Hartford Parking Authority (HPA) and the City should define new public parking in one of two ways: creating new street parking and collaborating with the private sector to create new off-street public parking. The first task would require reviewing existing street networks and converting travel lanes to parking (where traffic volumes and emergency vehicle clearances allow). The second task would have the HPA work collaboratively with the private parking sector to establish long-term lease agreements that allow for more shared parking and create a higher market share of public parking within the community. HPA's role in this new public parking system would include:

- In facilities managed by private parking operators, leasing of spaces to create a shared public pool of spaces
- In facilities owned by the private sector but leased and managed by HPA, HPA would provide management and operations of the shared parking assets, including the provision of management resources, installation of technology, collection of revenue, and oversight of the parking facilities
- Enforcement of the shared parking assets, which would require the creation of management agreements that allow HPA staff to enforce parking citations on private property.
- Implementation of wayfinding, branding, and marketing elements of the parking program consistent with today's practices within the HPA program.

Expanding the Capability and Reach of the HPA

The HPA should continue its efforts to modernize parking and the customer experience in the Hartford community through a handful of initiatives intended to raise awareness of the program, improve the decision-making, and support parking needs within the community. These recommendations include:

- Creating a focused arm of HPA dedicated to Communications and Media to help improve messaging and communication with the greater Hartford community. This group would serve to improve the messaging, conduct neighborhood level outreach, focus on brand development and marketing, and communicating the success and intent of the HPA.
- The introduction of a Parking Advisory Committee, made up of individuals representing the varied interested of the community (Downtown, Upper Albany, Parksville, and the Wethersfield Avenue Corridor) would help to define champions within the community and help provide partnership and oversight for the implementation of recommendations. The group would meet periodically to review data points related to the recommendations and discuss ongoing implementation and adaptation within the community.
- Improve functional use of data-driven decision making, including the development (or procurement) of program performance dashboards, expanding customer friendly concepts like virtual permitting in neighborhood areas, using existing data streams (like meters and license plate recognition), and expanding concepts like demand-based pricing to better balance parking demands and support the specific needs of each part of the community.

Downtown/DoNo/Bushnell Recommendations

Specific priority one recommendations for the Downtown/DoNo/Bushnell study area include:

- Leveraging available private parking supply in the area to create shared parking opportunities. HPA and the City should consider a program where they provide a financial subsidy (or tax relief) to owners of parking facilities in strategic areas in exchange for a lower-priced parking option available to transient public parkers. This program will establish more equitable transient parking (rather than flat-rate all day parking) that could help alleviate some of the parking pressures and establish more equitable public parking. The financial subsidy would essentially maintain revenue levels for the private parking owners or operators. In general, the HPA should look at these sites as opportunities to increase publicly available supply in underserved areas and introduce additional transient parking, a common theme amongst project stakeholders.
- Consider offering residential parking passes for residential parking nights and weekends (on-street).
- Continue to leverage the Woonerf app as the primary payment method (slowly eliminating cash).
- Implement asset-light concepts with combination of metering and app-based payments.

Upper Albany Recommendations

Specific priority one recommendations for the Upper Albany study area include:

- Leverage underutilized private surface parking areas for shared parking, including retail shopping centers, churches (on non-worship days/periods), and schools (outside of academic hours)
- Evaluate the neighborhood response to the ongoing paid parking pilot and expand as demand dictates, using a data-centric communication and outreach method to define how and where to implement paid parking going forward.

Parksville Recommendations

Specific priority one recommendations for the Parksville study area include:

- Evaluate potential (long- or short-term) public-private parking agreements in under-utilized private parking facilities to expand the HPA's inventory of off-street parking areas (which can be used to initiate an employee permit parking program).

PRIORITY TWO

The priority two recommendations are intended to focus on improving the parking experience and reducing poor parking behavior throughout the community. These recommendations would need to follow the creation of additional public parking assets (through shared parking) and the improvement of communications and data-driven decision making.

Community-Wide Recommendations

Improving Enforcement and Operations

The HPA should address inconsistent enforcement (as identified in the public outreach component of this project), with the intention of reducing unsafe parking behaviors like double parking, blocking driveways, parking in crosswalks, or parking on the sidewalk. This would begin with the expansion of enforcement staff, tailoring enforcement practices to the needs of the distinct neighborhoods, expanding operational and enforcement hours to support district needs, and potentially raising the costs of certain parking violations to dissuade poor behavior in commercial areas.

Parking Wayfinding

As the public parking system is expanded through the recommended shared parking system and collaboration with the private sector, the HPA should expand parking wayfinding signage and technologies to help better balance parking demands and serve the Hartford community.

Downtown/DoNo/Bushnell Recommendations

Specific priority two recommendations for the Downtown/DoNo/Bushnell study area include:

- Schedule price increases for the on-street system using data analytics and area demand profiles as catalyst for area and time-based increases.
- Increase use of demand-based pricing tools (like progressive pricing on Washington Street).
- Expand enforcement and payment into night and weekend hours (based on demand needs).
- Consider monetization of other curbside uses (loading, goods movement, micro-mobility, etc.) to help support diverse needs of businesses and residents in the downtown area.

Upper Albany Recommendations

Specific priority two recommendations for the Upper Albany study area include:

- Extend hours of enforcement and pricing to support turnover and business access (and address double parking and unsafe parking conditions).
- Introduce loading zones to support business needs and reduce double parking.
- Consider introduction and expansion of Residential Parking Permit (RPP)'s to help manage spillover
- demands.
- Consider reduced price parking for residents (through the Woonerf app).

Parksville Recommendations

Specific priority two recommendations for the Parksville study area include:

- Introduce a paid parking pilot to Parksville (similar to the one currently underway in Upper Albany).
- Roll out outreach, marketing and communications, and Parking Ambassadors to support a more consistent and visible customer centric parking system.
- Extend hours of enforcement and pricing to support turnover and business access.

- Utilize LPR system to undertake commercial and residential parking occupancy counts (2x) per year.
- Consider introduction and expansion of RPP's to help manage spillover demands.
- Consider reduced price parking for residents (through the Woonerf app).

Wethersfield Avenue Corridor Recommendations

Specific priority two recommendations for the Wethersfield Avenue Corridor study area include:

- Consider shared parking arrangements in underutilized parking areas. These would be more for economic development and area investment opportunities, rather than trying to solve a "need" problem.

PRIORITY THREE

The priority three recommendations are intended to build off of the successful implementation of priority one and priority two recommendations and begin to build a more community- and neighborhood-oriented parking management approach. These will incorporate program growth from new approaches to shared parking and improved behavior-based operational approaches.

Community-Wide Recommendations

As the program and public capacity evolves over time, the HPA and the City should begin to think about neighborhood-based strategies to support and balance business and resident needs and find opportunities to improve the overall approach to transportation in individual districts. These improvements could include:

- Implementing paid parking (virtual/digital permit only) in residential areas adjacent to heavily traversed commercial corridors, with the revenue generated from this implementation re-invested in the districts. This paid parking would be demand-based and only available in times when residential needs are lowered. This effort would support a more balanced approach to parking, while generating revenue to support the district.
- Consider the use of Commercial Benefit Districts to support the advancement of paid parking while providing opportunities for HPA to re-invest in the community. Using the revenues from the expanded parking management program to support mobility investments in the districts would support area growth while acknowledging a need for advanced management strategies.

Upper Albany Recommendations

Specific priority three recommendations for the Upper Albany study area include:

- Evaluate implementation of community parking programs (similar to the example from Columbus, OH which is described later in this report) that uses a combination of paid parking along Albany Avenue and app-based paid parking in adjacent residential streets, along with residential permit parking, to support a more holistic parking environment. The revenues generated from the program should be reinvested back in the community through a benefit district. Re-investment should be tailored to leasing spaces for shared parking, improvement of streetscape and mobility improvements, and overall neighborhood aesthetics.

Parksville Recommendations

Specific priority three recommendations for the Parksville study area include:

- Evaluate implementation of community parking programs (similar to the example from Columbus, OH which is described later in this report) that uses a combination of paid parking within commercial districts and app-based paid parking in adjacent residential streets, along with residential permit parking, to support a more holistic parking environment. The revenues generated from the program should be reinvested back

in the community through a benefit district. Re-investment should be tailored to leasing spaces for shared parking, improvement of streetscape and mobility improvements, and overall neighborhood aesthetics.

MEASURING SUCCESS

For parking specific recommendations, the following measures of success should be considered.

5. Leased and Shared Parking – improved parking utilization and balance of parking demands in the on-street and off-street environment (as measured through tools like LPR); reduced citations associated with unsafe parking behaviors.
6. Improved Communications and Management – reduced complaints from downtown and neighborhood districts; increased and balanced utilization of parking spaces; reduced citations
7. Demand-Based Approaches to Paid Parking and Enforcement - increased and balanced utilization of parking spaces; reduced citations
8. Community/Commercial Benefit Districts - increased and balanced utilization of parking spaces; re-investment income volumes

These measures should be routinely reviewed with the Parking Advisory Committee as the program implements recommendations from this report.

TASK E - TDM AND PUBLIC TRANSIT IMPACTS ON PARKING DEMAND

INTRODUCTION

The leading objective of the City of Harford Parking Study is to support the continued redevelopment of Hartford while balancing the multi-modal transportation demands of its growing economy. This chapter seeks to:

1. Understand how Hartford's parking system can benefit from recent public transportation investment;
2. Provide recommendations related to parking and streetscape management to support multi-modal transportation usage.

Central to this chapter's analysis is the acknowledgement that alternative transportation options in Hartford should be supported as a critical component of smart growth and sustainability of Hartford's future.

Although reliance on personal automobiles largely defines transportation and commutation culture in Hartford, the Parking Study public engagement process highlighted stakeholder interest to support alternative modes. Such interest builds off recent transit investments that have shaped new opportunities for enhanced mobility in Hartford. The primary transportation and mobility patterns considered in this chapter include:

- Peak-period commutation into and from Downtown Hartford.
- Last-mile connectivity and circulation within Downtown Hartford.

PUBLIC TRANSIT SERVICES

In addition to local bus routes operated by CTtransit, Downtown Hartford is served by the following key transit services:

- ***Rail***: As of 2018 CTrail began commuter service on the Amtrak-owned Hartford Line, adding service to the established Amtrak operation. The Hartford Line connects Hartford's Union Station with Springfield, MA and the Connecticut stations of Windsor Locks, Windsor, Hartford, Berlin, Meriden, Wallingford, and New Haven. Any ticket (CTtransit or Amtrak) may be used on any train between Springfield and New Haven.

