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# Downtown Parking Study

Concord, NC



PREPARED FOR



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Neighborhood Development  
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Concord, NC 28025

PREPARED BY



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9/1/2015



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## Glossary of Terms

The following is a brief list of phrases and terms that are used within this report.

- ❑ ADA (Americans with Disabilities Act) – Enacted in 1990, this federal legislation prohibits discrimination against people with disabilities in employment, transportation, public accommodation, communications, and governmental activities.
- ❑ ADA parking – marked or signed parking spaces that are available to persons with disabilities and displaying either an ADA placard (hang tag) or ADA license plate.
- ❑ Demand – an estimation of the number of vehicles that are in need of a parking space during a specified period of time. Existing parking demand will typically refer to the busiest period of the busiest day of the week based on parking occupancy counts.
- ❑ Demand margin – assumes that the vehicles observed during the peak period does not include individuals who may be working from home, on vacation, or otherwise away from their normal place of business on the day of data collection. For the purposes of this study the demand margin is 10%.
- ❑ Effective demand – calculated as the existing number of vehicles observed during the peak period plus a specified demand margin to account for individuals who were not at work on the day of data collection. For the purposes of this study the effective demand will be 110% of the observed occupancy counts.
- ❑ Effective future capacity – calculated as [raw surplus] – [effective demand].
- ❑ Efficiency – the highest and best use of a parking lot, which involves maximizing the physical layout of parking spaces as well as the oversell of parking permits to maximize the number of parkers without reaching 100% capacity during the peak period.
- ❑ Employees – individuals who regularly park within downtown for a typical work week. This category excludes irregular visitors that may be arriving for meetings, errands, special events, or other activities, such as jury duty.
- ❑ Employee parking – spaces or lots that are generally available during regular business hours (8 AM to 5 PM, Monday through Friday).
- ❑ Future parking demand – the estimation of additional vehicles that are generated by development; also refers to a specified period to time (either AM or PM peak period).
- ❑ Length of Stay – the duration of time that a vehicle is parked, either within a single (on-street) parking space, or among several parking spaces in a common area.
- ❑ Loading Zone – on-street parking location that is shared among nearby businesses for the purposes of *very brief* loading and unloading of delivery vehicles.



- ❑ Metered parking – parking spaces that are controlled by a parking meter device for the purposes of encouraging short parking duration and turnover within a high demand area.
- ❑ Occupancy – percentage of parking spaces that contain a vehicle during a specified time period (typically measured during AM, mid-day, PM, or evening).
- ❑ Peak hour demand – the busiest hour, of the busiest day, of a typical weekday. The holiday shopping season (Thanksgiving to Christmas) is not considered to be a typical weekday.
- ❑ Periphery parking location – parking lot or block that is located along the boundary of a specified area, *farther* than other locations. These areas are generally low-demand.
- ❑ Permit parking system – a system that utilizes physical stickers or hang tags that allow access to either a specified lot or a limited number of lots, and is coordinated by an organization or agency that efficiently manages parking resources for all users.
- ❑ Proximate parking location – a parking lot or block that is more centrally-located within a specified area, *closer* than other locations. These locations are generally high-demand.
- ❑ Regular parking – any non-reserved parking space that is generally available to any and all parkers. This category would include any timed on-street parking spaces, unless specifically stated otherwise.
- ❑ Reserved parking – signed parking spaces that are designated to a single individual, and are typically rented for a monthly fee.
- ❑ Resident – an individual that lives within or adjacent to the study area.
- ❑ Special event parking – irregularly scheduled parking demand, considered to be outside of the typical peak hour parking demand analysis. Special events should be managed independently, and possibly involve shared parking with private businesses with surplus parking.
- ❑ Supply – the total number of physical parking spaces that are available for parkers. Parking supply may refer to existing or future conditions. Public or private ownership of the parking supply may be an important distinction.
- ❑ Surplus parking – calculated as [existing parking supply] – [effective demand].
- ❑ Turnover – the number of vehicles that will utilize a single parking space during a specified time. Parking turnover is usually discussed in terms of on-street parking spaces within a high demand area. An on-street parking space with a 1-hour time limit will (in theory) have a higher turnover rate than one with a 2-hour time limit. This assumes that active enforcement will discourage any illegal parking.
- ❑ Visitor – an individual that irregularly arrives within the study area for either business, pleasure, or errands, and is not a downtown employee.



# Executive Summary

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## Executive Summary

### Community Involvement

The project team conducted seven (7) interview sessions with various stakeholders to gather first-hand knowledge of the city's parking challenges. There is a public perception of limited parking downtown. This perspective is contrary to the field data collected over a four (4) day period in some areas.

Stakeholders supported future on-street metered parking along Union St, for the purpose of limiting the length of stay and promoting vehicle turnover. Based on programs applied in other communities, it is possible to limit the length of stay without enforcing strict time limits. It was further agreed upon that revenue from these meters should be used for downtown improvements aimed at slowing vehicular speeds, maximizing visibility of stores/shops for business, and enhancing the pedestrian experience.

### Existing Parking Supply and Utilization

The project team conducted a four-day field inventory of the existing parking supply within an 18-block portion of downtown. A total of 2,356 parking spaces were counted every hour, 53% of which were public parking spaces (City or County).

The busiest hour of the busiest day of a typical work week was identified as 10 AM on Monday mornings, coinciding with the peak day of the Cabarrus County Court schedule. The maximum number of vehicles observed during this one-hour period was 1,333 (57% occupancy rate). On-street parking areas were the highest demand, observed to be greater than 94% occupied. County parking lots peaked at 86% occupied, and City lots were 62% occupied during this peak hour. Private parking spaces during this peak hour were observed to be 37% occupied, and never reached 45% occupied during the four-day field inventory.

### Future Parking Conditions

Downtown Concord has an estimated 875 "surplus" parking spaces based on existing utilization. The challenge for the City is that more than 700 of these surplus spaces are within under-utilized private parking lots (found to be only 37% occupied during the peak hour).

Forecasting ahead five (5) years, the City identified 15 near-term development projects (Table 1) that will increase future parking demand by as many as 598 spaces (high estimate). Market St and the Hotel Concord block are both anticipated to endure a significant parking shortfall in the future, as will the Cabarrus County Courthouse area. Nearby parking surplus within the Cabarrus Ave Garage, Bicentennial lot, and County lot on Church will likely experience parking demand overflow. Fortunately for the City, no downtown parking area is more than a five-minute walk from the center of Union St.



Table 1 – Future Development Projects

Address	Project Name	Expected Land Uses(s)
4 Union Street N	Concord Teleph. Co. (rear of Hotel Concord, facing Cabarrus Ave.)	Residential
4 Union Street N	Historic Bank (Hotel Concord)	Office/Services
14-18 Union Street N	Hotel Concord	Residential/Event
22 Union Street N	Old Theater Building	Retail
26 Union Street S	City Hall (old)	Office
30 Union Street S	Kitty City	Retail/Residential
57 Union Street S	Cabarrus Savings Bank Building (upper floors)	Residential
66 Union Street S	City Hall Annex (old)	Office
2 Corban Ave SW	Vacant Gas Station	Retail
16 Church Street N	Mills Building (former Electric Supply)	Retail
24 Church Street N	Serv Co (vacant building)	Retail
29 Cabarrus Ave E	Church St Lofts	Residential
61 Cabarrus Ave W	New Restaurant	Restaurant
35 Cabarrus Ave W	City Hall (new)	Office
Spring Street Lot	City Park (new)	Recreation

\* Generated through discussions with City staff, in collaboration with Concord Downtown Development Corporation.

## Management Strategies of Parking Systems

To maintain a balance of future parking supply and demand, several strategies are presented. Weekday shared parking strategies between private businesses and the City may represent the most cost-effective methods for increasing parking supply in the near-term, while simultaneously planning for the construction of new parking lots or garages. Examples of shared parking, as well as valet parking programs, are provided in section 5, with links for additional information on how the City could begin similar pilot programs. These minor improvements to the management of parking should have a larger cumulative effect on balancing the limited supply and growing demand for parking during weekday or evening periods.

## Implementation Plan Recommendations

This plan includes recommendations for improving the operation and management of the parking system, emphasizing the effective utilization of all parking resources. Not all recommendations may be immediately implemented; therefore, the project team has separated several quick-return initiatives that support the longer-term goals and objectives of this plan.

Near-term recommendations include educational and encouragement initiatives to improve on-street vehicle turnover, as well as enforcement options for more direct strategies. The project team recommends that the City begin regular field inventories to evaluate the effectiveness of modifications; these data will help to quantify and justify the City’s initiatives to the general public.

Parking Enforcement should transition towards a “Downtown Ambassador” approach, where the role is to help inform and guide visitors to the nearest appropriate parking areas rather than strict enforcement. Further

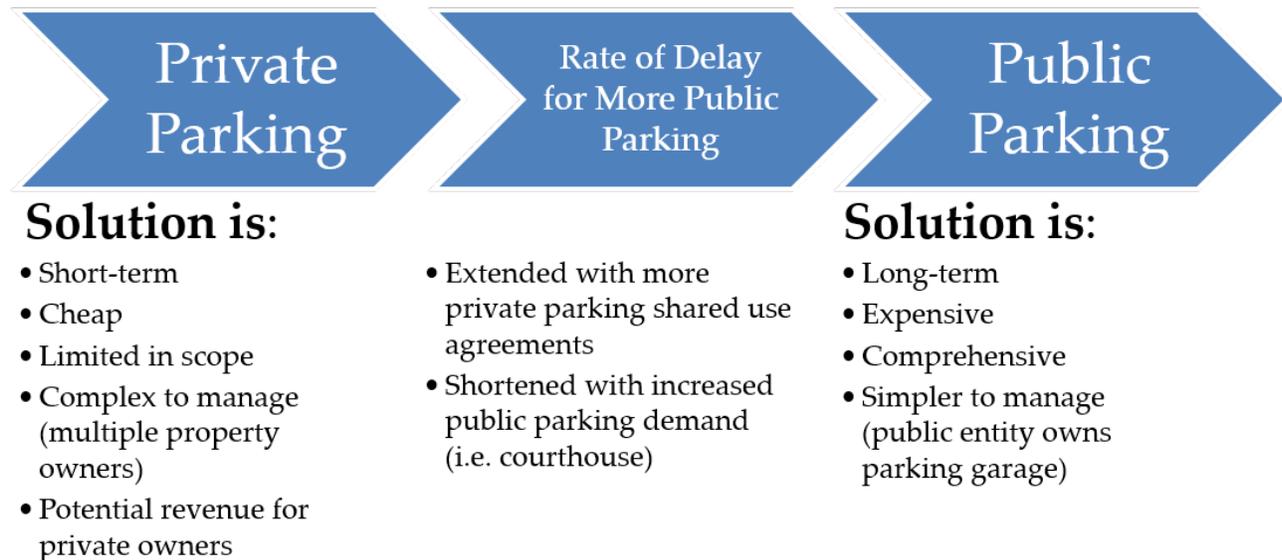


improvements to the enforcement, appeals, and citation process are recommended, as well as an audit of public and private parking signage to limit confusing or misleading messages and parking restrictions.

To address the high demand for on-street parking, the project team recommends three possible scenarios:

- 1) Retain free parking for on-street however establishing a fully tiered parking system of time limits (2, 3, 4, 8, and 24-hour options) so that visitors may choose the option that is suitable to their expected length of stay; this would be a near-term recommendation option;
- 2) Transitioning to a paid parking system for on-street, *without* time restrictions (i.e. as long as you pay the meter you can park all day in one space); this would be a longer-term recommendation option;
- 3) Transitioning to a paid parking system for on-street, with time restrictions that will encourage vehicle turnover (e.g. discouraging employee or merchant owners from paying to park on-street all day long); this would be a longer-term recommendation option;

Additional longer-term recommendations include networking with parking administrators of nearby municipalities through the Carolinas Parking Association, formalizing a parking management board, and investigating on-street pay station options (or a pilot study) for Union St. Further recommendations are presented in section 6, including the design and construction of parking garages in cooperation with City, County or private-sector stakeholders. Planning and design of parking garages should occur while the near-term recommendations are being implemented. It is possible that minor changes to the parking management system will effectively delay or reduced the future demand for structured parking, summarized below.





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## Introduction

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### Introduction

Concord is located 20 miles from uptown Charlotte (NC) and is one of the fastest growing cities in the region. The City of Concord serves as the County seat of Cabarrus County, supports a population of 84,000 residents, and is arguably best known as the home of the Charlotte Motor Speedway and Concord Mills shopping mall.

The City of Concord initiated this parking management study for the purpose of understanding current and future parking demand over the next five years. Based on current and projected conditions, the City plans to implement recommendations which best meet the parking needs of visitors, businesses, employees, and prospective investors seeking to improve and develop downtown properties.

In 2007, the City completed a Downtown Master Plan that focused on four (4) primary components: Visioning, Economic Analysis, Physical Improvements, and Parking Management. Recognizing the importance of parking supply and planning for future demand, the City of Concord sought out a transportation consulting firm to guide the planning process.

The project team of VHB Engineering initiated field data collection during March 2015. Following the assessment of existing parking supply and utilization, the project team met with stakeholders to discuss and solicit feedback related to parking system management. Stakeholders included representatives of the City of Concord, Cabarrus County, the Concord Downtown Development Corporation (CDDC), Concord Police Department, local merchants, and residents.

This report documents the analysis from these activities and recommends near-term (0-3 year) improvements that strive to:

- Inform and transform the public's perception of downtown parking,
- Strengthen the administrative role(s) of the City's parking management system, and
- Balance the parking needs of all users in an equitable manner.