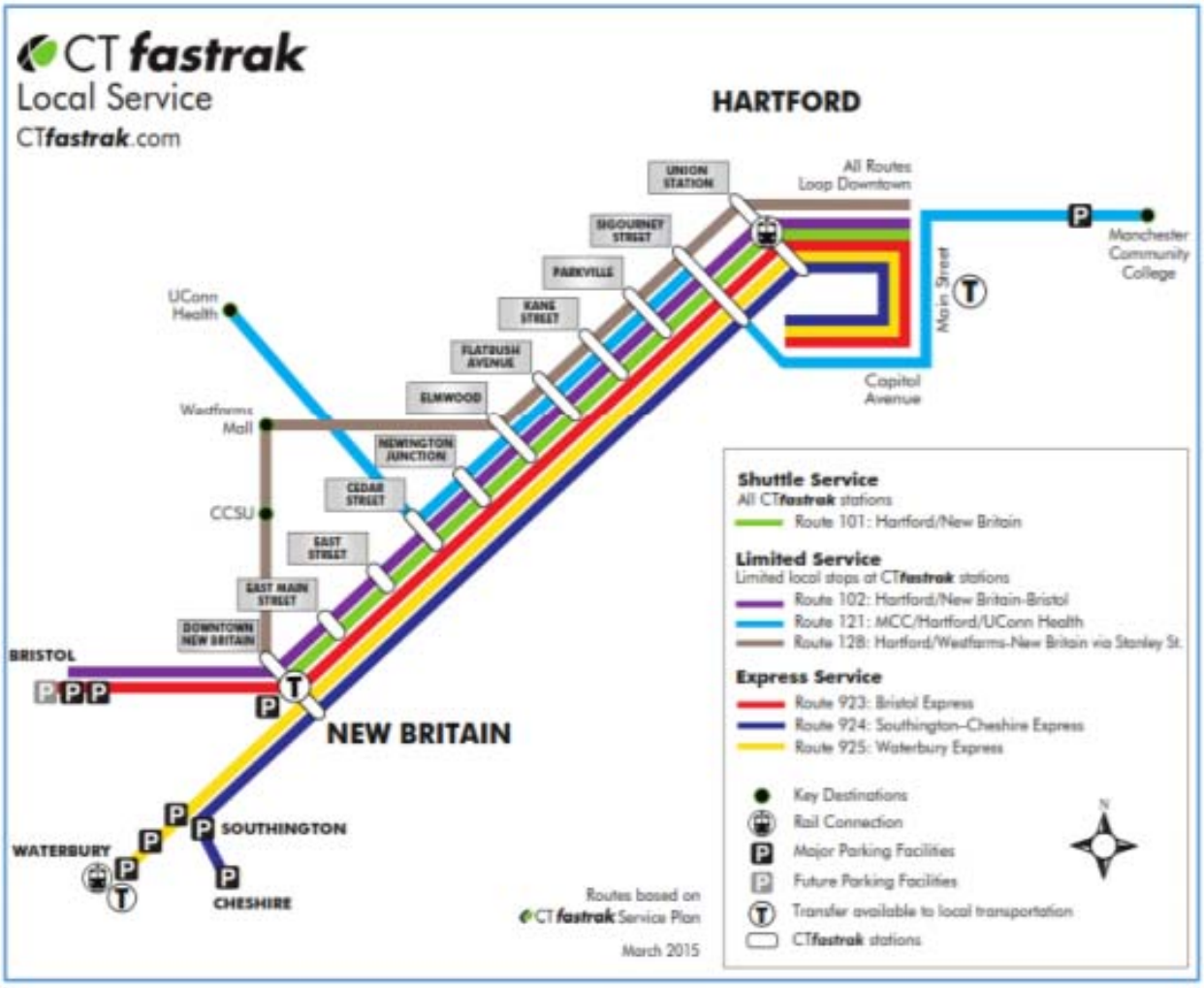
  During the AM peak-period (7am-10am) Hartford is served by five trains (four southbound from Springfield and three northbound from New Haven). During the PM peak-period (4pm-7pm) Hartford is served by four southbound trains and five northbound trains. Ridership volume has stagnated due to the pandemic. Amtrak provides additional rail service on the New Haven-Springfield line via the Northeast Regional, Valley Flyer, and Vermonter lines.

  CTfastrak: Operation of CTfastrak began in March 2015 as Connecticut's first bus rapid transit (BRT) system, utilizing a 9.4-mile dedicated busway along its core service area. The main goal of CTfastrak is to provide a more sustainable and user-friendly transportation alternative for commuters. The exclusive busway enables buses to avoid traffic congestion and provide a more efficient service. Stations constructed along the designated busway help to facilitate park and ride conditions. Certain station areas are designated for transit-oriented development to encourage smart growth and increase public transportation commutation to Downtown

Hartford. Seven of ten CTfastrak routes provide direct service to Downtown Hartford.[16] [17] Route 101, CTfastrak's core service route, runs exclusively along the dedicated busway every 7-8 minutes during peak hours, connecting New Britain to Downtown Hartford. Other routes extend beyond the designated busway to bring the CTfastrak service into surrounding neighborhoods (see Figure 35):

- Route 102 makes the same stops as the 101 but extends past New Britain to Bristol.
- Route 121 uses the busway from Cedar Street in Newington to Sigourney Street in Hartford and connects to UConn Health to the east.
- Route 128 uses the busway between Elmwood to Union Station but otherwise utilizes shared roadways to access the Westfarms Mall and New Britain.

Figure 35: CTfastrak Service Area

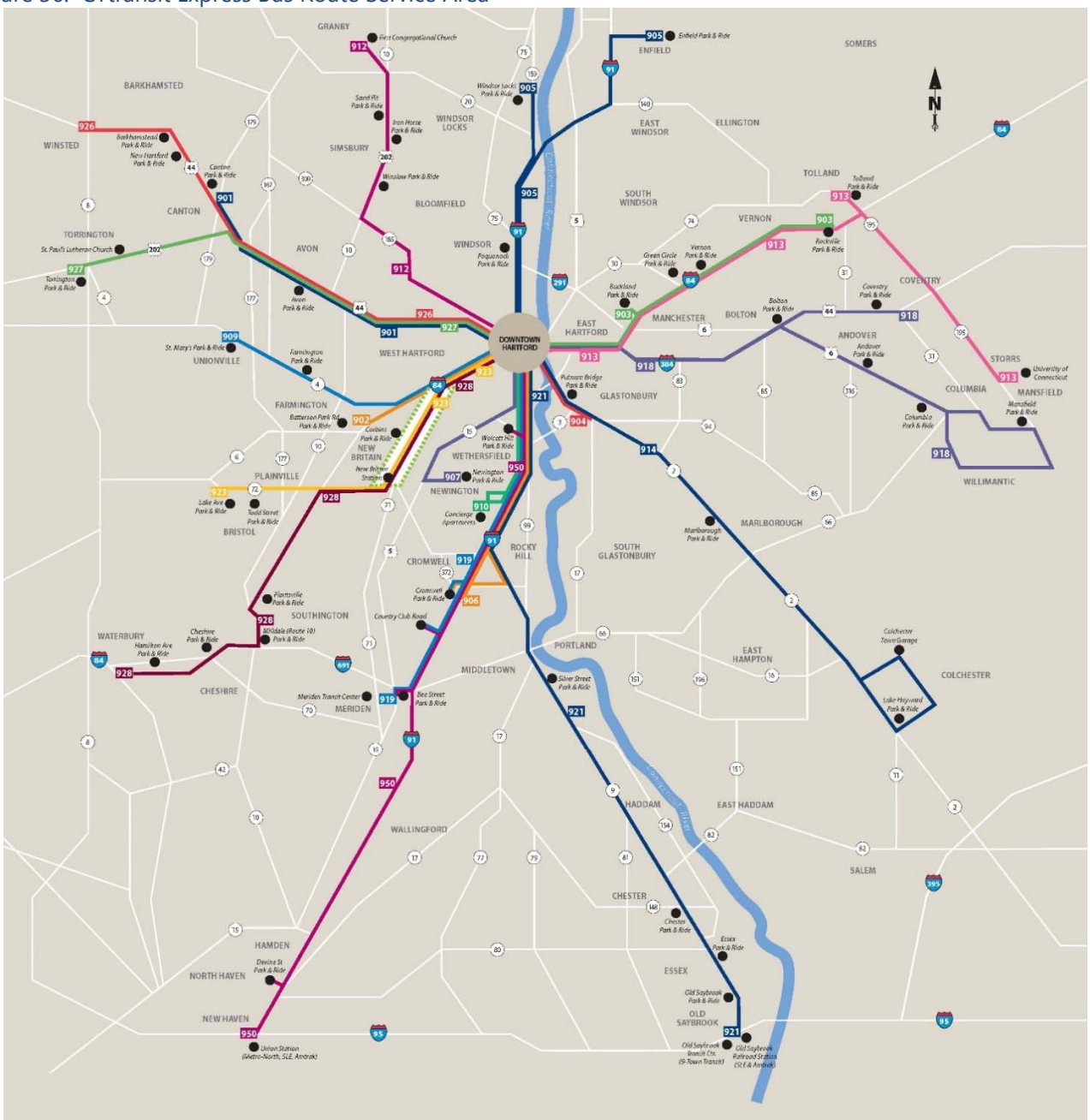


Source: CTtransit

[16] Additional routes that require a transfer to get to Downtown Hartford include: Route 140 (CCSU Shuttle); Route 144 (Wethersfield/Westfarms); and Route 153 (Flatbush/Copaco). Route 161 serves as a connector route within Hartford for access to St. Francis Hospital and Hartford Hospital.
[17] CTfastrak Express service includes Route 923 that links Bristol to Downtown Hartford and Route 928 that connects Southington, Cheshire, and Waterbury to Downtown Hartford. These express routes were realigned in order to access the CTfastrak busway.

- ***CTtransit Express Bus Routes:***
  CTtransit's overhaul of its Express bus routes began in the Fall of 2019 and culminated with a rollout of service changes in August 2021. Consisting of 21 Express Bus Routes, CTtransit's Express service is primarily designed to connect commuters from key Connecticut municipalities such as New Haven, Waterbury, Mansfield, and Enfield to Downtown Hartford. Figure 36 highlights the reach of CTtransit's Express Service. While service for most routes is focused on peak-hour travel, several routes operate seven days a week. Integral to the Express bus service is the Park and Ride System which is the basis of Express route stations.

Figure 36: CTtransit Express Bus Route Service Area



Source: CTtransit

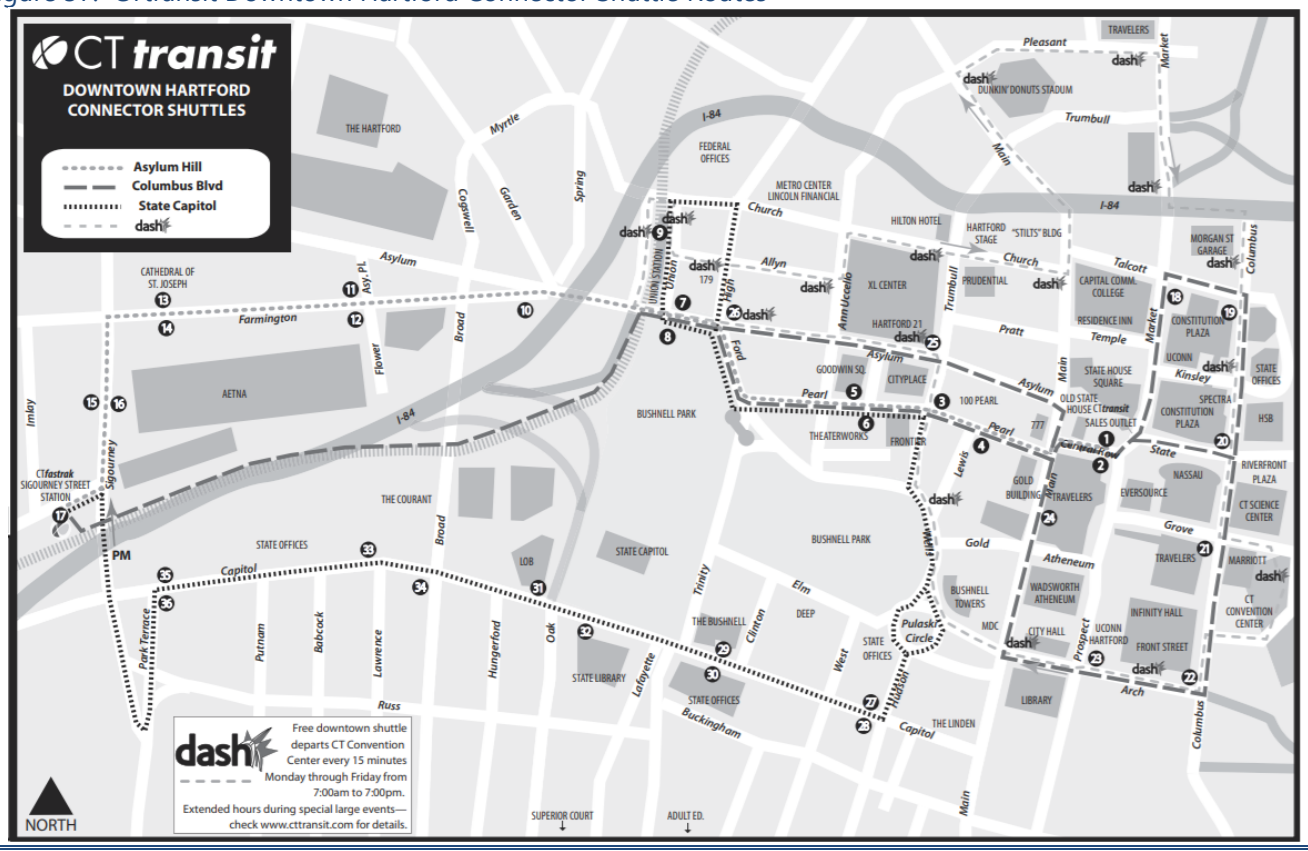
Downtown Express Connector Shuttles

In addition to several route realignments aimed to optimize Express service, new Downtown Hartford Connector Shuttles enhance last mile connections via three services that are operational as of August 2021 (see figure 37):

- Asylum Hill Connector
- State Capital Connector
- Columbus Boulevard Connector

These three shuttle routes operate during peak-periods to provide connections directly to key Downtown job centers. This service expands last-mile shuttle routes previously limited to the DASH Shuttle.

Figure 37: CTtransit Downtown Hartford Connector Shuttle Routes



Source: CTtransit

Alternative Transit and Micro-Modes

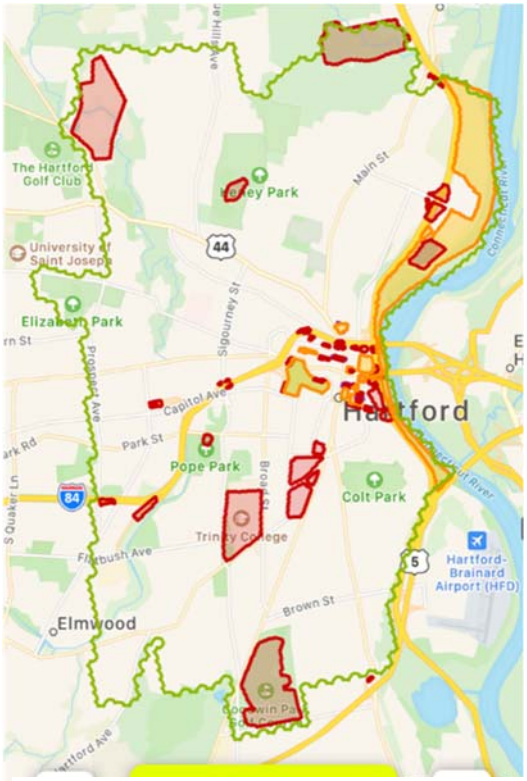


Figure 36: LINK Geo-Fenced Hartford Service Area

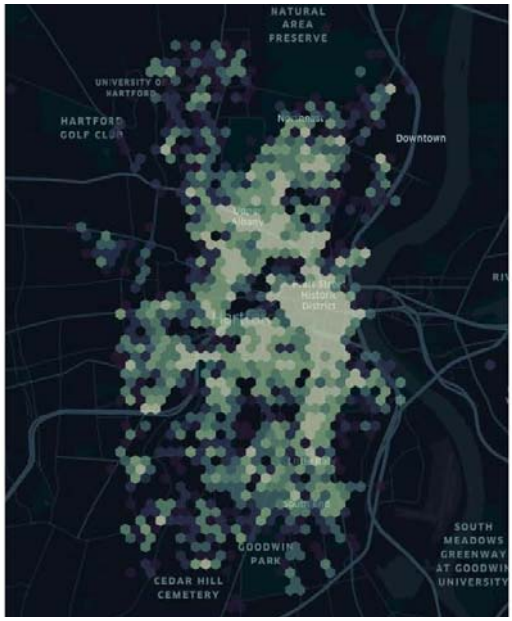


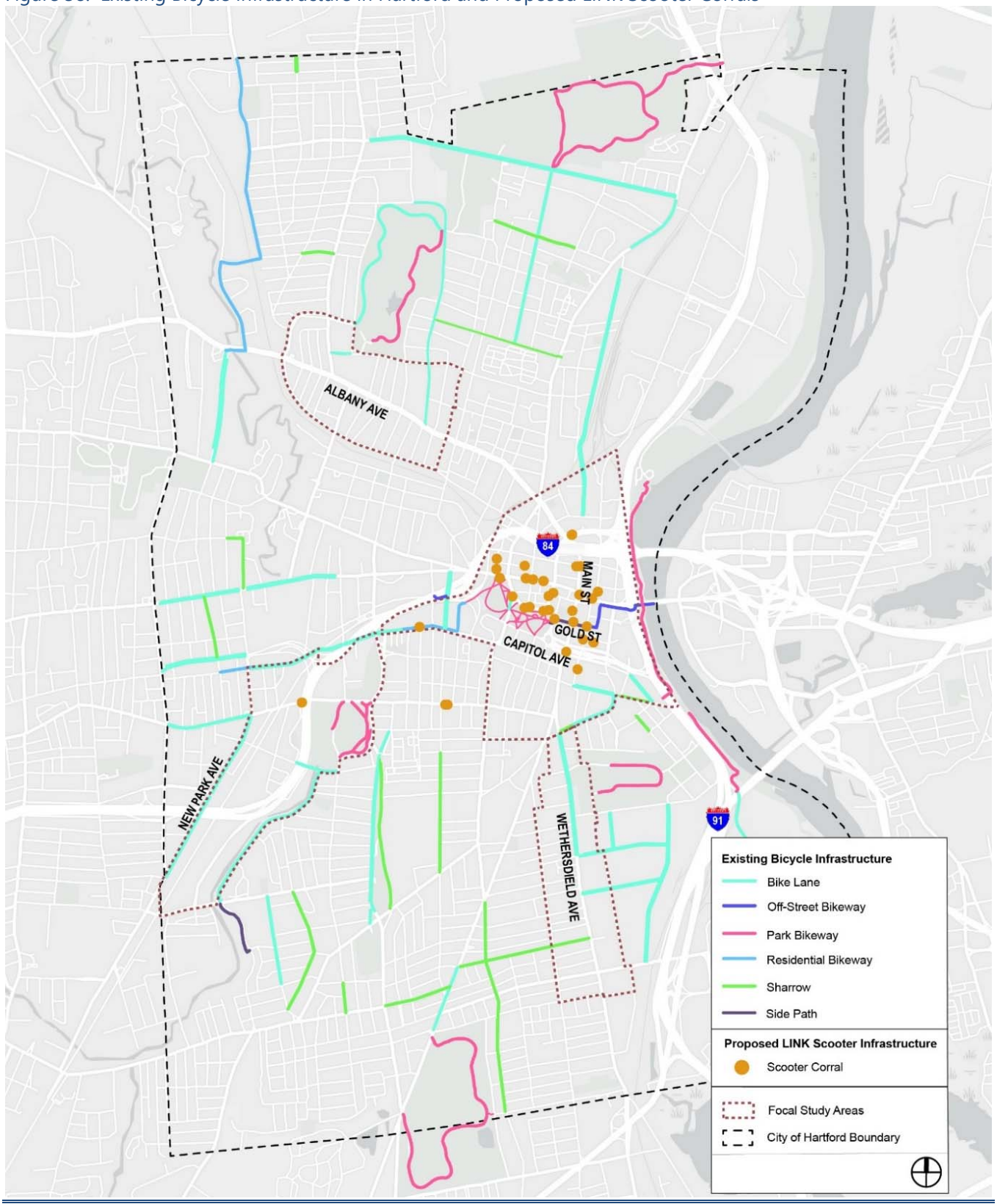
Figure 37: Hartford LINK Scooter Ridership Heat Map

Following a 2019 pullout of Lime's bike share program in Hartford after less than a year of operation, many stakeholders remained interested in bringing micro-modes back to the city. In April 2021 LINK e-scooters were brought to Hartford. The program initially launched and continues service with a fleet of 250 dockless scooters. During stakeholder outreach with LINK operators, it was reported that demand exceeded expectations and that scooters in Hartford have averaged six or seven trips per day which is higher than other cities similar to Hartford. Accessed via LINK's app-based platform, riders pay $1 to unlock a scooter and $0.35 per minute of riding time. The program offers a 70% reduced fare for riders who demonstrate financial need. Currently, LINK does not operate in Hartford over the winter months due to safety concerns related to ice and snow.