The study will also prepare for more long-term improvements (3-5 years) that support further economic development opportunities and address the parking challenges they generate.



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## Plan Vision

The plan vision explains the purpose of the project and guides the analysis of data and recommendations. The plan vision was developed in coordination with the project steering committee discussions. The plan vision statements are as follows:

- Identify strategies to effectively utilize existing parking resources and plan for future parking needs
- Involve and inform the public on parking system management options
- Investigate the potential for on-street parking meter options for Union St
- Balance future parking supply and demand for future economic development opportunities

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## Plan Objectives

Plan objectives are measurable outputs that support the overall plan vision. Working in conjunction with the project steering committee, the following project objectives are:

- Quantify the existing parking supply and utilization, and develop tools to help perform this analysis in the future
- Recommend operational and management improvements to the downtown parking system
- Evaluate existing wayfinding signage and recommend improvements and access to/from visitor parking areas
- Quantify future parking demand based on land use square footages, and develop a strategic plan for future parking needs
- Evaluate locations for constructing future parking supply (lots/garages)

## Community Involvement

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### Community Involvement

The study team actively sought local context for the parking challenges that face the City of Concord from the perspective of those who live, work, and experience downtown on a daily basis. Without this local knowledge, any parking study recommendations might not be suited to the City of Concord, and the plan's effectiveness would be limited.

On Thursday, April 9<sup>th</sup>, 2015 the project team conducted seven (7) interview sessions with various stakeholders and groups. The purpose of these informal discussions was to gather first-hand knowledge of the City's parking challenges, parking enforcement, revenues generated by parking, daily management of the parking system, and other related topics. A full summary of the stakeholder interviews is provided in Appendix A.

Interviewees included members of the Concord City Council and government, Cabarrus County government, the CDDC, the Concord Police Department, downtown merchants, property owners, and local residents.

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### Stakeholder Themes

Perspectives on parking are varied and diverse. The project team chose to highlight three (3) of the most relevant themes below, relating to public perception, the Cabarrus County courthouse, and parking enforcement limitations.

#### Public Perception

There is a public perception of limited parking downtown. This perspective is contrary to the field data collected over a four (4) day period. These data found a peak demand of 1,333 vehicles parking within 2,356 public and private parking spaces, which is a peak occupancy of 57%. Some parking areas were more consistently occupied than others, however. On-street parking, particularly along Union St, was frequently over 90% occupied between 8 AM and 5 PM during most the week. This condition along Union St is likely the source of the public's general perception regarding limited parking.



## Cabarrus County Courthouse

The Cabarrus County courthouse generates the greatest short-term parking demand. An estimated 1,400 individuals visit the courthouse during a typical session. This estimate has increased sharply from approximately 900 visitors three years ago. An additional 500 visitors per day are expected by 2020.

Potential jurors are directed by mail to park within one of three County-owned parking lots, the County lot on Church St (114 spaces), the County lot on Barbrick Ave (70 spaces) or the County lot on Corban Ave (58 spaces). These 242 County spaces are simply not adequate to accommodate courthouse visitors. Stakeholders discussed how vehicles are regularly towed for illegal parking within the “What-A-Burger” restaurant parking lot, located immediately adjacent to the Courthouse.

### Parking Enforcement Limitations

Finally, parking enforcement (Concord Police Department) does not currently have an electronic parking citation system, and therefore, it is not possible for the enforcement officer to identify (in the field) vehicles with multiple outstanding citations. Each new citation amount is \$10 regardless of whether the person is a regular offender (i.e. there is no scofflaw list) or a first-time visitor to downtown.

### Topics of Agreement

The project team actively engaged as many individuals as possible, and heard unique perspectives relating to downtown parking. The following topics were generally agreed upon by a majority of stakeholders.

- Support for future on-street metered parking along Union St by downtown merchants, for the purpose of limiting the length of stay and promoting vehicle turnover. This was discussed as a possible alternative to the current 2-hour time-limited parking along Union St.
  - Tiered system of timed parking is an alternative approach; 2-hour, 3-hour, and 4-hour on-street parking centered around Union St, with 24-hour on-street parking farther away.
  - Revenue from meters should be used for downtown improvements (parking, lighting, signage, streetscape, etc.).
- Streetscape improvements should be aimed at slowing vehicular speeds for safety and maximizing visibility of stores/shops for business.
- Visitors and employees of downtown prefer on-street parking spaces over off-street parking lots. This is confirmed by the parking occupancy data collection.
- Downtown is in need of additional retail space(s); merchants are curious if the City will sell or lease the City Hall and Annex building(s) once the new City Hall building is opened. The City is in agreement that this is the intention.
- Parking citation amounts (\$10) are too low to deter illegal parking, and enforcement “tours” are too infrequent to be effective.



## Topics of Disagreement

Some merchants firmly believe that downtown employees should not be allowed to park within on-street parking spaces, while others believe that (for safety reasons) they should be allowed to park on-street, near their stores. This commonly contentious topic persists in many other municipalities in North Carolina and other states.

There are limited residential (second story) units within downtown Concord currently, though four (4) residential development opportunities have been discussed. Stakeholders expressed mixed perspectives towards future resident parking, likely because it may impact their ability to find parking. However, residential parking was only a minor concern.

## General Topics of Uncertainty

Union St parking spaces are currently parallel, while some angled parking exists along several other streets. Although stakeholders did not indicate a preference for parallel versus angled, it is possible to accommodate a larger number of spaces using angled parking provided that there is enough pavement width. The majority of stakeholders indicated that more on-street parking is preferred, as long as safety is considered.

The project team presented concepts for traffic operation adjustments along Union and Market St within downtown. Stakeholders were asked whether they value (a) increasing sidewalk widths; (b) increasing on-street parking supply; and/or (c) maintaining the existing two-way traffic flow.

Comments were expectedly mixed for all three options, including combinations of options. Some stakeholders commented that widening sidewalks for some locations would be desirable, however all agreed that this should not come at the direct expense of on-street parking.

An alternative concept involved conversion to one-way traffic flow for this one-block area, and utilizing a portion of roadway for angled parking and small sidewalk width improvements. This concept was viewed as a potential detriment towards businesses, and also discussed as a potential safety concern for pedestrians, as it has been shown that one-way traffic flow allows for increased vehicle operating speeds. A more detailed summary of two-way and one-way traffic operation is included in Appendix D.

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## Summary Comments from Stakeholders

Public outreach from stakeholders contributed the following recommendations to this planning process. These topics will be referenced again within the Implementation Plan Recommendations section.

- The perception of parking shortage must be addressed by multiple outreach initiatives by the City, County, and CDDC.
- The County courthouse is a large generator of short-term visitor parking.
- On-street parking is in high demand, and should be prioritized for short-term, paying customers.
- Improving the entire parking enforcement process will be important to parking management.
- Minor improvements to the overall parking management system may be initiated as pilot projects, and evolve slowly over time so that all user groups can adjust to these changes.



## Existing Parking Supply and Utilization

### Existing Parking Supply and Utilization

#### Background

The study team was asked to organize and conduct a field inventory of the existing parking supply as well as determine existing utilization in advance of the initial project steering committee meeting.

The project study area was defined as an 18-block portion of downtown, roughly bounded by Killarney Ave to the north, McCachern Blvd to the east, Corban Ave to the south, and Spring St to the west (Figure 1). This study area boundary has been consistent with previous downtown parking studies from 2001 and 2007.

The study area is 67 acres in size, or roughly one-third of a mile wide and one-third of a mile tall. The eastern portion of downtown slopes gently downward towards McCachern Blvd and Three Mile Branch (creek).

Since 2001 the total number of parking spaces within downtown has varied by as much as 8%, which is quite stable considering that population growth over this same period has been significantly higher (Table 2).

Residential growth has been occurring outside of the study area however, as there are a limited number of residents currently living downtown.

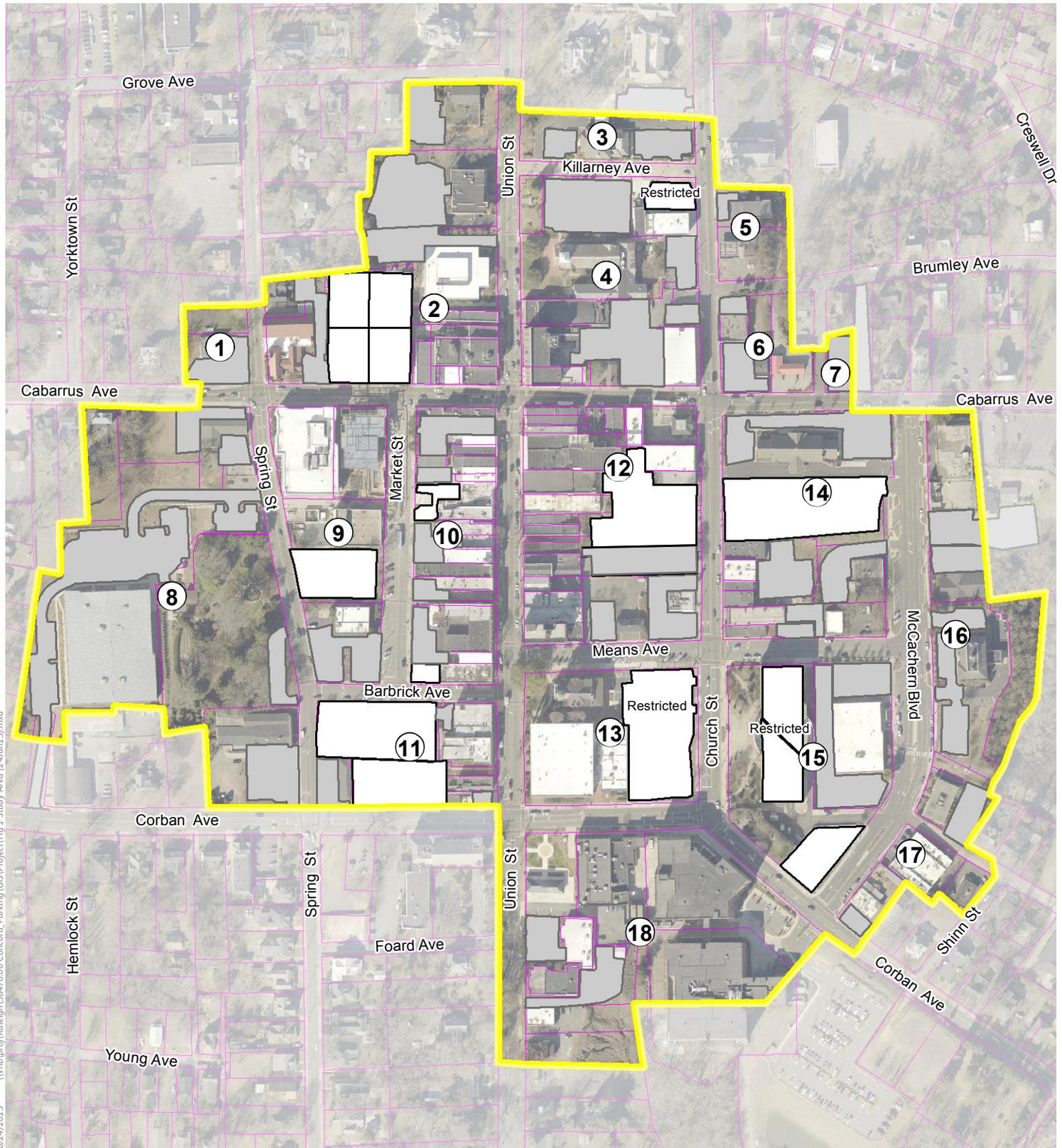
Table 2 – Downtown Parking Supply by Year

	2001	2007	2015	% Change 2001 to 2007	% Change 2007 to 2015
Parking Spaces	2,473	2,271	2,356	-8%	+4%
City of Concord, Population	55,977*	65,431	83,506	+17%	+28%

Note: 2001 and 2007 parking data from Downtown Parking Management Plan Update (2007).

2015 data collected 3/20/2015.

2001 population estimate from 2000 Census.



6/24/2015 \\vhb\proj\raleigh\38476.00 Concord\_Parking\GIS\Project\Fig 1 Study Area (24Jun15).mxd



**Parking Ownership**

- Public
- Private

- Study Area Boundary
- # Block Number

**FIGURE 1**

**Study Area**



Data Sources:

NC One Map; NCDOT; City of Concord



## Existing Parking Supply

Parking data was collected on Friday (3/20), Monday (3/23), Wednesday (3/25), and Saturday (3/28) in 2015. These days represent parking demand for a typical work week, as well as a comparison with a typical weekend day. It is understood that there are busier weekdays or weekend days throughout the year; however, the objective of this analysis was not to identify the worst-case scenario. A future parking demand model built on such scenarios would lead to over-construction of parking spaces that sit empty for most of the year.

The downtown study area includes 2,356 parking spaces; 213 spaces are on-street (9%) and 2,143 spaces are off-street (91%). The parking supply is evenly split between public and private. Private parking lots comprise 1,118 parking spaces (47%), and public parking (including City/County government and on-street spaces) make up the remaining 1,238 spaces (53%) (Table 3).