Figure 38 is a screenshot of LINK's app interface, demonstrating the geo-fenced Hartford service area outlined in green. Areas where riding is prohibited are shaded in red whereas slow riding zones are shaded in yellow. Figure 39 shows a LINK scooter activity heat map with concentrations of trip starts and ends. Lighter coloration denotes higher activity, which is most evident in Downtown Hartford. Figure 40 on the following page maps proposed locations for the siting of LINK scooter corrals which would serve as demarcated areas for storage. These corrals would have the benefit of creating relatively dependable locations for users to pick-up scooters and would help prevent scooters from being left in spaces that are obstructive or disorderly. At this stage, proposed corral locations are primarily downtown but additional locations include Frog Hallow, Parkville, and Capitol Avenue to the west of Downtown.

Figure 40 also illustrates existing bicycle infrastructure in Hartford, with a breakdown by category: Designated bike lanes, off-street bikeways, park bikeways, residential bikeways, sharrows (shared bicycle travel lane), and side paths. In 2019 the City worked with the IBI Group to develop the City of Hartford Bicycle Master Plan that provides guidance on a buildout of the City's bicycle infrastructure to improve connectivity and safety conditions for bicyclists. Much of Hartford's existing bicycle infrastructure, such as designated bike lanes, is fragmented which makes east-west and north-south connectivity difficult. Enhancements recommended in the 2019 Bicycle Master Plan provide an outline to improve connectivity across the City and would improve opportunities for residents to commute to Downtown.

Figure 38: Existing Bicycle Infrastructure in Hartford and Proposed LINK Scooter Corrals



Source: City of Hartford, ESRI

Population and Commutation Trends

Downtown Growth

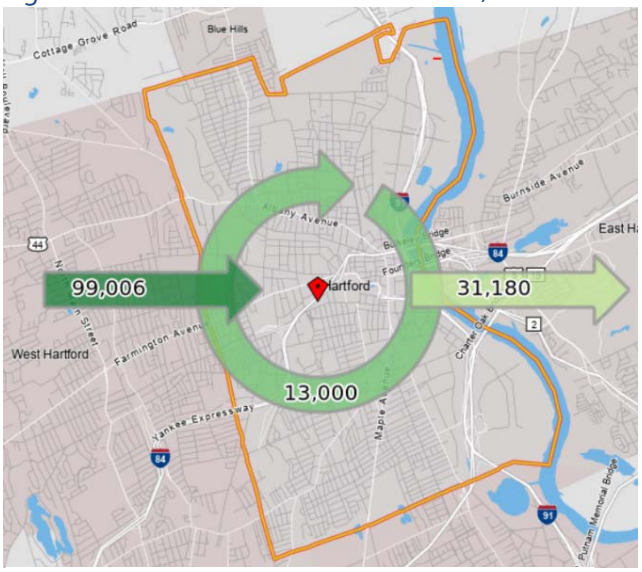
It is notable that Downtown's residential population and workforce have both increased significantly since 2010.

- From 2010 to 2018 Downtown gained over 6,300 employees, increasing by 14%.
- During the 2010-2019 period, Downtown Hartford's residential population grew by 69%, gaining almost 1,000 new residents for a total of about 2,400 in 2019. This downtown growth is significant when considered alongside Hartford's overall population which decreased at a rate of 1.6% during the same period.[18]

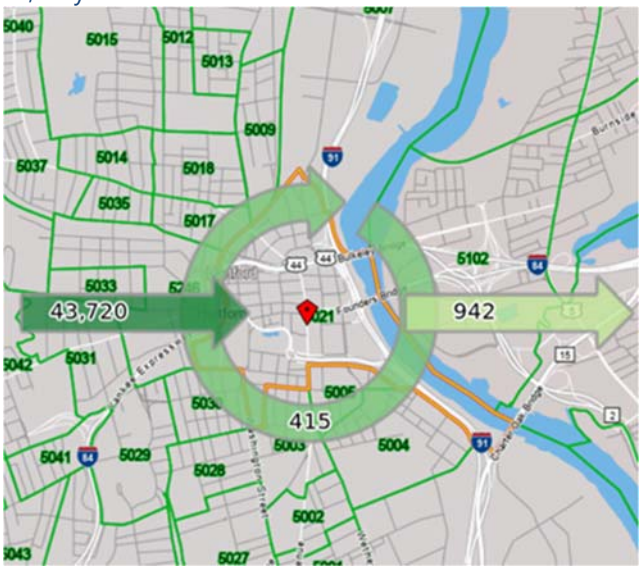
Inflow and Outflow Worker Commutation Volumes

The most recent data that detail commutation patterns in Hartford demonstrate that the City's overall workforce is just over 112,000 individuals with nearly 40% of these jobs in the Downtown "core".[19] [20] Figure 41 summarizes the commuter inflows and outflows for both Hartford as well as the Downtown core. While Hartford overall has just over 99,000 employees that commute into the city from outside, downtown constitutes the highest concentration of jobs. Most Hartford residents work outside of Hartford and do not add to peak-period parking demand in the city.

Figure 39: Hartford Commutation Inflow/Outflow Volumes, Citywide versus Downtown



Employed in Hartford: 112,006
Employed in Hartford but living outside: 99,006
Employed and Living in the Selection area: 13,000
Living in selection area but employed outside: 31,180



Employed in Downtown Hartford: 44,135
Employed Downtown but living outside: 43,720
Employed and Living in Downtown: 415
Living in Downtown but employed outside 942

Source: U.S. Census Bureau. 2021. LEHD Origin-Destination Employment Statistics (2018)

[18] U.S. Census Bureau, American Community Survey 2006-2010 Five-year estimates; 2015-2019 Five-year estimates.
[19] For the purpose of peak period transportation analysis, the total number of jobs is based on "Primary jobs." The Census defines primary jobs as the highest paying job for an individual worker for the year. The count of primary jobs is the same as the count of workers.
[20] Note that the Downtown core is defined as census tract 5021 for the purposes of analysis. However, it is noted that high density commercial areas peripheral to the Downtown core also contain a significant share of the total number jobs.

WORKER AND RESIDENT COMMUTATION: MODAL SPLIT

- Table 58 shows that 76% of the commuters who work in Downtown Hartford[21],commute by personal vehicle, 13% take the bus, nearly 1% take the train, and nearly 2% walk.[22] The low rail commutation from 2016 reflects the rail operations during this period of Census data. Hartford Line rail service was replaced by buses for a period of 2014-2015 and CTrail service on the Hartford line did not begin until 2018.

Table 58: Modal Split of Commuters that Work in Hartford: Downtown Hartford versus Citywide (2016)

	Downtown		Citywide	
Mode of Transit	**Total**	**% Share**	**Total**	**% Share**
Single Occupancy Vehicle	22,875	76%	85,930	81%
Carpool	2,415	8%	9,115	9%
Bus	3,800	13%	7190	7%
Rail	200	0.7%	320	0.3%
Bicycle	60	0.2%	260	0.2%
Walk	580	2%	2,740	3%
Other	140	0.5%	720	1%
Total	30,070		106,275	

Source: U.S. Census Bureau, American Community Survey 2012-2016
Five-year estimates. Special Tabulation: Census Transportation Planning
Note: Data are based on Census Tract 5021

Comparative 2010 to 2019 data demonstrate that commuting by public transportation has decreased city-wide whereas Downtown experienced a slight increase in this mode. Walking and bicycling have decreased from 2010 to 2019 in both Downtown and the City as whole.

Table 59: Hartford Residents' Journey to Work Modal Split: Downtown versus Citywide

	Downtown				Citywide			
	2010		2019		2010		2019	
	Total	% Share	Total	% Share	Total	% Share	Total	% Share
Workers 16 Years and Over:	949		1,769		46,631		51,078	
Car, Truck, or Van	557	58.7%	1,036	58.6%	32,649	70%	32,649	75%
Drove Alone	516	54.4%	1,027	58.1%	26,121	56%	31,708	62%
Carpooled	41	4.3%	9	0.5%	6,528	14%	6,617	13%
Public Transportation	47	5%	95	5.4%	8,065	17.3%	7,120	14%
Bicycle	7	0.7%	8	0.5%	480	1%	204	0.4%
Walked	310	32.7%	539	30.5%	3,796	8.1%	2,975	6%
Other	0	0%	0	0%	380	0.8%	357	0.7%
Worked At Home	28	3%	91	5.1%	1,261	2.7%	2,097	4%

Source: U.S. Census Bureau, American Community Survey Five-Year Estimates 2006-2010; 2015-2019

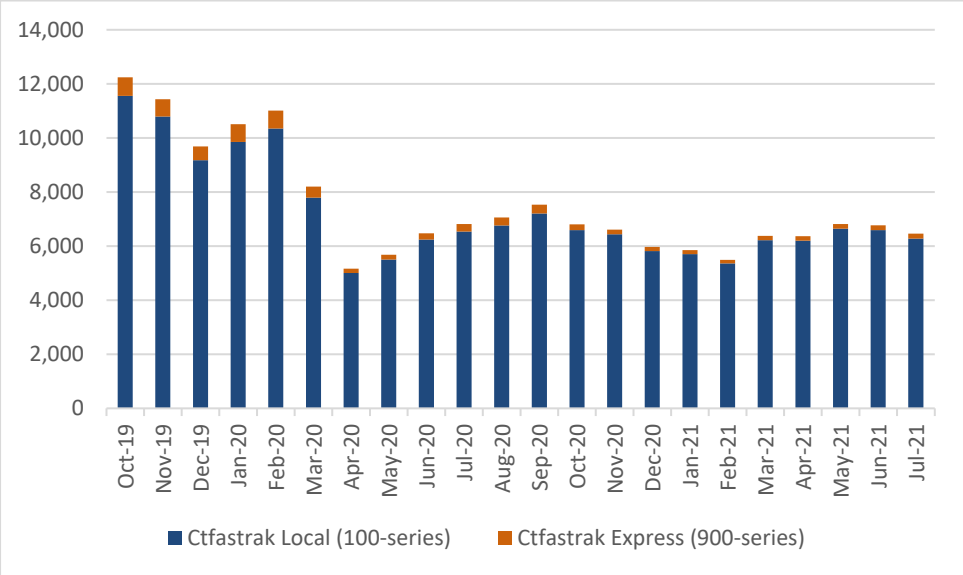
[21] Note that Downtown Hartford is defined here as Census Tract 5021 for analysis.
[22] U.S. Census Bureau, American Community Survey 2012-2016 Five-year estimates. Special Tabulation: Census Transportation Planning

IMPACTS OF RECENT PUBLIC TRANSPORTATION IMPROVEMENTS ON PARKING DEMAND

CTFASTRAK

During a stakeholder session with Downtown Hartford parking operators, it was expressed that CTfastrak has not affected parking demand within Downtown Hartford to any measurable degree since its implementation in 2015.