Table 3 – Parking Spaces by Types

Parking Type	Unreserved	ADA	Other	TOTAL	%
On-Street (City)	209	3	1	213	9%
Off-Street (City/County)	951	30	44	1,025	44%
Off-Street (Private)	1,072	38	8	1,118	47%
<b>TOTAL</b>	<b>2,232</b>	<b>71</b>	<b>53</b>	<b>2,356</b>	

\*Based on field data collected 3/20/2015

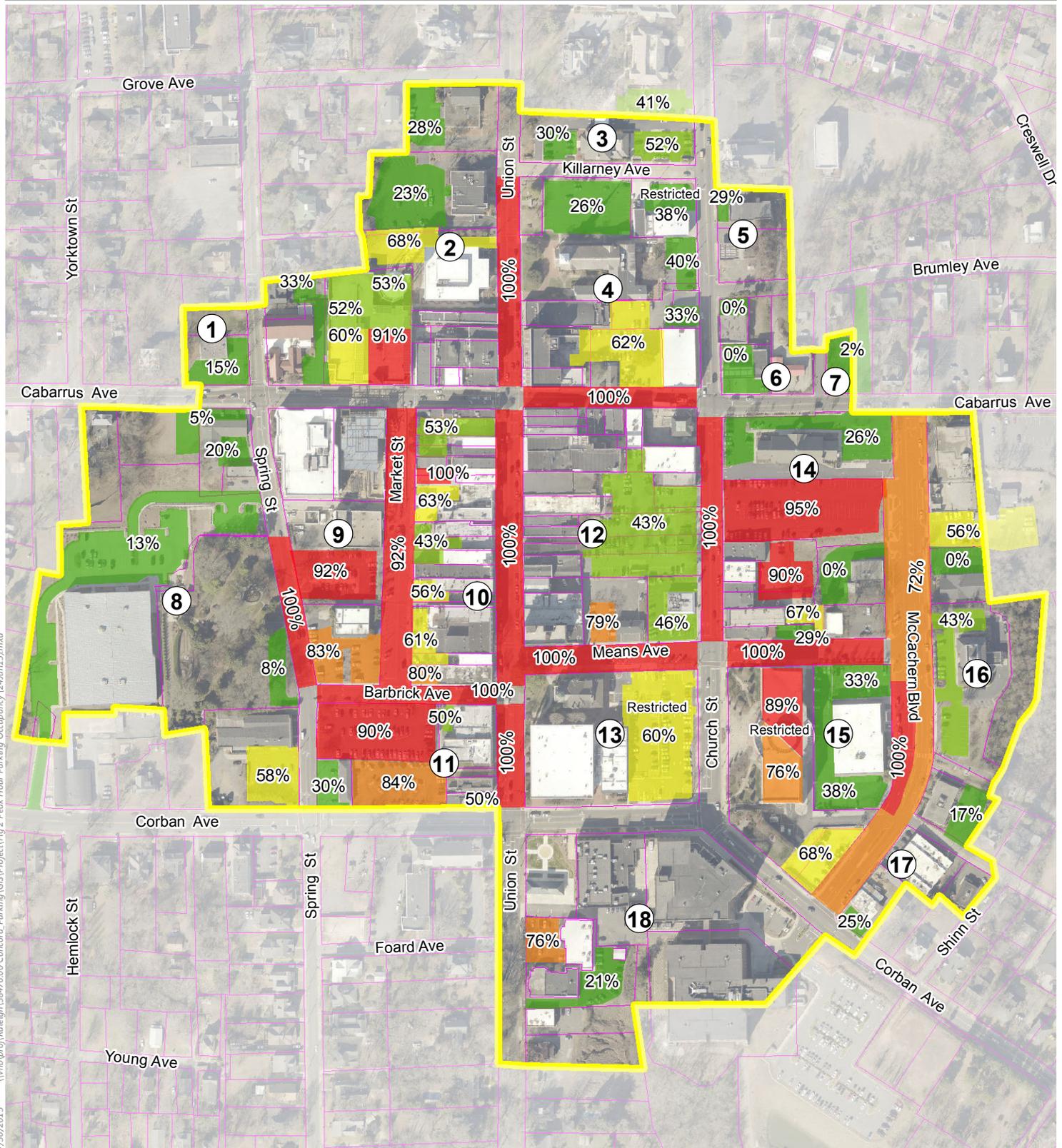
The City of Concord maintains 498 (21%) of off-street public parking spaces, the remainder are controlled by Cabarrus County (527, 22%) within five (5) parking areas:

- County Lots on Barbrick/Corban (70 and 58 spaces, respectively)
- County Sherriff Parking at Courthouse (101 spaces)
- County Government Center (162 spaces)
- County Lot on McCachern (22 spaces)
- County Lot on Church (114 spaces)

Ownership of parking lots is important to this plan, however the general public may perceive city lots in the same manner as county lots, and choose to park within whichever is closest to their destination. It is safe to assume that many courthouse visitors are parking within City-maintained parking lots, as well as many city visitors parking within County-maintained parking lots.

Parking demand was not evenly distributed among all parking lots within the study area (Figure 2).

- Monday was observed to be the busiest parking day of a typical week (Table 4);
- Private parking demand peaked at 35% occupied; public parking demand peaked at 72% for off-street lots and 96% for on-street parking spaces;
- Centrally-located lots (public and private) were observed to have occupancy rates between 65-90% during the peak hour;
- Lots further from the center of downtown were found to be below 40% occupied during this time; and
- The peak 3-hour period was between 10 AM and 1 PM, and this was consistent across all three weekdays observed.



7/30/2015 \\v\b\proj\raleigh\38476.00 Concord\_Parking\GIS\Project\Fig 2 Peak Hour Parking Occupancy (24Jun15).mxd



**FIGURE 2**



**Peak Hour Parking Occupancy**

**Peak Occupancy**

- ≤ 40%
- 41% - 55%
- 56% - 70%
- 71% - 85%
- > 85%

- Study Area Boundary
- # Block Number

Data Sources:

NC One Map; NCDOT; City of Concord



On-street parking demand was greatest during the 10 AM hour on Monday, where 201 vehicles were observed within 213 on-street parking spaces (94% occupancy). This condition is critically important because the targeted parking occupancy rate is 85%, or one (1) empty space for every seven (7) spaces. McCachern Blvd was the only street with more than one available parking space during this peak hour. On-street parking is free, with no parking meters or pay stations in Concord. Free parking is the likely reason for this (very) high parking occupancy.

Table 4 – Parking Occupancy Counts by Day

Day	Total Vehicles Observed	# Hours Observed	Peak Vehicles Observed (1-hr)
Friday	10,320	10	1,179
Monday	11,201	10	1,333
Wednesday	10,117	10	1,160
Saturday	3,652	6	664

\*Based on field data collected 3/2015

The afternoon peak for on-street parking occurred during the 2 PM hour of Monday (85%), representing only a slight decline from the AM peak (~20 vehicles), however all other afternoon periods were below 75% occupied. An afternoon peak that is slightly lower than the AM peak is typical for most downtowns.

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## Public Parking Utilization

During the AM peak hour there were 310 cars observed within the 498 parking spaces maintained by the City of Concord, for an occupancy of 62%. Some of these occupied spaces include Police Department and other fleet vehicle parking within the Cabarrus Ave Garage. These vehicles are utilized on a weekly basis, but remain idle for a majority of a typical weekday, as well as all weekend. As parking demand for the garage increases in the future, the city should consider relocating any of the “storage” vehicles to an off-site location and free up these spaces for visitor or employee purposes.

For comparison, there were 427 cars observed within the 527 parking spaces maintained by Cabarrus County for an occupancy of 81%. The parking industry targets 85% as the ideal parking occupancy for on-street and public off-street lots.

The combined parking utilization for both city and county lots is 72%, which is manageable for both entities. If Cabarrus County chose to “run off” vehicles that were not parked for official county-business, then these vehicles would likely park within city lots. The Cabarrus Ave Garage (city parking) would likely experience utilization greater than 85% as a result. The parking cycle described would possibly continue until visitors chose to park within other (illegal) parking areas to avoid the frustration. This condition would be negative for all involved, and should be avoided through collaboration and active parking management (discussed further in section 6).

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## Parking Turnover Analysis

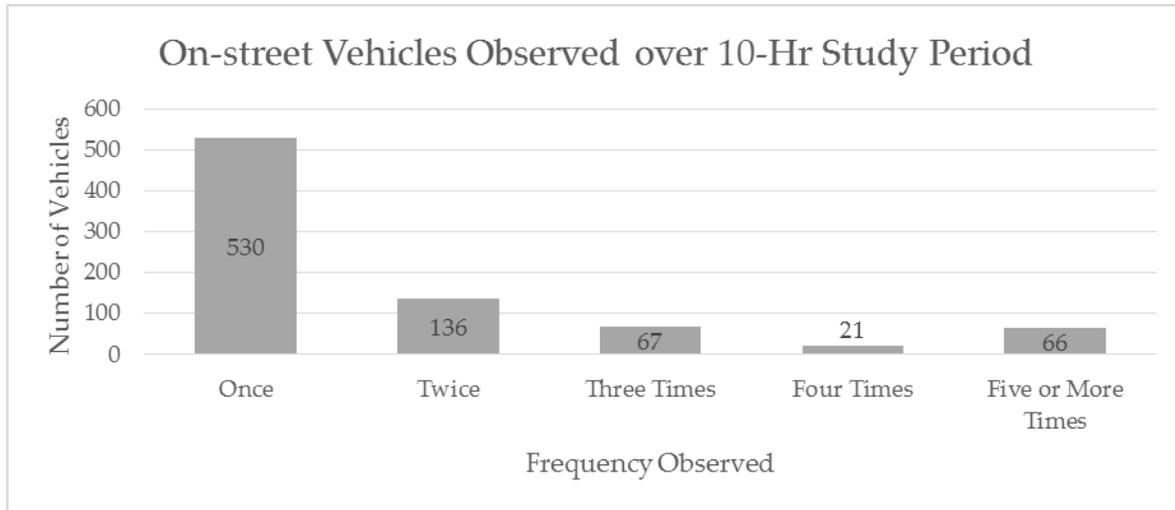
On-street parking is free of charge and limited to two (2) hours for most of the study area. The project team observed unique vehicle license plates each hour along on-street parking areas to confirm the existence of an



employee parking “shuffle”. The parking shuffle, also referred to as the “employee ballet” is a condition where downtown employees choose to park for a majority of an 8-hour day within on-street spaces and systematically re-park every two (2) hours to avoid parking citations.

The project team observed 1,546 total license plates, finding 820 unique plates during the 10-hour period of analysis. Results suggest that as many as 33 vehicles, all of which were observed on five (5) or more occasions, were parking on-street for a majority of the day (Figure 3).

**Figure 3 – On-street Parking Turnover – Frequency Observed**



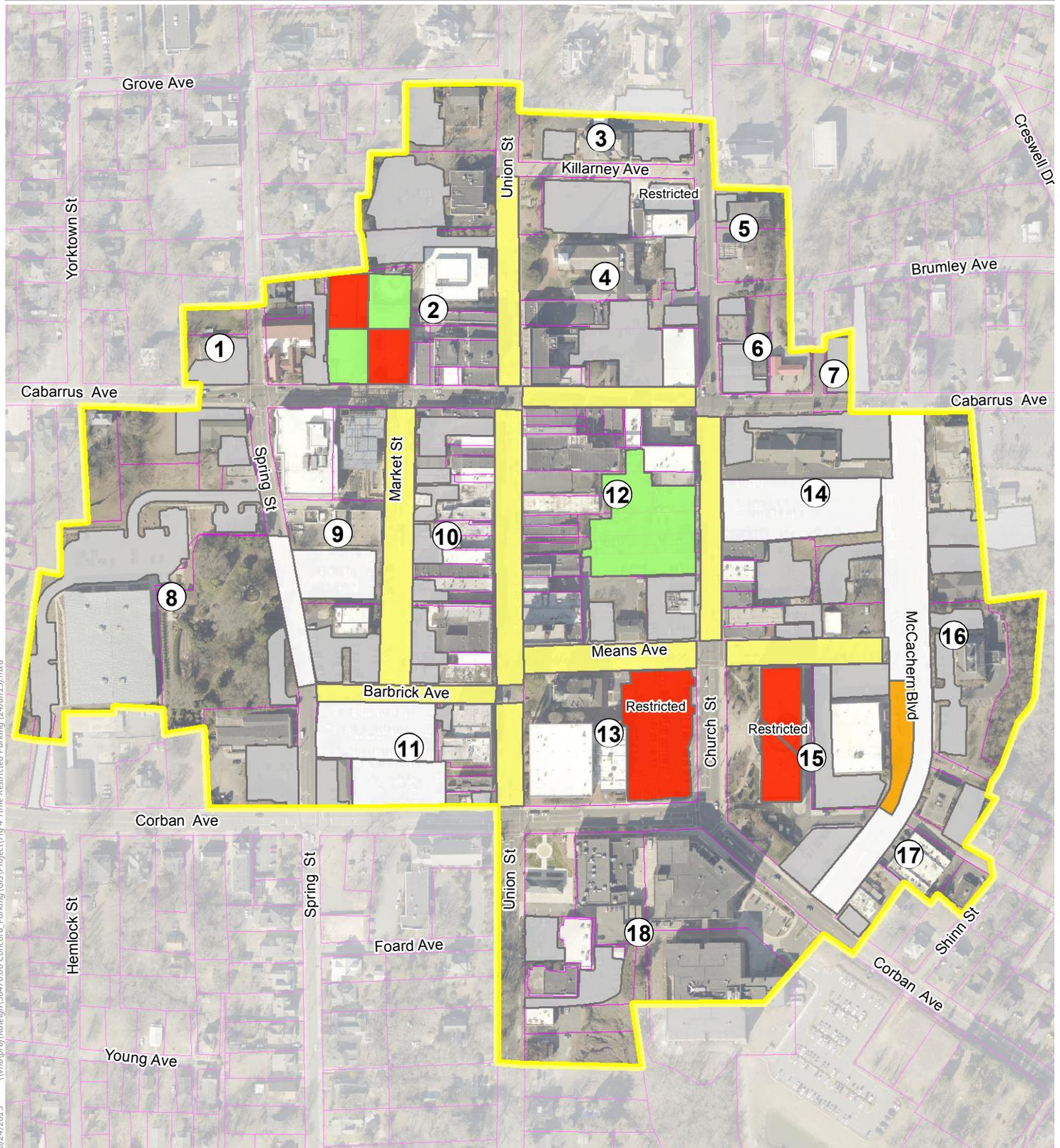
The typical on-street parking time limit is two (2) hours, however some 3-hour parking is allowed within the Bicentennial lot, as well as some all-day parking allowed along McCachern Blvd and Spring St (Figure 4). Vehicles that were observed parking within these areas constitute the “Legally Parked” column (Table 5).

**Table 5 – On-street Parking Turnover – Vehicles Observed on 5 or more Occasions**

Frequency Observed	# Vehicles	Legally Parked	Possibly Illegal	
10 occasions	4	3	1	
9 occasions	9	6	3	
8 occasions	13	9	4	
7 occasions	13	8	5	
6 occasions	8	3	5	
5 occasions	19	4	15	
<b>Subtotal 5+</b>	<b>66</b>	<b>33</b>	<b>33</b>	<b>50%</b>

\* Legally parked includes (a) All-day parking along McCachern Blvd or Spring St; and (b) Private/leased parking within the Bicentennial lot

Of these 33 possibly illegal parkers, more than half (21) remained parked in a single parking space, suggesting that parking enforcement was ineffective on this particular day. Ten (10) vehicles were observed parking in two (2) different parking spaces, and two (2) vehicles were observed in three (3) different parking spaces, suggesting that the drivers were attempting to avoid a citation by frequently “shuffling” their vehicles (Table 6).



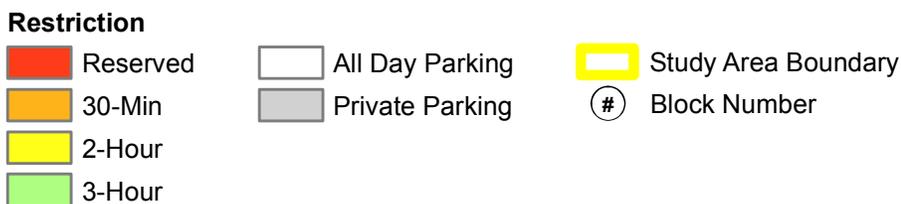
6/24/2015 \\vhb\proj\raleigh\38476.00 Concord\_Parking\GIS\Project\Fig 4 Time Restricted Parking (24Jun15).mxd



**FIGURE 4**



**Time Restricted Parking**



Data Sources:  
NC One Map; NCDOT; City of Concord



Table 6 – On-Street Parking “Shuffle” to Avoid a Citation

Possibly Illegal Parkers	1 Space	2 Spaces	3 Spaces
33 license plates observed 5+ occasions	21	10	2
Subtotal	64%	30%	6%

The results suggest that the parking shuffle is occurring, to a relatively small extent (33 vehicles of 820), along the following streets: (a) Union St; (b) Bicentennial lot; (c) Barbrick Ave; and (d) Market St.

The City should not be alarmed by the 33 vehicles observed to be shuffling throughout the day. This magnitude (4% of 820 unique plates) does not appear to be disrupting the ability to find available parking spaces. The City should be aware of this phenomenon and discourage it through adjustments to parking operations, enforcement and management so that it does not become a problem in the future. The objective would be to guide these individuals toward longer-term parking options that are currently under-utilized, and avoid the need to re-park every two (2) hours.

## Future Parking Conditions

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### Future Parking Conditions

This section will quantify the anticipated future parking demand based on identified development projects, identify locations of parking surplus and shortfall, and present best practice management strategies that may be useful to the City of Concord. It will build upon the conditions observed and discussed in Existing Parking Supply and Utilization (section 3) and estimate future parking demand that can be expected by near-term development projects.

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### Parking Surplus

The existing parking utilization analysis suggests a total of 1,023 unoccupied parking spaces during the busiest hour (10-11 AM) of the busiest day (Monday) of a typical weekday, as collected during the field inventory phase of this project.

### Margin of Error

The project team observed 1,333 vehicles parked during the peak hour. This number does not account for individuals who may have been (a) working from home; (b) sick; (c) on vacation; (d) away from the office running errands; (e) attending an out-of-office meeting; or otherwise not present on the day of collection.

A future parking demand model begins with conversion of these empty spaces into a raw surplus value, which factors in the assumed number of employees, visitors, or merchants who were not present on the day of data collection. For the purposes of this study, a margin of error of 10% is applied to the number of vehicles observed to determine the existing effective demand and raw surplus (Table 7).

The number of empty parking spaces was never lower than 1,023 during the study period; this represents the observed parking surplus. For future demand estimation, this equates to a raw parking surplus of only 875 to account for the estimated 148 vehicles that were not present (Figure 5).

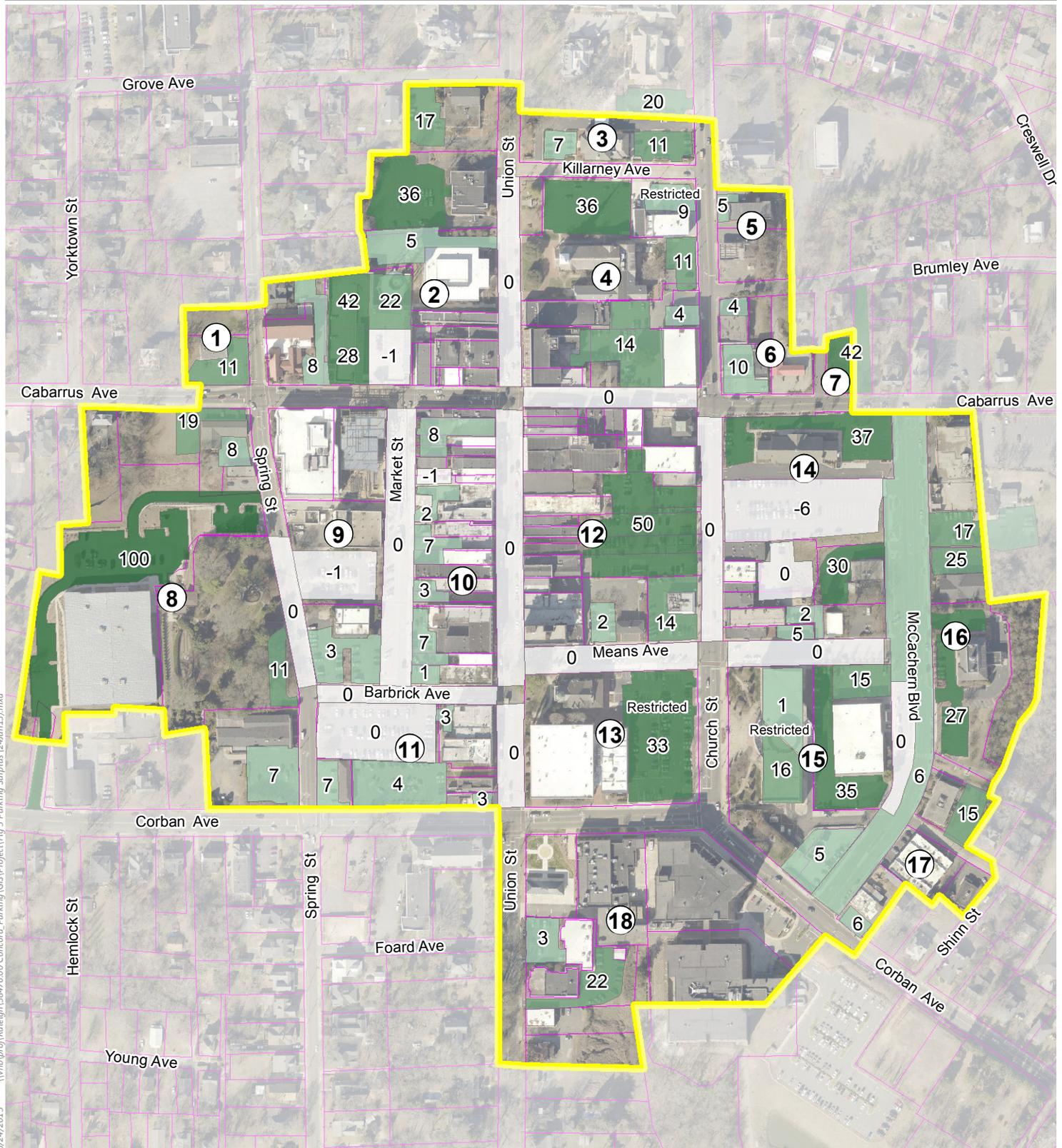
City parking areas account for 154 of these surplus parking spaces, while an estimated 19 surplus parking spaces are present within Cabarrus County parking areas. *The remaining raw surplus parking (more than 700 spaces) belong to private parking lots, which are beyond the jurisdiction of the city, save for a shared parking arrangement (section 5).*



Table 7 – Calculating the Existing Surplus

Parking Supply	2,356	Includes public and private spaces
Peak Occupancy (cars)	1,333	AM peak hour (Monday 10-11 AM)
Margin of Error	10%	Accounts for non-present vehicles
Effective Demand	1,481	Assumed parking demand
Raw Surplus	875	Assumed surplus of existing parking

Note: This is the estimated existing parking surplus for the peak hour (10 AM) of the peak day (Monday) of a typical week, while County Court is in session. This assumed parking surplus will be higher for non-peak days, and potentially smaller for special events within downtown that are considered non-typical.



6/24/2015 \\vhb\proj\raleigh\38476.00 Concord\_Parking\GIS\Project\Fig 5 Parking\_Surplus (24Jun15).mxd



**FIGURE 5**



**Parking Surplus**

**Raw Surplus**

- 0 Spaces
- 1 - 10
- 11 - 25
- 26 - 50
- > 50 Spaces

- Study Area Boundary
- # Block Number

Label represents estimated raw surplus;  
Negative values result from existing occupancy greater than 85%

Data Sources:

NC One Map; NCDOT; City of Concord



## Parking Demand Model

This section presents near-term development projects and quantifies their parking demand. Based on discussions with the project steering committee and members of the city, there are 15 projects that are expected to generate new parking demand (Table 8). These projects have been vetted by City staff as most likely to be constructed within the next five (5) years.

Table 8 – Future Development Projects

Address	Project Name	Heated SF	Uses(s)
4 Union Street N	Concord Teleph. Co. (rear of Hotel Concord, facing Cabarrus Ave.)	5,280	Residential
4 Union Street N	Historic Bank (Hotel Concord)	1,844	Office/Services
14-18 Union Street N	Hotel Concord	27,512	Residential/Event
22 Union Street N	Old Theater Building	9,690	Retail
26 Union Street S	City Hall (old)	20,000	Office
30 Union Street S	Kitty City	8,180	Retail/Residential
57 Union Street S	Cabarrus Savings Bank Building (upper floors)	15,000	Residential
66 Union Street S	City Hall Annex (old)	14,304	Office
2 Corban Ave SW	Vacant Gas Station	1,156	Retail
16 Church Street N	Mills Building (former Electric Supply)	3,780	Retail
24 Church Street N	Serv Co (vacant building)	600	Retail
29 Cabarrus Ave E	Church St Lofts	30,149	Residential
61 Cabarrus Ave W	New Restaurant	2,800	Restaurant
35 Cabarrus Ave W	City Hall (new)	76,176	Office
Spring Street Lot	City Park (new)	0	Recreation

\* Generated through discussions with City staff, in collaboration with Concord Downtown Development Corporation.

## Parking Demand Model

The project team created a spreadsheet-based parking demand model to estimate the number of parking spaces needed to meet the expected demand for these developments. The model may be adjusted or updated as additional information is obtained, or assumptions are revised.

## Parking Demand Estimation

The Institute of Transportation Engineers (ITE) Parking Generation manual 4<sup>th</sup> edition was utilized for this analysis. This manual converts square footage of varying land uses into future parking demand based on a broad spectrum of case studies across the US. The manual provides a low, median, and high ratio for estimating parking demand, and the range for many land uses was quite large. The parking ratios selected for this analysis are displayed in Table 9.



Table 9 – Future Parking Demand Estimation

Future Land Use	Est. New SF	Parking Ratio per 1,000 SF	Est. New Parking Demand
Residential	97 beds	1.5 per bed	146
Retail	15,226*	2.5	62*
Office	78,020	3.0	234
Restaurant	2,800	4.0	14
Courthouse (increased visitors)	-	-	142
<b>Subtotal</b>			<b>598</b>

\*.Some retail space already exists, however is vacant; therefore new parking demand is generated without new SF.

### Visualization of Demand

Figure 6 displays the locations of future parking demand that is generated by these development projects. Block number 4 near the Concord Hotel and Church Street Lofts is estimated to generate demand for 164 new parking spaces.

Blocks 9 and 10 will collectively generate demand for 248 new parking spaces. The new City Hall building is estimated to only generate a net demand for 126 new parking spaces because many existing employees are currently working within the current City Hall and Annex buildings. To avoid double-counting these individuals the project team decided to reduce the new City Hall estimate and account for new office employees that will back-fill the current City Hall (60) and Annex (43) office space. The actual estimate for the 76,000 SF City Hall building is 229 future parking spaces.