Figure 40: CTfastrak System-Wide Average Weekday Ridership (Oct 2019 – Jul 2021)



Source: CTtransit (2019-2021)

Figure 40 demonstrates CTfastrak system-wide average weekday ridership volumes from October 2019 (pre-pandemic) through July 2021. The data show pre-pandemic ridership in October 2019 averaged just over 12,000 daily weekday passengers. The highest recorded average weekday ridership since the pandemic started was just over 7,500 (September 2020) and the most recent was nearly 6,500 (July 2021).[23] Although ridership is expected to rebound to some degree based on employer return-to-office policies in Downtown Hartford, it is not expected that ridership will grow beyond pre-pandemic 2019 levels in the near-term future.

To analyze the degree of transportation and parking impacts that have ensued from the operation of CTfastrak, Census data from 2014 (pre-CTfastrak operation) and 2019 (post- CTfastrak inauguration) were compared to note any significant changes in public transit ridership for daily work commutes. See Table 60. This analysis considers modal share data for commuters that live in West Hartford, New Britain, Newington, and Bristol.[24] Residents from these municipalities are top contributors to the Hartford's workforce and are directly served by CTfastrak stations.

[23] At the time of this report, publicly available ridership are available up to July 2021.
[24] West Hartford, New Britain, and Newington have designated CTfastrak stations on the busway.

Table 60: Key Municipalities Served by CTfastrak: Public Transit Modal Share from 2014 to 2019

Key Municipalities Served by CTfastrak: Public Transit Modal Share from 2014 to 2019

	Newington					Bristol					New Britain					West Hartford				
	2019		2014		2014-2019	2019		2014		2014-2019	2019		2014		2014-2019	2019		2014		2014-2019
	Total	% Share	Total	% Share	Share Diff.	Total	% Share	Total	% Share	Share Diff.	Total	% Share	Total	% Share	Share Diff.	Total	% Share	Total	% Share	Share Diff.
Total Commuters	16,351		15,524			31,089		29,519			32,418		32,392			32,836		31,352		
Public Transit (All modes)	238	1.5%	222	1.4%		519	1.7%	236	0.8%		1,071	3.3%	1,065	3.3%		845	2.6%	629	2.0%	
Bus	220	1.3%	222	1.4%	-0.08%	430	1.4%	236	0.8%	0.58%	1,059	3.3%	1,044	3.2%	0.04%	732	2.2%	558	1.8%	0.45%

	Analysis Area Totals					
	2019		2014		*2014-2019*	
	Total	% Share	Total	% Share	Total Commuter Difference	Share Diff.
Total Commuters	112,694		108,787		3,907	
Public Transit (All modes)	2,673	2.4%	2,152	2.0%	521	0.4%
Bus	2,441	2.2%	2,060	1.9%	381	0.3%

Source: U.S. Census Bureau. 2009-2014 American Community Survey; 2015-2019 American Community Survey

Despite limitations of these data[25], Table 60 demonstrates that implementation of CTfastrak has not significantly shifted overall commutation patterns for the residential population of these municipalities which constitute a significant portion of Hartford's workforce. From 2014 to 2019 Bristol and West Hartford experienced roughly a 0.5% increase in the share of population that commutes via bus. New Britain experienced a smaller and less significant increase in public transit utilization, and Newington experienced a small decrease in its share of bus commutation. For the four municipalities combined the percent of bus commuters has increased by 0.3% and the number of bus commuters has increase by 381 (mostly in Bristol and West Hartford).

This analysis does not suggest that CTfastrak has not improved the viability of public transportation in the Greater Hartford area. Rather, these data support observed accounts that CTfastrak has not significantly shifted the number of daily commuters who drive into Hartford and park. As the overall number of transit users as a proportion of total commuters is relatively low (in the range of 2 to 3%), the percentage increase in transit users does not have a measurable impact on parking demand. The impact on parking demand is in the same range as the typical variability in daily parking demand.

METRO HARTFORD RAPIDROUTES STUDY

The Capital Region Council of Governments (CRCOG) released a draft of the Metro Hartford RapidRoutes Transit Priority Corridors Study in May 2022. This study investigated infrastructure improvements that could be made in six major corridors to make bus service more efficient and convenient. Potential improvements include bus stop consolidations and the introduction of bus lanes in key areas. Of the six corridors studied, five are included in Hartford:

- Albany Avenue/Blue Hills Avenue in Hartford and Bloomfield
- Farmington Avenue in Hartford and West Hartford)
- Franklin Avenue in Hartford and Wethersfield
- Main Street/Windsor Avenue in Hartford
- Park Street in Hartford

[25] Analysis limitations include: (1) Commutation volumes from the municipalities summarized in Table 1 are based on travel to all workplace destinations, not only Hartford; (2) The full extent of CTfastrak ridership is not represented by these select areas.

The RapidRoutes study identifies a series of recommendations for each Corridor and suggestions for implementation and next steps. Recommendations to consolidate the number of corridor bus stops (i.e. 27 stops to 18 on Park Street and 58 stops to 36 on Albany Ave/Blue Hill Ave.) may present opportunities for new on-street parking spaces, whereas some areas where new bus lanes are proposed may result in a reduction of on-street parking. The study recognizes that many types of bus lanes are possible including in medians, curbside, and adjacent to parking lanes (offset lanes). Detailed analysis of potential impacts on on-street parking will be evaluated in the next corridor design stages once a project sponsor is confirmed.

While successful implementation of corridor improvements would improve bus service and convenience, potential CTtransit ridership increases due to enhanced service are not projected to have a significant impact on overall parking demand in Hartford.

CONCLUSIONS

Public transit and other alternative transit modes play an important role in improving accessibility and enabling a wider geographic and labor reach. Despite the value of recent public transportation investments such as CTfastrak, the redesign of CTtransit Express bus routes, and CTrail operation on the Hartford Line, these initiatives have not had a significant impact on parking demand in Downtown Hartford. It is not expected that the transit investments discussed in this section will affect the parking recommendations from this study.

Enhanced connectivity in Downtown Hartford allows for a more decentralized parking system and greater flexibility in terms of parking supply locations. Public engagement illuminated the challenges associated with changing the behavior of drivers who want to park near their destination for "door-to-door" service. However, these new services and circulation enhancements provide a basis to encourage behavior change for a more sustainable parking system that supports other planning goals for Downtown Hartford.

RECOMMENDATIONS

Support a coordinated, decentralized parking system downtown that incorporates connector services, micro-modes, and enhanced walkability.

Although the public engagement process emphasized the parking preference for "door-to-door" access, a decentralized parking system could be supported by:

- Enhanced marketing and communications information that emphasizes where available parking is in the Downtown area.
- Enhancing last mile connectivity with micro-modes such as existing LINK scooters and bicycle infrastructure investments between parking facilities and key destinations. The City should continue to expand the LINK scooter program to match demand, including winter months operation.

- Coordinating with CTtransit to examine and potentially modify downtown "circulator" shuttle routes, stops, and timing to ensure that existing needs are met. In the event that there are significant unmet needs, a City-operated service could be explored to provide key connections such as service between HPA parking areas and key destinations.
- Continued investment towards Downtown streetscape improvements that improve walkability conditions and encourage walking longer distances.

In addition to supporting connectivity for individuals who commute into downtown Hartford, such strategies will also enhance the quality of life for existing and future downtown residents.

Continue to encourage Transit-Oriented Development (TOD) around Hartford's CTfastrak Stations

Transit Oriented Development projects along the CTfastrak stations have been advocated through studies by the Capital Region Council of Governments (CRCOG), by CT DOT and by the City of Hartford. The City's TOD Overlay Zoning encourages higher density development with increased flexibility around designated transit nodes. While certain sites are currently planned as TOD developments in the Parkville District (237 Hamilton, 17 Bartholomew, 45 Bartholomew, 169 Bartholomew), there is opportunity to encourage greater densities around these stations while also working with developers and property owners to promote the marketing of CTfastrak service to new residents. In addition, the developers in TOD areas should be incentivized to subsidize the CTfastrak passes for their residents for maybe one year.

Fund and support targeted marketing efforts to improve public awareness of transit services and initiatives, specifically CTfastrak, the new Downtown Connector shuttles, and Link scooters

The City of Hartford should consider exploring opportunities to support public awareness campaigns that increase transit ridership and reduce parking demands. Efforts could include the following:

- Brand the new CTtransit Downtown Connector Shuttle services so the vehicles are eye-catching and that their service as a last-mile connector is quickly discernable.
- Consider expanding LINK scooter service in Upper Albany and Parkville to promote alternative mobility options.
    - In coordination with community-based organizations, the City should consider promoting information on existing subsidies that LINK offers to low-income individuals. The City could provide additional subsidies to further incentivize the use of scooters in targeted neighborhood areas. For example. LINK scooters could be promoted in Parkville as a last-mile connection service to the CTfastrak station. In Upper Albany, LINK scooters could be promoted as a convenient alternative to navigate Albany Avenue.
- The City should encourage major downtown employers to advertise and offer pre-tax public transit programs to their employees.

Support Hartford 2035 strategies to improve the City's walkability, bikeability, and public transit services as a means to reduce in-city auto trips made by residents, especially from outer neighborhoods to Downtown.