Block 12 is expected to generate demand for 35 new parking spaces as upper floors are converted to an estimated 23 residential units.

An increased number of daily visitors to the Cabarrus County Courthouse is expected to generate a demand for 142 additional parking spaces during the peak hour (Mondays).

The resulting parking demand generated was linked with GIS resources to display the pattern of supply, demand, and future parking balance for the downtown study area. Various GIS maps of existing raw surplus, future parking demand, and parking balance per block are provided in Appendix C.





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## Parking Supply Changes

One of the plan objectives is to evaluate locations for constructing future parking supply (lots/garages). The project team examined four (4) locations and presented findings to the steering committee. Two of the most relevant locations are briefly summarized below. A more detailed summary of site-specific parking supply, net parking change, and estimated costs to construct is included within Appendix C.

### County lot on Barbrick/Corban

The existing County lots on Barbrick Ave and Corban Ave are physically separated by wheel stops and sign posts. There are 128 total parking spaces within these two lots. Parking is for County-business Monday through Friday between 7 AM and 5 PM. Lots are open to the public after 5 PM and all weekend. The County is currently in initial discussions on design options for a parking garage within this footprint.

The project team estimates that a parking garage footprint of 180' x 221' (39,890 sq. ft.) would fit on this site. Assuming a 4-level garage, the future parking garage capacity could be 480 parking spaces, at a construction cost of \$8.64 million. This garage could feature three (3) points of entry/exit for Barbrick Ave, Spring St, and Corban Ave, as well as a courthouse visitor parking pay lot on the first level. If the pay lot were appropriately priced and actively managed over time, then this location would be ideal for courthouse visitors. The accessible path to the courthouse would be less than 400' along the Corban Ave sidewalk.

Constructing this garage would displace 128 existing parking spaces, and disrupt additional on-street spaces along Barbrick Ave. The net parking gain of this potential garage would be approximately 364 new spaces, assuming that some exterior parking spaces could remain near Spring St. This garage would provide additional public parking for the courthouse and help leverage the redevelopment of adjacent buildings and underutilized surface parking lots. To improve vehicular access to the garage Barbrick Ave could be converted from one-way to a two-way street. An alternative that maximizes on-street parking would retain one-way traffic for Barbrick Ave and convert parallel spaces to reverse-angle parking. This change would yield a net gain of four (4) new on-street spaces over the current 15 spaces, and maintain entry/exit into the proposed parking garage.

These estimates are planning-level and do not represent an engineering site/civil analysis.

### County lot on Church

The existing County lot on Church contains 114 parking spaces, between Church St (NC 73) and McCachern Blvd. This lot is open to the general public after 5 PM and all weekend long. The County is not currently considering design options for a parking garage within this footprint.

The project team estimates that a parking garage footprint of 120' x 341' (40,920 sq. ft.) would fit on this (sloping) site. Assuming a similar 4-level garage, the future parking garage capacity could be 496 parking spaces, at a construction cost of \$8.9 million. The garage could feature two (2) points of entry/exit for Church St and McCachern Blvd. The width of the site is less than the ideal 180' that would support three (3) parking bays, with the center bay serving as the ramp. For this reason, the garage would have to feature two (2) bays, both of which would serve as the ramp to the next level. This would merely be a constraint of the site, however the garage could function well from a traffic perspective. This garage would displace the existing 114 parking spaces. The net parking gain would be approximately 382 new spaces.

These estimates are planning-level and do not represent an engineering site/civil analysis.



## Management Strategies

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### Management Strategies of Parking Systems

The project team was tasked with providing examples of educational programs for the general public relating to parking, implications for paid versus free on-street parking systems, and costs associated with construction and maintenance of parking facilities. The intent of these management strategies is to effectively utilize the low-demand, periphery parking spaces, while simultaneously planning to construct new parking supply.

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### Innovative Public Educational Programs

This section outlines several examples of parking system management approaches that educate the general public in the hope of changing behaviors. There are many resources available for a broad perspective on parking management strategies, one quality example may be found at the Victoria Transport Policy Institute: <http://www.vtpi.org/>

#### Bend, OR

The City of Bend, Oregon adopted a comprehensive parking plan to address both on- and off-street parking in its downtown. To implement its zonal strategy for prioritizing parking, it needed to convey appropriate parking locations to various groups (customers, employees, etc.). The City used directional wayfinding signage to guide drivers to appropriate lots and standardized signage for both owner-operated lots and city lots, to avoid confusion. In conjunction with a marketing/communication campaign, the city hoped to segment the city spatially by parking/trip purpose. The City implemented its 2-hour limit policy and new signage in 2007, and problems arose almost immediately. Signage had to be reworded in 2008 to improve clarity, and there were even proposals to cover up the signs to solve confusion and congestion surrounding downtown parking. In 2014, the City acknowledged that the program recommendations were poorly executed, and confusion persisted amongst parking consumers in regards to their parking options and inconsistent signage.

For additional information: <http://www.bendoregon.gov/index.aspx?page=769>

*Action Item: CDDC should work with employers to develop targeted parking areas for downtown employees and discuss with City and County stakeholders. The top level of the Cabarrus Ave Garage is one such example.*

## Salem, MA

While Salem already boasted a robust signage program to guide drivers and pedestrians (potential drivers) to an appropriate lot, redundancy was somewhat of an issue. The City placed wayfinding signage at key “decision points”, with an appropriate level of information conveyed at each point. The takeaway message is that municipalities can save resources by supplying necessary information while cutting redundant signage facilities. Long-term parking signs can be for visitors as well as downtown employees.



Images from Google Street View near the following addresses:

- 278 Essex St, Salem MA, at intersection with Crombie St;
- 73 Church St, Salem, MA, at entrance to parking lot

Note: These examples have been created with elements of the MUTCD, however they are not official MUTCD standard signs.

For additional information:

[http://salem.com/pages/salemma\\_dpdc/studiesreports/SALEM%20FINAL%20Report.pdf](http://salem.com/pages/salemma_dpdc/studiesreports/SALEM%20FINAL%20Report.pdf)

*Action Item: The CVB, County, City, and CDDC should coordinate a system of “Most General” to “Most Specific” levels of wayfinding signage. For example, “Short Term/Long Term” parking signs could be placed at key gateways into downtown, directing drivers to parking based on their time needs.*

## Salem, OR

Salem, Oregon modified parking along one of its busy downtown corridors. In order to address challenges presented by identified Title VI communities (low income & Hispanic), the city applied a battery of programs to involve and educate these members of the community. In addition to mailing invitations for public meetings in both English and Spanish, parking marketing materials were also bilingual. Advisory partners such as the CAN-DO Neighborhood Association and the Salem Human Rights and Relations Advisory Committee were also selected for their sensitivity to these issues. These were important participants in the spectrum of public workshops and public hearings.

For additional information:

<http://www.cityofsalem.net/Departments/CommunityDevelopment/Planning/NorthBroadway-HighStreetParkingManagementPlan/Documents/Draft%20Public%20Outreach%20Plan.pdf>

*Action Item: Wayfinding should seek to be as simple and informative as possible, using symbols in place of text when possible in order to most broadly communicate with people who may have limited literacy or English skills.*



## Wilmington, NC

In addition to an option to pay meter fees via mobile phone, the city also has initiated a parking token program. Instead of struggling with exact change, customers can purchase tokens from participating local stores. The stores pre-pay for the parking tokens, so the City is guaranteed its parking revenue. This program also has the benefit of encouraging entry into stores that would otherwise have not been patronized. These stores are identified by a “Lots More” decal (marketing campaign slogan) displayed in the storefront window. Wilmington has an exemplary program for public education and encouragement initiatives for parking.

For additional information:

<http://www.wilmingtonnc.gov/Portals/0/documents/City%20Manager/Parking/ParkingBrochure.pdf>

*Action Item: If paid parking is implemented, CDDC and the City should develop a merchant token program.*

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## Shared Parking Strategies

This section will outline several examples of special event valet parking systems and other examples of shared residential-employee parking areas.

## Woodstock, GA

Rather than forcing downtown patrons to navigate various individual valet programs, the Downtown Development Authority of Woodstock created a centralized valet service for downtown restaurants and attractions. Partnering with lot owners that do not have competing peak periods with these evening attractions (banks, churches, etc.) ensured that these facilities are efficiently utilized rather than allowing inventory to be wasted. This shifts the burden away from public parking facilities and balances periods of irregular demand with under-utilized private lots.

For additional information:

<http://patch.com/georgia/woodstock/downtown-woodstock-valet-parking-program-works>

*Action Item: CDDC should coordinate with stakeholders (Cabarrus Arts Council, Carolina Courts, or other event coordinators) for valet parking during special events. This could also include temporarily suspending the 3-hour time limit for the Cabarrus Ave Garage to accommodate overflow parking, on a limited basis.*

## Iowa City, IA

The pilot valet program receives financial support from 11 different downtown businesses. The service operates twice a week, Friday 5-10 PM and Saturday Noon-10 PM. Visitors drop their cars off at a local bank, and the valet service utilizes the top floor of a parking garage. This ensures that these otherwise less desirable spaces are used. Additionally, the garage spaces are numbered for easy vehicle tracking. The valet fee is \$10.

For additional information: <http://www.press-citizen.com/story/news/local/2015/05/11/downtown-valet-pilot-program-kick/27113449/>



Similar parking valet services are available within these cities, with varying hours of operation:

- ❑ **Pensacola, FL** <http://www.downtownpensacola.com/about/news/press-releases/222-new-valet-parking-program-introduced-downtown>
- ❑ **Plymouth, MI** <http://www.freep.com/story/money/business/michigan/2014/12/03/plymouth-downtown-valet-service-parking/19826893/>
- ❑ **Springfield, MA** <http://springfielddowntown.com/whats-happening/parkwithease/>

### Alexandria, VA

The City of Alexandria suggests there are two approaches to shared parking: (1) contractual agreement between parties, or (2) parking management districts. Contractual agreements must receive municipal permits to ensure potential conflicts are detected. Special parking management districts generally must charge for parking and reinvest those funds back into the district. On-street parking is actively managed and metered in these districts.

For additional information:

<https://alexandriava.gov/uploadedFiles/planning/info/SharedParkingFactSheet.pdf>

*Action Item: The City currently utilizes option 1 for parking with the Cabarrus Ave Garage and could explore option 2 if demand for parking warrants this type of system.*

### Sacramento, CA

Sacramento's old zoning code included parking requirement minimums. The City removed many of these minimum requirements to alleviate the burden on downtown businesses and allow mixed uses with non-competing peak periods to share parking. The City found that building additional off-street parking does not necessarily relieve on-street parking demand, and parking requirements can be a burden to existing businesses and a barrier to new businesses.

For additional info: <http://uli.org/infrastructure-initiative/parking-its-not-just-about-where-to-store-cars/>

Similar discussions of parking maximums, rather than minimums, and how they contribute to streetscape walkability are presented in the Redwood City, CA parking plan. For additional information:

<http://shoup.bol.ucla.edu/Downtown%20Redwood%20City%20Parking%20Plan.pdf>

*Action Item: The City's Center City (CC) zoning classification applies no parking minimums, so this Best Practice is already in place. Individual property owners/developers may choose to allocate a certain number of parking spaces based on anticipated demand and financing requirements for parking.*

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## Employee-Visitor Parking Balance

This section will outline several examples of management strategies to encourage employee parking within low-demand, periphery locations that allow visitors to use the high-demand on-street parking spaces.



## Palo Alto, CA

The City issued free permits to neighborhood residents, prioritizing locals over commuting employees for on-street parking. Without this permit, a two (2) hour limit has been applied to cars parked on neighborhood streets. Since this program is specifically designed to discourage employees, enforcement only happens during traditional business hours (8 AM -5 PM, Mon.-Fri.). Commuting employees may obtain a permit, but must pay a fee for it. This program has the additional benefit of encouraging the use of underutilized parking (garages and lots) through different pricing options, in addition to freeing up on-street parking.

For additional information:

[http://cityofpaloalto.org/gov/depts/pln/transit/parking/downtown\\_rpp\\_program.asp](http://cityofpaloalto.org/gov/depts/pln/transit/parking/downtown_rpp_program.asp)

## Belmont, MA

Like many cities, Belmont needed to ensure relatively high turnover rates in its downtown core. The City implemented a tiered price system that combined a unique time element. While customers still pay for time, there is a certain amount of free time associated with each zone. For instance, “core” spaces will have 15 minutes free and then cost \$1.00 per hour, while more periphery spaces will allow 30 minutes free and only cost \$0.50 per hour. The most peripheral lots will allow monthly permits that cost as little as \$0.67 per day. This is an example of offering multiple options and incentivizing more distant options.

For additional information:

[http://www.belmont-ma.gov/sites/belmontma/files/file/file/final\\_parking\\_management\\_plan.pdf](http://www.belmont-ma.gov/sites/belmontma/files/file/file/final_parking_management_plan.pdf)

## Lynchburg, VA

The City uses a progressive fee system to discourage longer stays. While no time limit is imposed, certain locations become more expensive after the first hour (first hour is \$0.25, then \$0.25 per 15 minutes afterward). It also has mixed payment facilities, hourly spaces and monthly permits, throughout the city to allow a limited number of employees access to certain locations within the city while preserving turnover in hourly spaces.