Recommendations from previous planning efforts such as Hartford 2035 and the City of Hartford Bicycle Master Plan should continue to be promoted to achieve the added benefit of reducing parking demands downtown and along neighborhood corridors as the City continues to grow.

The gaps in bicycle infrastructure limit the convenience and viability of biking as a means of commutation within the City. The public engagement process emphasized the importance of coordinating parking needs with bicycle infrastructure opportunities.

- The City should continue to work with bicycle advocates and the Complete Streets Task Force to identify priority areas for new bicycle racks or storage. During the Parking Study public outreach, bicycle advocates highlighted that such amenities are not consistent around corridors and downtown.
- Winter climate is frequently mentioned as a barrier to year-round bicycling. However, bicycle infrastructure and operations in comparable cities, such as Madison, WI or Montreal, Quebec have demonstrated that when such infrastructure is properly built and managed, many bicyclists continue to ride in cold months. With Hartford's commitment to maintain bicycle infrastructure in winter months, the City should consider communications that promote biking in the winter season such as what the City of Madison shares online: **https://www.cityofmadison.com/bikemadison/getbiking/winter.cfm**

Parking Study outreach highlighted the need to improve pedestrian safety across Hartford. Enhancing pedestrian safety has the added benefit of promoting more efficient parking patterns, such as park and walk behavior. In coordination with CT DOT, the City should consider a review of recent crash data that involved pedestrians and/or bicyclists in order to identify areas where interventions may be needed. For example, public outreach in Upper Albany highlighted that some stakeholders feel that pedestrian crossing times should be lengthened at signalized intersections to provide safer conditions.

Improve curb access and bus staging areas to enhance public transit service

Reliable and efficient curb access is critical to bus and shuttle users. The public engagement process raised the issue that certain bus stops could benefit from having an adjacent parking spot removed to achieve enhanced curb access for boarding and deboarding. Bus staging in higher density downtown areas such as locations near Union Station were cited as frequent sources of additional congestion. The City, along with HPA and CTtransit should collaborate to:

- Advance recommendations within CRCOG's RapidRoute Study that will enhance bus level of service in key corridors. The City should conduct a city-wide audit of curb and sidewalk space around bus stops to identify and prioritize locations where rider access could be enhanced.
- Identify additional bus staging locations in Downtown that minimize street congestion and challenges for pedestrians. Efficient bus staging areas should be identified for both CTtransit buses as well as private buses related to events.

TASK F – PARKING EXPANSION STRATEGIES

This section represents the recommendations associated with Task F – Parking Expansion Strategies. The purpose of the task is to outline strategies, policies, design criteria, and sample opportunities to expanding both the public on-street and off-street parking to support access to the Hartford's businesses and attractions and future development. The Task F Memo primarily focuses on the downtown study area but does offer an example of public parking expansion in the Upper Albany Study area.

As mentioned previously in this report, while there is a preponderance of parking in the downtown study area, many of these parking facilities are owned by private operators as well as state agencies and institutions who aren't presently incentivized to develop the properties and or provide access to the public. Given Hartford's intent to spur continued redevelopment of the significant number of downtown surface lots with denser mixed use and residential development, the City eliminated mandatory parking minimums in its downtown in 2015 and citywide in 2017. As a result of these activities, Hartford is realizing an increase in development and developer interest now that the burden and cost constructing parking facilities on limited urban land is reduced or eliminated.

While the elimination of parking requirements helps promote development, actual parking demand is generated by new development and this demand must be satisfied to both finance and market future projects. Accordingly, there is a point at which new parking demand will impact the existing public parking supply given that only a very limited amount of parking is controlled by the HPA or City when compared to the overall downtown parking supply. In addition, the lack of centralized public parking resources may inhibit future development given the high cost to develop parking structures for individual projects. Consequently, in addition to the strategy proposed in this report for the HPA of City to lease and share private parking resources for public use when possible, the HPA and City should judiciously increase its control of public parking resources to support Hartford's continued economic and redevelopment activities. Outlined below are strategies to increase the public parking supply.

NEW ON-STREET PARKING AREAS

Within the Downtown there is a considerable amount of curb space that is presently regulated as no parking. Based on a cursory look at the streets and the designated "no parking" areas, there does not seem to be compelling traffic safety or circulation concerns to limit the on-street parking supply.

On-street metered parking provides highly desirable and convenient parking for downtown patrons and helps calm traffic within the downtown environment by improving the pedestrian experience. On-street parking can serve as a buffer to pedestrian activity and is highly effective at regulating the parking spaces for the intended durations and users when it's metered and consistently enforced. In addition, the revenue generated by metered parking supports operations and improvements to the parking system and can be reinvested in the downtown district. Lastly, adding on-street parking is an affordable option to providing additional public parking for downtown visitors, patrons, and residents. During the site visit, the THA team potentially identified 14 on-street parking spaces that may be able to be added on High Street between Asylum Street and Church Street and 15 on-street spaces on Asylum Street between Trumbull Street and Main Street without modifications to travel lanes, pedestrian sidewalks, or bicycle lanes.

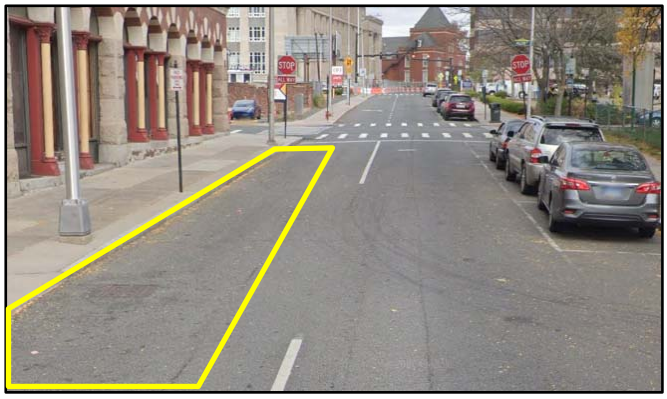
To identify and quantify the amount of parking that can be added to the downtown inventory, the City should perform a comprehensive audit of downtown streets to verify the ability to add parking in accordance with the City's

traffic and street dimension standards and requirements without negatively impacting pedestrian safety and the flow of traffic. These spaces are well-located in the downtown and offer a potentially outstanding opportunity to increase the parking supply and generate additional revenue, which would offset the capital cost of the new meter installations and on-going parking operations, maintenance, and upgrades.

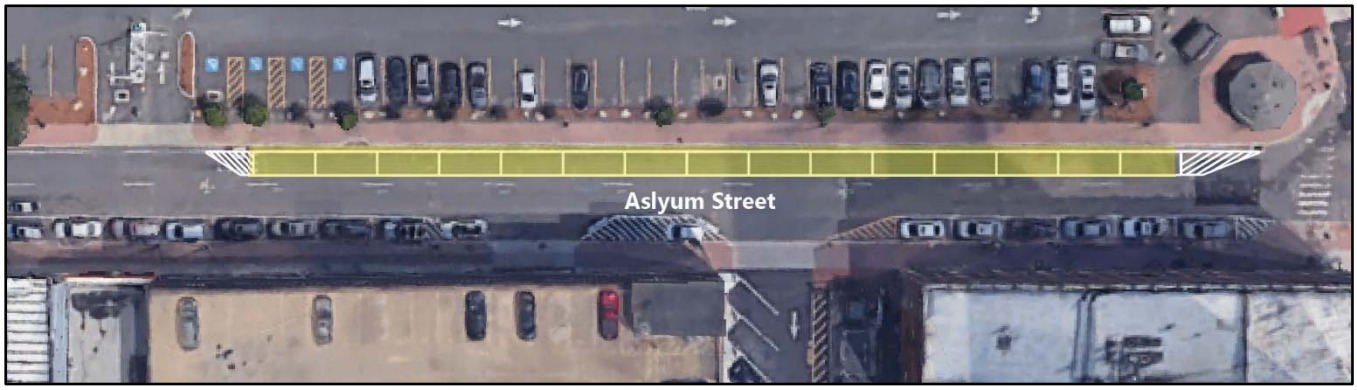
Figure 41: High Street and Asylum Street On-Street Parking Expansion Opportunities

High Street between Allyn Street and Church Street

High Street between Asylum Street and Allyn Street



Asylum Street between Trumbull Street and Main Street

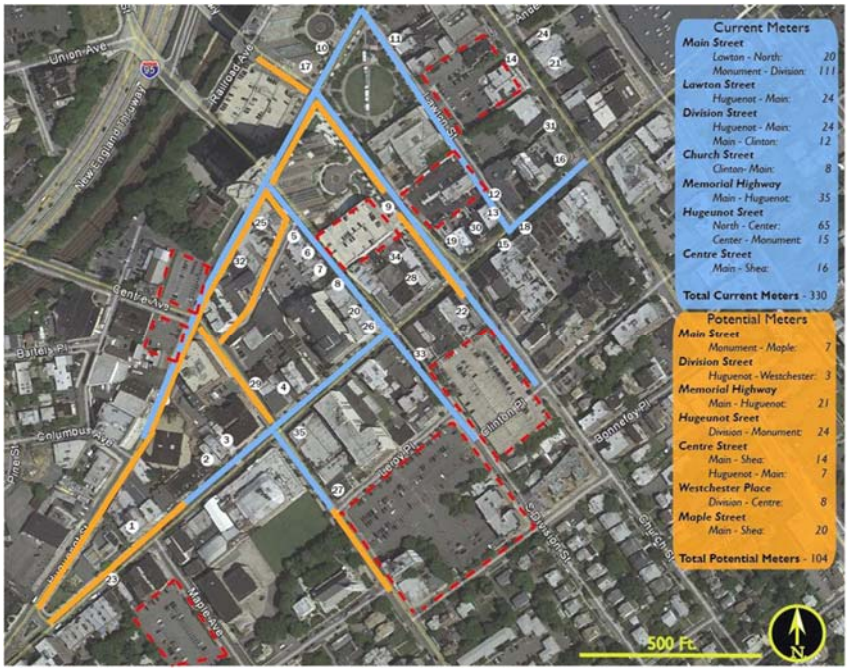


Source: Google Maps, THA Consulting, Inc, 2022

CASE STUDY

ON-STREET PARKING - NEW ROCHELLE, NY

In New Rochelle NY, THA identified the opportunity to potentially add over 100 on-street parking spaces throughout the downtown area. The City subsequently audited the area to evaluate the ability to add parking without negatively impacting pedestrian safety and the flow of traffic. It is our understanding that the majority of on-street spaces recommended in the report were added to the public parking inventory.