For additional information:

<http://www.lynchburgva.gov/sites/default/files/COFILES/Parking/Parking%20Brochure.pdf>

Fort Collins, CO also suggested a progressive pricing schemes, among many other management strategies. For additional information: <http://www.fcgov.com/planning/parkingplan.php> and report: <http://www.fcgov.com/planning/pdf/parking-plan.pdf>

## Salem, MA

Rather than using time limits to encourage turnover in high demand locations, Salem uses demand-sensitive market pricing to ensure adequate occupancy rates. The price of parking is still tied to an hourly rate, but rather than forcing customers out, demand pricing will indirectly discourage long-term parking (employees for instance). This method also eases the phenomenon of “ticket anxiety,” commonly associated with strict time limits for downtown customers. For employees and longer term stays, monthly permits can be issued to underutilized lots and enforced through traditional ticketing.



For additional information:

[http://salem.com/pages/salemma\\_dpced/studiesreports/SALEM%20FINAL%20Report.pdf](http://salem.com/pages/salemma_dpced/studiesreports/SALEM%20FINAL%20Report.pdf)

### Old Pasadena, CA

Originally, Old Pasadena had time limited parking with no meters. The City experienced difficulties balancing employees and visitors, as employees tended to take advantage of the free on-street spaces. There was also a cultural resistance to metered parking in any form. In response, the city established an improvement district downtown to reinvest meter money back into the area, rather than let it sit in the general fund. This business improvement district (BID) is managed by a non-profit business entity, the Old Pasadena Management District. By ensuring that parking meter revenue was reinvested back into the source, the landscape and storefronts of the downtown, the city managed to convince local stakeholders to agree to metering. The city experienced positive reactions from the downtown community after the program was implemented.

For additional information: <http://articles.latimes.com/2004/mar/02/local/me-wheel2>

### Redwood City, CA

The most coveted (on-street) spaces should be the most expensive, and the price should decline with desirability. On-street parking does not need to be incentivized, as it is already attractive. Despite the need for a financial return on investment, garages should not be more expensive than on-street facilities. If they were more expensive, then garage parking would become even less desirable and only drive people toward already congested desirable areas.

*“Market-rate prices are the only known way to consistently create available parking spaces in popular areas. If we institute market-rate prices, and adequate spaces are made available, then what purpose do time limits serve? None, other than to inconvenience customers. If there is a space or two available on all blocks, then who cares how long each individual car is there? The reality is that it doesn’t matter.” (p. 22)*

For additional information:

<http://shoup.bol.ucla.edu/Downtown%20Redwood%20City%20Parking%20Plan.pdf>

*Action Item: Concord should conduct regular peak hour occupancy counts along on-street spaces, evaluating whether some users are downtown employees. If occupancy regularly exceeds the targeted 85%, and employee vehicles are observed, the City should consider using price to control demand.*

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## Paid versus Free On-street Parking

The case studies above reference different methods for actively managing a system of parking. The term “actively” is deliberately placed because a system that is left unmanaged will quickly be abused, forgotten, and become stagnant. There are as many unique examples of active parking management as there are unique cities, and each must recognize the staff experience, financial constraints, and existing parking “culture”.

There is no “trigger” to identify the exact moment that on-street parking meters are needed. Support for the installation of parking meters will come from the city, business owners, employees, and residents. This support will likely arise from a commonly observed parking problem or recurring challenge that is shared by

all user groups and verified by data collected over time. Without the supporting data, perspectives towards parking will be varied and often conflicting. This is a very common predicament for many downtowns.

### Time Restricted Parking

The City of Concord has offered (time restricted) on-street parking for free as far back as 1989, which is as far back as City staff is able to recall. Historic photos from the 1960s show parking meters along Union St, which were likely removed with streetscaping in the mid-1980s.



Photo Courtesy of Jim Ramseur (text by Independent Tribune)

Concord Fire Department personnel check a fire hydrant while a Concord police officer stands to the left in this undated photo. This image was shot from the square in Concord, looking south down Union Street, sometime after the 1965 renaming and renumbering of Concord streets. The quadrant grid system was laid out at that time, and South Union Street became Union Street South as shown on the street sign on the far left. The car stopped at the intersection is a 1957 Chevrolet, a classic today. Parking meters were still a dominant feature of the streetscape, and many merchants gave free parking tokens to those who made purchases.



Photo Courtesy of Jim Ramseur (text by Independent Tribune)

This image of Belk's in downtown Concord shows the building much as it looked after the 1950 renovation, and it is recognizable today as Union Street Square. It is still known to many longtime residents as the "old Belk building." Prior to this renovation, the left-hand portion was occupied by Yorke & Wadsworth Hardware, which had previously moved to South Church Street. The old Belk's facade and the Yorke & Wadsworth facade were combined into the storefront shown in this image. Prior to moving to the Carolina Mall around 1970, the Belk's men's department was on the left side of the main floor. Appropriately, that same space is now J. Talbert's Ltd., a men's store. The right side of the main floor is



now being remodeled for a new restaurant. The building to the right of Belk's became McClellan's Dime Store and today is Cabarrus Creamery. The west side of South Union is reflected in Belk's show windows, revealing the Gold Shop, the Pastime Theater and Citizen's Bank. Parking meters dotted the sidewalks in downtown Concord during this era.

Parking enforcement is tasked with promoting vehicle turnover every two (2) hours. The current method involves a process of tire chalking and the issuance of citations. This process is important to the City and merchants because on-street parking is the most desirable for potential customers, but also highly desirable for employees who are looking to remain parked for up to eight (8) hours or more. Parking enforcement is in a difficult position, balancing the needs of many in a fair and equitable method, on a regular but not predictable basis throughout the day, week, month, and year.

Over the previous three (3) years Parking Enforcement has issued an average of 2,391 citations per year, 94% of which are paid without appeal. Of the 6% that are appealed, most appeals were granted (378, 88%). Revenue generated by citations averaged \$7,661 per year, or \$3.20 per citation issued. Enforcement is not a revenue generating operation.

#### Advantages of Current System

Low capital investment in labor, equipment, and materials to perform daily parking enforcement are the immediate advantages for the City. The current system is managed by one (1) non-sworn officer of the Police Department, also tasked with non-parking related duties. Parking citations are hand-written currently. Regulatory signs are installed along a majority of streets stating "Two Hour Parking" with the hours of enforcement "9 AM to 6 PM". The City utilizes a compact (Firefly) electric vehicle for parking enforcement, which allows the officer to quickly move within and among parking lots and on-street spaces.



#### Disadvantages of Current System

Disadvantages of the current system include a reliance on regular schedule of enforcement "tours". The parking enforcement officer must make one cycle through parking lots and along on-street spaces to mark tires, followed by a second pass more than two (2) hours later to identify vehicles that have not moved. To avoid a citation the driver could simply wash the chalk mark from their tire, or re-park their vehicle within an adjacent space. Additional disadvantages include the following:

- Time restriction signs are passive, as drivers must still choose to voluntarily comply.
- On-street enforcement hours are different than off-street parking lots.
  - On-street signs state "Two Hour Parking, 9 AM to 6 PM."
  - County parking lots state "7 AM to 5 PM"; as well as "Open to the public after 6 PM..."
  - Bicentennial lot states "3-hour parking, 8 AM to 5 PM", with 35 spaces marked as "Reserved."
- Enforcement is reactionary, occurring after vehicles have parked for more than two (2) hours.
- The City is tasked with collecting citation fees, which can be a costly process involving staff time as well as a collections agency.
- Enforcement vehicle is conspicuous, and is not large enough to carry boot equipment for repeat offenders.



## Metered Parking

There are other methods to promote vehicle turnover, most successfully through installing parking meters or pay stations. This alternative incentivizes the driver (or downtown employee) to limit their parking time or seek a lower-cost (free) option that is further away. Enforcement is still needed with meters or pay stations, however the process of enforcement is much easier for one officer to manage.

There are several types of meter technologies to consider, each offers unique advantages or challenges. Traditional meters are the least expensive option, though many are needed, and they offer fewer payment and enforcement options.

Multi-space pay stations are growing in popularity because one station can replace many individual meters along a block. Pay stations accept payment tokens, credit cards, and even payment via cell phone. Some pay station systems will print a receipt and require the user to *pay-&-display* the receipt on the dash board. A second option is to number every on-street parking space and utilize pay-by-space stations. A third option is pay-by-plate, where the user enters their vehicle license plate regardless of where they park. There are advantages and tradeoffs for each technology.



### Advantages of Metered Parking

Regardless of the meter type, linking the payment and enforcement software together will improve the enforcement process by alerting the officer of an overstay vehicle in real time. The system can then navigate the officer directly to the parking space in question. This technology would also provide the assurance that no violations exist and they can focus their efforts to other tasks.

Payment flexibility is a convenience to the user, such as a text message to remind them that their time is about to expire and offering the ability to add additional time via their phone and credit card. Additional features of a pay station system would include a merchant validation option, where a set of pre-paid digital codes could be distributed to customers, and redeemed at the pay station or via cell phone.



Installation of meters or *pay stations* on a limited basis or in a limited geographic location would be a good way to gauge potential success. A pilot program could be developed for Union Street to quantify the number of drivers who suddenly find less-expensive parking alternatives. Duncan Solutions, among others, offers meter pilot programs through their website <http://www.duncansolutions.com/LibertyPilotProgram/>.

### Disadvantages of Metered Parking

The capital costs of meter installation and the software integration with Parking Enforcement represents a significant investment. There are many metering systems available depending upon the size and complexity of the parking system. Meters may be solar powered or hard-wired, and each option has different advantages or tradeoffs. Pay stations are much more expensive per unit to purchase, however only one or two units are needed per block-face. Individual *spaces will need to be numbered* either with a small sign or a weather-resistant thermoplastic paint. The user is required to remember their parking space number and key it into the pay station machine to pay for parking. Some pay station systems are set up for pay-and-display,





where the user is required to return to their vehicle to place the receipt on their dashboard for the enforcement officer. Other systems do not require the receipt to be displayed because the pay station is electronically linked to hand-held units that inform the officer which spaces have a valid receipt, and which are without payment.

Individual space meters are less expensive per unit than pay stations, but one meter is needed for each space (or two meters may be mounted on one pole and serve two spaces).

Maintaining individual space meters is quite simple; with a supply of surplus meter heads, it is easy to swap malfunctioning meters immediately. Maintaining a malfunctioning pay station would be more challenging depending upon whether the repair may be made electronically (to the software) or may require a physical repair by a service technician, in which case the pay station may be inoperable for an extended period of time.

Parking Enforcement equipment and technology must be paired appropriately for the metered parking technology. For example, if a pay station allows for cell phone payment (pay by license plate), then there is no receipt to display on the vehicle. In this scenario the Parking Enforcement vehicle should include an automated license plate scanning technology to quickly identify license plates and compare them with the list of paid parking. If pay stations allow pay-&-display of receipts, enforcement must be able to read or scan the receipt from the dash board. This process may be more time consuming for the City's lone enforcement officer; however, given the relatively small size of the enforced area within downtown Concord this option may be more practical than the high cost of license plate scanning technology.

The most appropriate system for the City may come from the recommendation of a nearby municipality with successful implementation of a meter or pay station system. The project team suggests the City reach out to members of the Carolina's Parking Association, and discuss technologies with other municipalities before contacting a local distributor.

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## Construction and Maintenance Costs

Construction cost estimates for parking lots and garages will vary greatly depending on size, location, design, materials, and labor. The parking industry standard practice is to compare the final construction costs with the number of (gross) parking spaces built, and report the cost per space.

Maintenance costs for surface parking lots and garages will include cleaning, lighting, security, landscaping, snow and ice removal, access control equipment, insurance, labor, and administrative efforts.

### Garage Construction and Maintenance

The median construction cost for a parking garage in 2015 was just over \$18,500 per space. This estimate reflects the median cost from many cities, several of which opened parking garages for less than \$17,000 per space (Carl Walker Inc.).

For the City of Concord this means that the cost of building a garage that is comparable to the Cabarrus Ave Garage (334 spaces, opened in 2002) would be \$6.18 million.

Operation and maintenance costs for a parking garage should be factored into the amount of revenue needed to pay off the annual debt from construction. Repair and renovation projects will increase in cost and complexity over time; however, with regular inspection and minor repairs the City may avoid a disruption of



service for significant repairs. A typical rule of thumb is to collect an additional 2-5% of the construction cost per space to cover the annual operation and maintenance costs. Garages with paid attendants or complex access control equipment will trend towards the higher end of this range, while basic garages without gate equipment and labor will trend towards the lower end.

### Surface Lot Construction and Maintenance

The median construction cost of a surface parking lot is likely between \$4,000 and \$6,000 per space, depending upon site constraints, landscaping or storm water options, lighting, signage and access control equipment.

Maintaining a surface parking lot is less expensive than a garage, although maintenance occurs more frequently. Sealing or repaving is recommended every 5-10 years, as necessary, and dependent upon climate conditions. Operation and maintenance costs for a surface parking lot should likewise be factored into any permit revenue forecasts. Maintenance budgets can vary between \$200 and \$800 per space, the higher range for lots with paid attendants or gate control equipment (VTPI).

Parking and maintenance cost estimate sources:

Carl Walker Inc. (2015), "Parking Structure Cost Outlook for 2015," *Industry Insights*,  
<http://www.carlwalker.com/news/newsletters/>

Nelson/Nygaard Consulting Associates Inc. (2012), "Parking Structure Technical Report," Metropolitan Transportation Commission, <http://www.vtpi.org/tca/tca0504.pdf>

Victoria Transport Policy Institute (VTIP) (2013), "Transportation Cost and Benefit Analysis II – parking Costs," [http://www.mtc.ca.gov/planning/smart\\_growth/parking/6-12/MTC\\_Parking\\_Structure.pdf](http://www.mtc.ca.gov/planning/smart_growth/parking/6-12/MTC_Parking_Structure.pdf)



## Recommendations

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### Implementation Plan Recommendations

This parking study is structured as a five-year improvement plan, with recommendations for the near-term (0-3 years) and the long-term (3-5 years). Recommendations have been compiled from stakeholder discussions, steering committee meeting topics, and best practices from the parking and transportation industry. Recommendations are presented along a relative timeline; however, as changes to the parking system occur and parking demand adjusts accordingly, it will be necessary for the City to re-evaluate the order of recommendations.