PARKING EXPANSION OPPORTUNITIES – SITE ANALYSIS

The development of a centralized parking facility to provide parking to support multiple redevelopment or downtown development projects and can act as a catalyst that encourages private sector development and rehabilitation of an existing area's commercial and residential real estate located within the facility's area of influence.

As a result of redevelopment planning and initiatives underway in Hartford, the Team undertook a Future Parking Expansion Analysis as outlined in the Study RFP to evaluate potential sites for a parking facility to support redevelopment and economic development. The study focuses on two properties owned by the City.

- Site One – 141 Sheldon St
- Site Two – 614 Albany Ave

To undertake this study the following parking planning and design considerations were evaluated:

1. The garage's proximity and integration with the residential component and existing businesses;
2. The number of spaces yielded given the size of the site;
3. The efficiency of the parking facility in terms of square feet per space. The lower the square feet per space, the more efficient the garage;
4. The vehicular and pedestrian circulation within, to and from the facility; and
5. The ability of facility to accommodate various parking demands throughout the day and evening, thereby improving its financial viability.

Design Guidelines

When developing new parking, the planning, integration, design and user convenience of structured parking to serve Hartford redevelopment projects is critical to the overall success of the projects it serves and requires the application of smart parking planning principles. Parking facilities become the "front door" or gateways of these projects, serving several user groups and providing meaningful impressions to the residents, visitors, restaurant patrons, shoppers and commuters who use them. As such, parking facilities should be planned and designed to contribute to the area's urban realm that will be a part of the downtown environment and experience, not as just a storage facility for cars.

- To the extent possible mixed-use development should be integrated at the ground level of the garage to enliven the streetscape and maintain the connectivity between the land uses adjacent to the garage.
- Pedestrian and vehicular access and exits and sections of the façade should be adorned with architectural elements that contribute to the aesthetic character of the community.
- Stair and elevator towers serve as desirable architectural features and should be designed using glass with maximum visual access and exposure to vibrant streets to enhance user comfort and security.
- Passive security measures include long, clear sight lines, bright lighting, and the elimination of dark areas. These measures should be incorporated to provide patrons with a high level of user comfort.
- Sustainable design features should be incorporated to reduce the facilities environmental impact.

Parking Planning

- Plan for future development
- Locate to serve multiple uses or projects
- Design for the long term
    - Aesthetics
    - Durability
- Connect the facility to places where people want to go
- Incorporate quality materials / landscaping

Safety, Security and User Comfort

- Maximize glazing at stair/elevator towers
- Increase lighting levels- Interior: 7 to 8 foot-candles
- Design for visibility and openness
- Minimize interior walls, maximize wall openings
- Generate activity– share facility amongst multiple users throughout the day
- Add façade / perimeter lighting to enhance streetscape
- Use decorative fencing at grade to limit pedestrian access and signal directions to entrances/exits
- Maintain open stairways
- Include CCTV's, emergency call system, etc.

Interior Enhancements

- Parking is often the first and last experience of a downtown visit - gateways to communities
- Incorporate vibrant design, artwork, and colors
- Communicate a downtown theme
- Consider "super graphics" graphics to enliven the facility

Sustainability Opportunities

- Ensure energy and cost-efficient design
- Use efficient lighting systems and controls
- Design for photovoltaic array
- Provide preferred parking for fuel efficient vehicles
- Include electric car charging stations and ample bike storage
- Use drought-resistant landscaping
- Consider parking guidance systems and occupancy signage

Parking Operations

- Generate revenue to cover operational costs and reserves
- Identify the best parking operations and revenue collection systems
- Provide convenient payment options - credit card, cash, Pay-by-Cell.
- Offer validation systems for merchants
- Design accessible entrance/exit payment stations for all users to facilitate ease of movement at chokepoints

Site One

The City of Hartford owns the 250-space lot located at 141 Sheldon Street near the UConn Hartford campus. This centrally located surface lot in the downtown is not the highest and best use of this property. A potential use of this property is a mixed-use project that provides residential, retail, and/or commercial uses coupled with structured parking. Based on the referenced concept plan, this site can support a parking facility of approximately 516 spaces which replaces the existing surface lot and provides additional, centralized parking for the downtown area to support future development within a reasonable walking distance.

In this hypothetical development scenario, a private development partner could be selected to partner with the HPA to undertake the mixed-use project. Connecticut parking authorities have statutory authority to construct and operate parking facilities. CT General Statute 7-204 grants parking authorities the powers to create, establish, and expand wherever built by the municipality, off-street parking facilities. Furthermore, parking authorities may: acquire real property by purchase, gift, devise, lease, or condemnation which is necessary for or incidental to the construction, maintenance, operation, or expansion of off-street facilities; give, grant or sell any real property owned by the authority to the municipality; lease parking facilities to any public agency, individual, firm, corporation, or hospital; and enforce parking regulations. Throughout the country parking authorities have proven to be effective entities to develop and operate parking to support redevelopment and economic activity. In Hartford, in addition to the operation, management and enforcement of the City's parking assets, the HPA can serve as a valuable component and resource with regards to Hartford's economic development initiatives. The HPA can help secure

existing parking for new projects and play a leadership role in the planning and development of new facilities to support new projects.

For this scenario, based on the value of the land and the associated development rights, the developer would contribute the land value based on the proposed development program towards the construction of the HPA-owned parking structure. By developing this new parking facility with available public parking, the city / HPA would have a new parking resource to support not only the proposed project but other projects in the area, offering developers the opportunity to satisfy their parking needs with a capital contribution and / or leasing space in the new parking garage. In addition, based on the private development of the 141 Sheldon Street site as a mixed-use project, the city would gain a significant property tax ratable on the mixed-use portion of the property that was previously tax exempt.

Figure 42: Site One Location Aerial Map

Source: Google Maps, THA Consulting, Inc, 2022

Figure 43: Site One Ground Level Plan

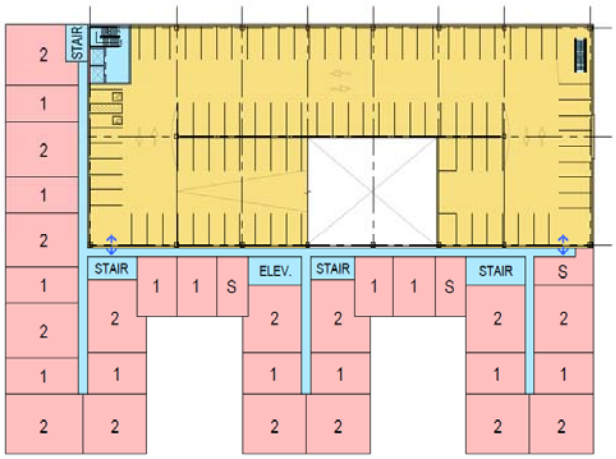
Source: THA Consulting, Inc, 2022

- The property is approximately 334 feet in length (East-West) and 250 feet in width (North-South).
- The garage is a single threaded helix design with parking ramps.
- Garage's entry and exit are on Sheldon Street.
- The main elevator stair is located on the NW corner adjacent to Sheldon Street and Prospect Street. A second stair is located on the NE corner adjacent to Sheldon Street.
- Total parking spaces is estimated at 516 spaces (8' 6" x 18' 0" stall size).
- The estimated SF per space efficiency is 308 SF per space.
- Total height of the facility is approximately 60 feet with five (5) levels.

Figure 44: Site One Typical and Top-Level Plans

Typical Level Plan

Top-Level Plan



Source: THA Consulting, Inc, 2022

Table 61: Site One Program Tabulation

Estimated Parking Spaces

PARKING TABULATION				
LEVEL	STANDARD	ACCESSIBLE	VAN ACCESSIBLE	TOTAL
Top	89	2	0	**91**
Fourth	109	2	0	**111**
Third	109	2	0	**111**
Second	109	2	0	**111**
Ground	89	1	2	**92**
TOTAL	**505**	**9**	**2**	**516**

Estimated Residential Units

RESIDENTIAL TABULATION				
LEVEL	STUDIO	1-BED	2-BED	TOTAL
Top	3	13	15	**31**
Fourth	3	13	15	**31**
Third	3	13	15	**31**
Second	3	13	15	**31**
Ground	2	6	8	**16**
TOTAL	**14**	**58**	**68**	**140**

Source: THA Consulting, Inc. 2022

Based on the site size, potentially it can accommodate a residential building with approximately 140 units. The residential units break down is listed in Table 61.

Table 62: Site One - Order of Magnitude Cost Estimate – Concept Design

#	Item	Cost
1	Sitework *	$ 1,000,000.00
2	Environmental **	$ -
3	Cast in Place Concrete (foundations & washes) ***	$ 1,900,000.00
4	Precast Concrete	$ 7,200,000.00
5	Masonry	$ 80,000.00
6	Façade Enhancement	$ 650,000.00
7	Structural & Misc. Metals	$ 480,000.00
8	Carpentry	$ 80,000.00
9	Roofing, Waterproofing	$ 320,000.00
10	Alum. Curtainwall, Storefront, Doors, Hardware	$ 707,000.00
11	Finishes / Painting	$ 158,000.00
12	Specialties (signage, fire extinguishers, etc.)	$ 110,000.00
13	Equipment & Furnishings	$ 55,000.00
14	Plumbing / Fire Protection	$ 375,000.00
15	Elevator	$ 475,000.00
16	Mechanical	$ 85,000.00
17	Electrical / Lighting	$ 1,050,000.00
18	Electric Charging Stations (10 Stations)	$ 140,000.00
19	Parking Access Revenue Control System	$ 250,000.00
20	Security System (Cameras and Blue Light)	$ 220,000.00
21	General Conditions, Insurance, Profit	$ 1,780,000.00
Total Direct Construction Cost		**$ 17,115,000.00**
	Cost Per Space (516 spaces)	**$ 33,200.00**
	Construction Contingency @ 10%	$ 1,711,500.00
	Construction Management (CM)	$ 340,000.00
	Design and Soft Costs @ 6.5%	$ 1,112,475.00
	Total Cost with Contingency, CM, Design and Soft Costs	**$ 20,278,975.00**
	Cost Per Space with Contingency and CM (516 spaces)	**$ 39,400.00**

Source: THA Consulting, Inc. 2022

Note:

- This is a preliminary order of magnitude (OME) construction cost estimate only.
- Estimate does not include cost for land.
- Estimate does not include any costs associated with environmental remediation, environmental premiums or geotechnical premiums.
- Estimate assumes standard spread footing foundations.
- Estimate does not include soft costs, permitting fees, and construction management fees.
- 40-hour work week, utilizing prevailing wage labor. All work to be performed during normal work hours.
- No premiums are included or accelerated work schedules, or material deliveries.
- Assume no automatic sprinkler system.