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### Near-term Recommendations (0-3 years)

Near-term improvement recommendations may be described as “low-hanging fruit” initiatives. Many of the following recommendations may be initiated by the City, County, and/or Downtown Development Corporation and have immediate results, however these should not preclude planning for longer-term parking garage construction that have a significant lead time for design and construction. Recommendations have been grouped into categories for the purpose of organization. Many of these recommendations may be implemented simultaneously; however, the City should attempt to evaluate the before and after impact of these strategies and report their level of “effectiveness.” Table 10 summarizes the timeline for these recommendations.

### Education/Encouragement Improvements

These recommendations help explain parking management strategies, and encourage the use of all available parking spaces, rather than the ones located closest to the destination.

1. **Shared Parking Resources Initiative** (Year 1) - Treat on-street parking as a scarce resource and prioritize its use for short-term visitors and customers with high turnover.
  - 1.1. CDDC should coordinate with downtown merchants, and encourage their employees to reserve on-street parking for shoppers, especially within the two- to three-hour time limit areas.



- CDDC should facilitate the discussion of a coordinated valet parking program for Union St, particularly for lunch and special events.
  - City should work collaboratively with CDDC to identify a cost-effective valet program through public, private or shared agreement, and involve nearby businesses with under-utilized parking spaces (Woodstock, GA and other examples).
- 1.2. CDDC should coordinate with the City to utilize the Cabarrus Ave Garage for (irregular) special event overflow parking (e.g. Carolina Courts, or Cabarrus Arts Council). These should not be regularly scheduled events that would otherwise require a more permanent parking solution.
- City should offer a suspension of the 3-hour time restriction for Cabarrus Ave Garage, as needed to accommodate these special events.
  - City should consider a nominal administrative fee to cover/remove signage, and/or provide traffic control personnel, as well as to discourage this from becoming a regular weekly trend.
- 1.3. City and County government should limit the number of reserved parking signs/spaces for specific persons or departments to the fewest number possible, and only between business hours.
- 1.3.1. City and County governments should require individuals or departments to pay a premium price to rent a guaranteed parking space 24 hours per day, seven days per week.
2. **Tiered Parking System Initiative** (Year 1) – Establish a timed-parking hierarchy that reserves on-street parking for shorter visits.
- 2.1. City government should maintain the on-street parking time restriction for Union St while promoting time-tiered parking on nearby streets (three-, four, and eight-hour time limits), encouraging long-term parking further from Union St.
- City and County governments should discourage the use of all timed parking areas by employees, and incentivize the use of under-utilized spaces around the periphery of downtown (24-hour areas), and walking to destinations (see Bend, Oregon example).
  - City and CDDC should work with merchants to provide incentives such as discount coupons to downtown merchant stores, public recognition on a City website or bulletin board, giveaway prizes, or similar employee appreciation efforts.
3. **Parking Ambassador Initiative** (Year 1) – Adjust role toward ‘ambassador’ of downtown.
- 3.1. Parking Enforcement should perform more frequent “tours” of on-street parking areas, be visible and friendly, and offer direction to nearby parking areas for long-term parking.
- 3.2. Parking Enforcement should interact directly with downtown merchants, ask what their customer’s parking needs are, and report back to the City and CDDC.

## Enforcement Improvements

The goal of any parking management system is to provide multiple options so that individuals choose to “voluntarily comply” with regulations. These recommendations help with the difficult task of enforcing parking regulations.



4. **Citation Appeals Initiative** (Year 1) - Offer a streamlined citation appeals process in anticipation of increased rate of citation appeals (current trend is 6% appealed); be fair and consistent to avoid the appearance of favoritism at all costs.
  - 4.1. Parking Enforcement should institute a no-charge warning citation for first-time citations.
  - 4.2. Parking Enforcement should offer discounted citation amount if paid within 96 hours (or other specified time); escalating fee if paid after specified time.
  - 4.3. Parking Enforcement should investigate an electronic parking management and enforcement software solution that integrates with DMV license plate database.
    - City staff should contact nearby municipalities and inquire about their enforcement software solution capabilities and limitations.
    - City staff should contact vendors of enforcement software to request a demonstration.
    - Parking Enforcement should coordinate with City IT Department to establish a database of repeat parking offenders (scofflaw list).
5. **Enforcement Consistency Initiative** (Year 3) – Ensure that public parking lots are equally enforced within downtown. This initiative builds upon the Parking Ambassador Initiative.
  - 5.1. City and County should perform an audit of existing signage to ensure consistency and set standard hours of enforcement for visitors (8-5 PM).
  - 5.2. City and County should consider a shared enforcement strategy for all public parking areas.

## Evaluation & Planning Improvements

These recommendations help the City establish existing data, identify parking trends over time, and confirm or refute perceptions of parking.

6. **Continual Evaluation Initiative** (Years 1-5) – Conduct active parking management of parking demand
  - 6.1. City should perform semi-annual peak hour occupancy counts, as well as additional occupancy counts as needed or requested. These data points are important for separating fact from opinion, and may be used to justify future parking management changes.
    - City should identify under-utilized private parking lots (based on field count data) and work with CDDC on the Shared Parking Resources Initiative (Education/Encouragement), prioritizing banks and churches nearest Union St and Market St that have low parking demand during weekday business hours.
7. **Parking Signage Initiative** (Year 2) – Audit of existing public/private parking signage to promote simplicity and limit visitor confusion.
  - 7.1. In coordination with Cabarrus County CVB's wayfinding signage system, City and County Transportation should audit parking signs located *within* the public right of way according to standards from the Manual on Uniform Traffic Control Devices (MUTCD).



- City should coordinate with the CDDC and merchants to encourage standardization of private signs beyond the public right of way.

## Engineering Improvements

These recommendations help the City maximize the existing parking supply, by coordinating re-striping efforts to coincide with any utility or pavement management construction.

8. **On-Street Re-striping Initiative** (Year 1) – Coordinate any future utility repair or pavement maintenance work within the roadway to add 12 new on-street parking spaces.
  - 8.1. City should add four (4) parallel spaces along the west side of Market St near the New City Hall.
  - 8.2. City should add one to two (1-2) parallel spaces along the southeast side of Union St between Cabarrus Ave and Means Ave by reducing the typical parking stall width to 23' long.
  - 8.3. City should remove the left-turn lane and add two to three (2-3) angled parking spaces along the southwest side of Means Ave adjacent to the historic Cabarrus County Courthouse building.
  - 8.4. City should convert Barbrick Ave parking to reverse-angle, and add four (4) new parking spaces along the south side.
9. **Off-Street Re-striping Initiative** (Year 2) – Develop pavement management plans for parking lots.
  - 9.1. City and County should prepare individual pavement management plans for parking lots, and re-stripe as appropriate with an adopted minimum parking width of 8.5'. A narrower parking stall width will accommodate more spaces at the expense of driver convenience (door dings and over-the-line parking).

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## Long-term Recommendations (3-5 years)

Long-term improvement recommendations may need to be explored further before implementing, or require some additional coordination with City, County, and/or Downtown Development Corporation stakeholders. This should not preclude early planning for design and construction (recommendation 11) which will require an extended lead time. Other initiatives, such as administrative improvements (recommendation 10), may not be fully realized until other initiatives are in place.

10. **Parking Administration Initiative** (Year 4) – Formalize parking management within the City government
  - 10.1. Stakeholders should establish a board/committee to administer the parking management program.
    - Include representatives from City, County, CDDC, merchants, property owners, and Police.
    - Include special events coordination within the duties/tasks of this board.
  - 10.2. Become a member and attend a Carolinas Parking Association fall conference and tradeshow and network with similar municipalities that manage downtown parking.
    - <http://www.carolinasparking.org/>



**11. Parking Garage Construction Initiative (Year 4)** – Pursue construction design options with Cabarrus County for a joint-use parking garage to be located on existing County parking lots (Barbrick and Corban lots).

11.1. Include options for hourly pay lot within first floor nearest Courthouse.

- Consider options for hourly pay lot, as well as County-validation options.
- Negotiate reduced hourly rate for validation option.
- Evaluate demand for pay lot over time and expand/reduce accordingly using temporary bollards (plastic or concrete).

11.2. Reserve upper level parking for permit-only options during business hours.

**12. Transition to Paid On-Street Parking Initiative (Year 5)** – After fully documenting peak period utilization trends, adjusting parking enforcement strategies, encouraging the use of low-demand parking areas, incentivizing employees to walk, and maximizing available parking supply.

12.1. City should consider a pilot program for parking meters along Union Street.

12.2. City should implement on-street pay stations that accept multiple forms of payment (coins, cash, cards, and pay by cell phone).

- Include options for merchant parking validation, via smart phone mobile application, printed codes, or tokens for use at pay stations.
- Include parking token option (Wilmington, NC example) in cooperation with merchants.

Table 10 – Implementation Timeline

#	Initiative	Category	Agency	Near-Term			Long-Term	
				1	2	3	4	5
1	Shared Parking Resources	Education/Encouragement	City, CDDC, Private	Black	Light Gray	Light Gray	Light Gray	Light Gray
2	Tiered Parking System	Education/Encouragement	All	Black	Light Gray	Light Gray	Light Gray	Light Gray
3	Parking Ambassador	Education/Encouragement	City-Parking Enforcement	Black	Light Gray	Light Gray	Light Gray	Light Gray
4	Citation Appeals	Enforcement	City-Parking Enforcement	Black	Light Gray	Light Gray	Light Gray	Light Gray
5	Enforcement Consistency	Enforcement	City, County	White	Black	Light Gray	Light Gray	Light Gray
6	Continual Evaluation	Evaluation & Planning	City, County, CDDC	Black	Black	Black	Black	Black
7	Parking Signage	Evaluation & Planning	All	White	Black	Light Gray	Light Gray	Light Gray
8	On-Street Re-striping	Engineering	City	Black	Black	Light Gray	Light Gray	Light Gray
9	Off-Street Re-striping	Engineering	City, County	White	Black	Light Gray	Light Gray	Light Gray
10	Parking Administration	Long-term	All	White	White	White	Black	Light Gray
11	Parking Garage Construction	Long-term	City, County, CDDC	White	White	White	Black	Light Gray
12	Transition to Paid Parking	Long-term	City, CDDC	White	White	White	White	Black

Note:

\*Black cells correspond with the initial year of implementation, where all stakeholders are involved;

\*Dark gray cells correspond with the secondary year of implementation, focusing on continuation of the initiative;

\*Light gray cells correspond with continual administration of the initiative, with stakeholders involved as needed.





# **Appendix A – Stakeholder Interview Memorandum**



To: City of Concord

Date: April 17, 2015

Memorandum

Project #: 38476.00

From: Timothy Tresohlavý  
VHB Engineering

Re: Concord Downtown Parking - Stakeholder Interview Themes

This memo describes the common themes discussed with various individuals or groups during stakeholder interviews on Thursday April 9<sup>th</sup>, 2015. Prior to stakeholder interviews the project team observed the following from field work:

- The busiest time of the busiest day of the week for parking is Monday morning, between 10-11 am;
  - The busiest 3-hour time was also found to be Monday, between 9 am – 12 pm;
- Monday afternoons also experienced a peak parking demand between 2-3 pm;
- Friday (154 vehicles fewer) and Wednesday (173 vehicles fewer) were found to be short of Monday's parking demand of 1,333 vehicles observed.

*Themes displayed in this font style were found to be noteworthy by the project team.*

#### **Cabarrus County / Clerk of Courts Meeting**

- The County courthouse generates the greatest short-term parking demand; *estimated 1,200-1,600 individuals visiting the courthouse during a typical Monday*; this has increased from an estimated ~900 only 3-years ago.
  - Civil jurors arrive after lunch; this is the PM peak hour on the observed busiest day.
  - Criminal jurors arrive ~ 9 am (Tuesday); this is assumed to be an off-peak day.
- Potential jurors are instructed by mail to seek parking within one of three County-owned parking lots:
  - County lot on Barbrick: 70 spaces; observed to be 90-94% occupied during peak periods;
  - County lot on Corban: 58 spaces; observed to be 84-91% occupied during peak periods;
  - County lot on Church: 114 spaces; observed to be 68-95% occupied during peak periods;
  - Subtotal of 242 parking spaces; observed 220 vehicles during peak periods (91%).
- Unknown whether there is an existing regulation that stipulates the maximum distance from the courthouse that jurors are allowed/expected to park.
- In the near term (3 years) the County is exploring the feasibility of constructing a *parking deck on the current Barbrick/Corban parking lot site*; There is concern over the maximum height restriction (72'; Hotel Concord).
- In the near term (5 years) the County is exploring the feasibility of constructing a second courthouse and underground parking on the current Sheriff/Court parking lot.
- In the longer term (10 years) the County would consider feasibility of construction a parking deck on the current Church St parking lot, though slope and width may be challenges.
- County employees pay \$5-10 per month to park within the Gov Complex parking garage.
- County parking areas are *available to the public after 6 pm* weekdays, and all weekend long.
- 'What-a-Burger' routinely tows (Courthouse visitor) vehicles that are illegally parked.