- 10% Construction Contingency.
- Order of Magnitude cost estimate is based on 2022 dollars and is not meant to be considered an exact budget amount.
- **Estimate might vary due to time of construction year, project delivery method, local economy and many other factors.**

CASE STUDY

The Highlands at Morristown, Morristown, New Jersey
Private development and commuter parking on transit-owned surface parking lot

As part of a joint development project in Morristown, NJ TRANSIT conveyed a 300-space commuter parking lot to a development. The project consists of 218 apartment units, 8,000 square feet of retail space and a 722 space parking deck. 415 spaces in the parking deck are owned by NJ TRANSIT and 207 spaces are owned by the developer through a condominium form of ownership. As compensation for the conveyance of the land the developer built and conveyed the transit parking at no cost to the agency and NJ TRANSIT receives a share of net proceeds from any future sale of the developer's project. The revenues generated by the leasing of available residential parking for commuter use are split between NJ TRANSIT and the developer to offset facility operational costs.

The parking facility management, maintenance and operations are established and dictated by the condominium's master deed and governed by the project's condominium association. Both NJ TRANSIT and the developer contribute their proportionate share to cover the costs of maintenance and management performed by a third-party parking operator.

Key Advantages, Features, and Strategies

- Private developer delivers parking structure to Transit agency as part of joint development structure
- Commuter parking is increased and shared with TOD project
- Transit agency and developer share operational costs based on pro rata ownership interest of parking facility
- though unique condominium regime
- Shared-use, operation and maintenance of parking facility between Transit agency and joint development partner

SITE TWO

The proposed surface lot Site is located on the north side of Albany Ave between Magnolia St and Irving St (614 Albany Ave). The property is owned by the City. The existing site contains a basketball court and two vacant parking lots. The HPA would like to convert this site to a municipal parking lot to accommodate potential parking demand in the Upper Albany neighborhood.

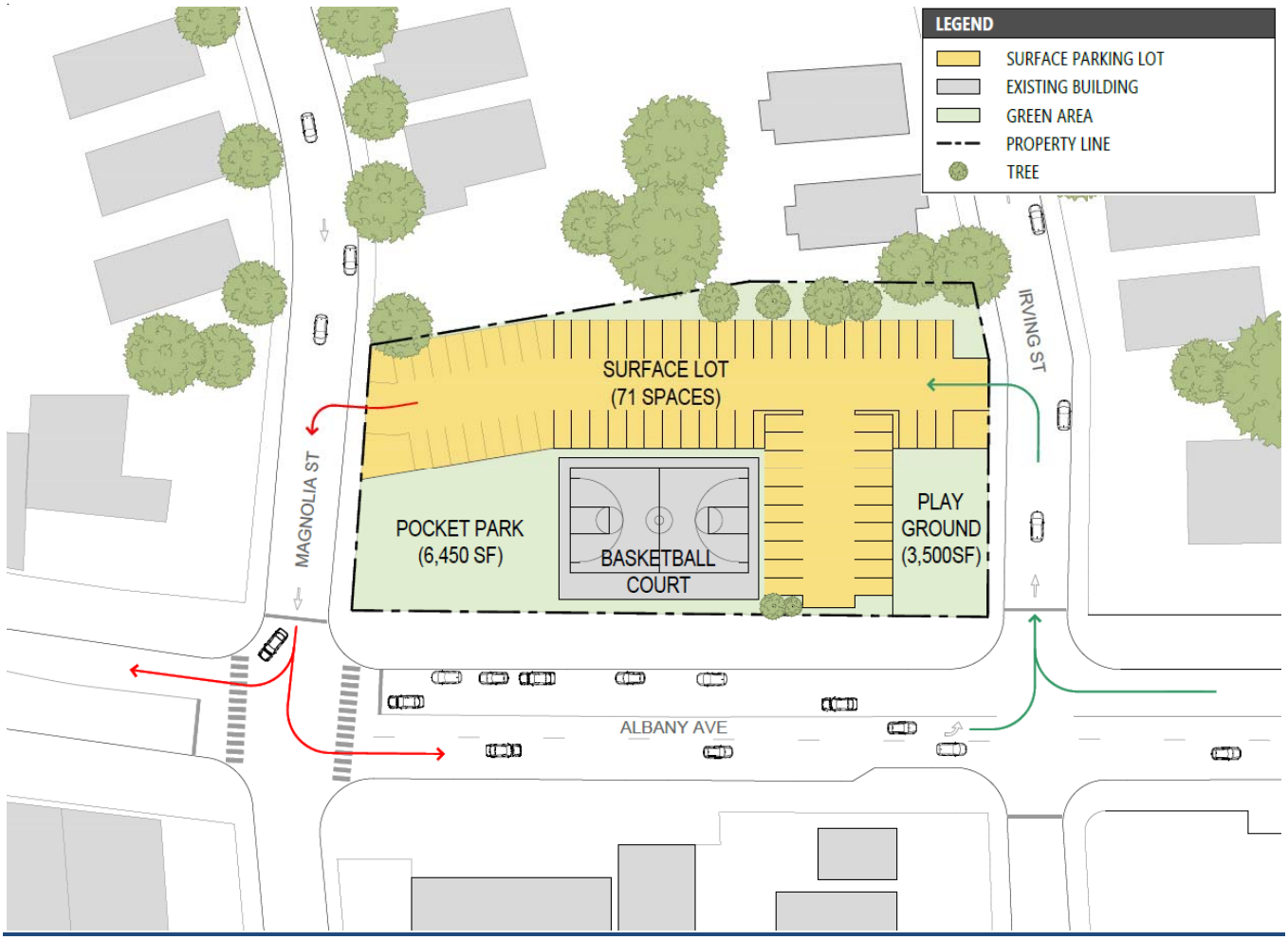
Figure 45: Site Two Location Aerial Map

Source: Google Maps, THA Consulting, Inc, 2022

Two concept designs are developed for Site Two. The existing basketball court and pocket park on the southwest corner are stay in both options.

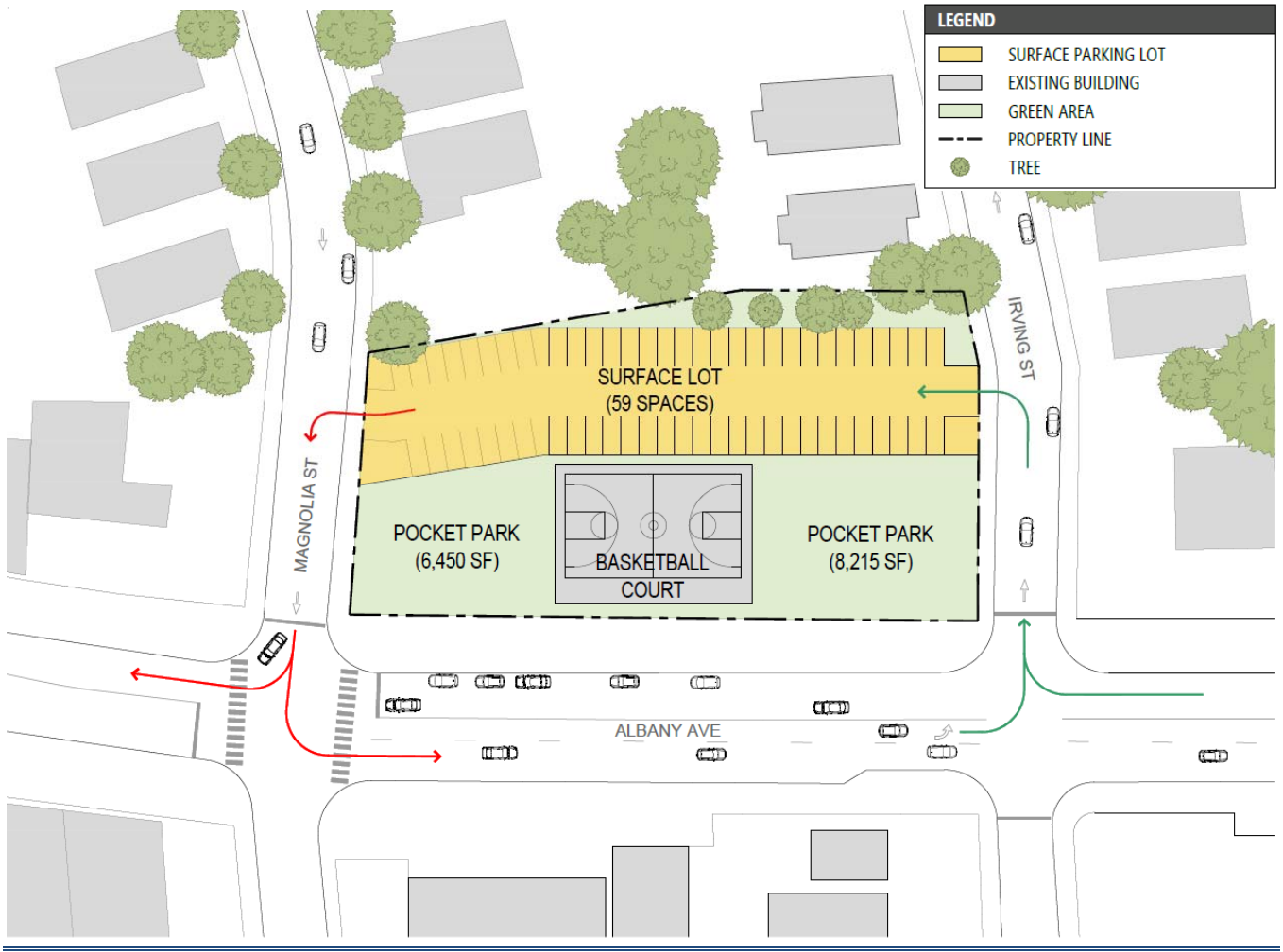
- Option 1 includes 71 spaces with one (1) pocket park, one (1) basketball court, and one (1) playground.
- Option 2 includes 59 spaces with two (2) pocket parks, and one (1) basketball court.

Figure 46: Site Two Site Plan - Option 1



Source: THA Consulting, Inc, 2022

Figure 47: Site Two Site Plan - Option 2



Source: THA Consulting, Inc, 2022