- Law Enforcement Center on Corban Ave can house up to 600 inmates within 3 separate buildings; visiting hours for inmates are offered during regular weekday business hours. Visitors are asked to park in the County lot on Church (2-blocks north).
- Corban Ave and Union St around Courthouse must remain as [no](#) on-street parking areas for security.

### **Project Steering Committee Meeting**

- Many Union St restaurants are closed during the peak hour (10-11 am Mondays), which is fortunate, however could raise future parking demand issues.
- [Evening events are perceived as very difficult for parking](#) (comment by President/CEO of Cabarrus Arts Council); impression that this only relates to on-street parking, which is a challenge all day long; this is where drop-off or valet service options should be explored.
- McCachern Blvd and Spring St were converted to 24-hour on-street parking because of low utilization; also, McCachern has steep slope walking up Means Ave.
- Bicentennial lot leased parking spaces are probably below market rate for a 24-hour per day, 7-day per week reserved parking space.

### **Downtown Business Merchants Meeting**

- [Local merchants expressed support for on-street meters or pay stations along Union St](#) to limit the length of stay and frequent 100% occupancy of this street.
  - Revenue generated from meters MUST remain within downtown, for use in streetscape or other downtown improvements;
- Discussed support for as much angled parking as possible to maximize the on-street capacity.
  - Even if the sidewalks are not widened, angled parking is preferred.
- Streetscape improvements should be business-focused, meaning (a) slower speeds for safety; and (b) maximum visibility of store/shops.
- [Once City Hall is complete: Will City sell its Union St buildings, or back-fill its offices?](#) (Yes, this was confirmed with City staff)
  - Will City Hall employees park in Cabarrus Ave deck; opening parking along Market and Spring St lot? (Yes, this was confirmed with City staff)
- Some recommend developing Church St corridor with stores/shops, and parking deck (hidden) behind on current County Lot of Church site; Same development concept could be applied to Means Ave and Church St around Bicentennial lot area.
- Lack of on-street parking (at times) is the #1 complaint of customers to merchants.
- Explore the possibility of converting two traffic signals (Union @ Cabarrus; Union @ Corban) to 4-way stop sign intersections, then remove left-turn lane, reduce to two-lanes of travel and provide on-street parking or sidewalk improvements along one side of the street.

### **Parking Enforcement Meeting**

- City parking enforcement exists for the following facilities (682 spaces); typical enforcement tour lasts 1-hour:

- Spring Street Lot (39 spaces; 24 hours)
  - Bicentennial Lot (96 spaces; 3-hour limit; some reserved)
  - Cabarrus Ave Garage (334 spaces; 3-hour limit on first floor and ramp only, other floors are by permit only from 8-5 M-F; 35 spaces reserved)
  - On-street parking along Spring St, and McCachern Blvd (24-hour)
  - On-street parking along Market St, Union St, Church St, Means Ave, Barbrick Ave, and Cabarrus Ave (2-hour limit)
- City parking areas are [enforced from 7:30 am to 4:30 pm](#) Monday to Friday, using wheel chalking.
  - City on-street signs specify 2-hour parking between **9 am and 6 pm**; some signs suggest Monday to Friday.
  - City parking lot signs specify 3-hour parking between **8 am and 5 pm**; Bicentennial lot; Cabarrus Garage.
  - Over-night parking is not allowed within the Cabarrus County parking lots.
  - Parking enforcement supports on-street parking meters or pay stations, because technology will make enforcement easier.
  - Parking enforcement suggests that merchant vehicles are commonly found parking on-street (Union St) in front of their own store(s).
  - Parking citations (\$10 violations) are written by hand, using a carbon-copy ticket book; without electronic database there is no possibility of identifying repeat offenders (scofflaw list) or escalating citation amounts;
  - Parking boot equipment is not applied to repeat offenders; estimated that some repeat offenders may owe \$8,000 to \$10,000 in previous citations; police are currently working with City Legal department to improve the language of parking citations and appeals process.
  - Currently only 10% of citation revenue is retained by the City; the remaining 90% goes towards Cabarrus County Schools, which is common within the State of NC. The City collected \$23,000 in citation revenue over the past 3 years, and retained \$2,300.
  - The Police Department is recommending that all future citations be \$10, and only escalate to \$50 after payment is not received following a 30-60 day period of notice. At this time an outside collections agency that is not affiliated with the Police Department would handle the collections.

### **City Council Meetings**

- Angled parking makes on-street parking signs difficult to read.
- There is a perception of unsafe parking decks; find best engineering practices to minimize perception.
- City and County have mutual interests in another downtown parking garage; site to be determined.
- Public has perception that on-street parking along Union St renders outdoor dining impossible.

### **Community Workshop Event**

- Examine whether the Union St spaces are greater than the typical on-street parking stall length (22' max).



# **Appendix B – Existing Conditions Analysis**

Existing Conditions Analysis - Parking Inventory and Utilization

Lot Type	Parking Supply				% Supply				Cars - Friday								Cars - Monday								Cars - Wednesday								Cars - Saturday											
	UnRSVD	ADA	Other	TOTAL	UnRSVD	ADA	Other	TOTAL	8 am	9 am	10 am	11 am	12 pm	1 pm	2pm	3 pm	4 pm	5 pm	8 am	9 am	10 am	11 am	12 pm	1 pm	2pm	3 pm	4 pm	5 pm	8 am	9 am	10 am	11 am	12 pm	1 pm	2pm	3 pm	4 pm	5 pm	9 am	10 am	11 am	12 pm	1 pm	2pm
On-Street	209	3	1	213	9%	0%	0%	9%	183	179	175	169	165	146	123	131	105	68	120	180	201	196	191	152	181	136	105	74	102	123	132	126	123	129	129	118	91	75	86	113	108	131	120	117
Parking Lot	2,023	68	52	2,143	86%	3%	2%	91%	872	930	1,001	1,010	924	960	952	867	807	553	777	1,094	1,132	1,131	1,027	1,014	1,005	993	880	612	772	967	1,013	1,033	1,037	893	909	887	849	609	428	514	533	533	494	475
	2,232	71	53	2,356	95%	3%	2%		1,055	1,109	1,176	1,179	1,089	1,106	1,075	998	912	621	897	1,274	1,333	1,327	1,218	1,166	1,186	1,129	985	686	874	1,090	1,145	1,159	1,160	1,022	1,038	1,005	940	684	514	627	641	664	614	592
									10,320								11,201								10,117								3,652											
Lot Owner																																												
Private	1,072	38	8	1,118	46%	2%	0%	47%	373	411	460	471	444	420	417	383	376	336	254	386	395	407	382	366	365	372	359	290	264	380	388	429	445	377	366	364	361	298	249	317	338	318	269	268
Public	1,160	33	45	1,238	49%	1%	2%	53%	682	698	716	708	645	686	658	615	536	285	643	888	938	920	836	800	821	757	626	396	610	710	757	730	715	645	672	641	579	386	265	310	303	346	345	324
Ownership Type																																												
Municipal-On-Street	209	3	1	213	9%	0%	0%	9%	183	179	175	169	165	146	123	131	105	68	120	180	201	196	191	152	181	136	105	74	102	123	132	126	123	129	129	118	91	75	86	113	108	131	120	117
Municipal-Off-Street	951	30	44	1,025	40%	1%	2%	44%	499	519	541	539	480	540	535	484	431	217	523	708	737	724	645	648	640	621	521	322	508	587	625	604	592	516	543	523	488	311	179	197	195	215	225	207
Private	1,072	38	8	1,118	46%	2%	0%	47%	373	411	460	471	444	420	417	383	376	336	254	386	395	407	382	366	365	372	359	290	264	380	388	429	445	377	366	364	361	298	249	317	338	318	269	268
Owner																																												
City On-Street	209	3	1	213	9%	0%	0%	9%	183	179	175	169	165	146	123	131	105	68	120	180	201	196	191	152	181	136	105	74	102	123	132	126	123	129	129	118	91	75	86	113	108	131	120	117
City	446	15	37	498	19%	1%	2%	21%	193	213	234	260	251	255	251	243	232	171	227	313	310	307	306	291	281	274	253	228	208	273	304	313	320	272	287	259	238	243	140	144	140	162	169	153
County	505	15	7	527	21%	1%	0%	22%	306	306	307	279	229	285	284	241	199	46	296	395	427	417	339	357	359	347	268	94	300	314	321	291	272	244	256	264	250	68	39	53	55	53	56	54
Private	1,072	38	8	1,118	46%	2%	0%	47%	373	411	460	471	444	420	417	383	376	336	254	386	395	407	382	366	365	372	359	290	264	380	388	429	445	377	366	364	361	298	249	317	338	318	269	268
Block Num	Includes On-Street and Off-Street																																											
1	12	1	0	13	1%	0%	0%	1%	0	3	3	4	5	3	6	2	5	4	0	2	2	5	5	6	8	3	4	2	0	1	1	1	2	2	1	1	3	1	0	1	3	3	0	0
2	427	15	2	444	18%	1%	0%	19%	105	130	159	166	158	168	177	165	151	114	167	216	258	269	252	219	237	240	218	193	158	238	263	267	268	216	223	229	218	207	54	74	93	93	106	92
3	67	5	0	72	3%	0%	0%	3%	4	19	36	40	41	23	19	24	27	32	6	41	31	36	37	41	25	24	31	23	9	37	37	40	46	28	25	24	27	26	7	15	14	10	6	7
4	145	7	0	152	6%	0%	0%	6%	33	42	53	75	65	66	55	48	47	38	36	59	72	79	79	65	71	66	62	55	28	40	55	74	107	83	64	56	48	52	24	58	65	50	34	43
5	7	0	0	7	0%	0%	0%	0%	1	1	2	2	2	2	2	3	3	5	3	2	2	2	2	2	2	2	2	2	1	2	2	1	2	2	2	1	1	3	0	0	0	0	0	
6	14	0	0	14	1%	0%	0%	1%	0	1	2	2	1	1	1	2	1	0	0	0	0	0	1	0	0	0	0	0	2	1	1	1	1	1	2	1	0	0	0	0	0	0		
7	43	0	0	43	2%	0%	0%	2%	1	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0	0			
8	181	8	0	189	8%	0%	0%	8%	147	142	139	141	139	141	137	118	108	115	24	41	41	41	38	34	35	38	31	23	33	39	31	49	45	41	42	45	38	37	111	127	130	135	117	129
9	112	2	0	114	5%	0%	0%	5%	93	90	89	93	80	73	75	77	61	37	58	106	102	98	85	70	83	54	41	25	47	52	54	54	53	46	56	45	34	30	38	43	43	59	50	38
10	114	1	1	116	5%	0%	0%	5%	71	69	65	70	79	77	61	73	55	46	62	69	81	75	67	70	72	65	54	47	43	56	62	66	60	64	62	52	59	50	39	50	53	60	51	46
11	160	6	0	166	7%	0%	0%	7%	143	134	124	107	102	109	104	88	69	39	129	145	137	134	115	128	130	122	101	55	112	88	83	81	111	71	72	89	78	33	46	54	56	62	58	60
12	125	4	35	164	5%	0%	1%	7%	95	105	115	119	117	96	87	81	90	69	60	125	91	82	109	107	92	89	86	78	66	95	105	113	122	114	104	95	86	88	90	95	81	92	101	89
13	112	3	3	118	5%	0%	0%	5%	23	44	64	69	59	84	72	58	40	18	68	78	78	80	77	97	91	73	50	31	63	69	72	69	59	68	68	74	54	14	17	24	17	20	18	17
14	240	6	0	246	10%	0%	0%	10%	86	95	108	87	70	65	73	73	68	32	60	117	162	155	122	99	101	104	94	56	51	86	99	104	88	74	86	81	74	47	20	20	20	21	16	15
15	262	7	12	281	11%	0%	1%	12%	192	170	149	140	117	138	147	132	131	39	153	190	189	180	148	149	160	169	137	43	191	201	195	152	128	140	145	135	143	47	44	43	42	36	35	31
16	151	4	0	155	6%	0%	0%	7%	35	37	39	47	36	39	42	38	41	26	46	56	59	64	59	56	57	55	56	42	48	59	60	58	53	50	61	55	59	39	20	19	20	20	21	
17	12	0	0	12	1%	0%	0%	1%	6	5	5	3	3	5	1	1	2	1	6	5	5	5	7	4	4	6	1	0	3	3	1	3	1	4	4	2	3	2	2	2	1	0	2	
18	48	2	0	50	2%	0%	0%	2%	20	22																																		

Existing Conditions Analysis - Parking Inventory and Utilization Summary - City Parking ONLY

City Parking Lots					Existing Supply				Cars - Friday						Cars - Monday						Cars - Wednesday										
Block Num	Id	Lot_Name	Restriction	Owner	UnRSVD	ADA	Other	TOTAL	9 am	10 am	11 am	12 pm	1 pm	2pm	9 am	10 am	11 am	12 pm	1 pm	2pm	9 am	10 am	11 am	12 pm	1 pm	2pm	10 am	11 am	12 pm	1 pm	2pm
2	6	Deck 1	3 hour	City	79	4	2	85	11	16	22	25	29	40	26	51	53	49	37	39	28	32	34	45	34	35	9	16	23	32	26
2	7	Deck 2	Reserved	City	94	3		97	64	70	70	60	70	64	90	88	85	79	78	82	88	87	85	78	82	80	19	19	19	22	22
2	8	Deck 3	Reserved	City	96	3		99	23	29	29	32	33	35	44	51	47	47	40	38	51	61	63	67	26	43	15	15	15	15	15
2	9	Deck 4	3 hour	City	51	2		53	14	15	17	15	16	16	27	28	37	25	26	27	27	28	27	24	27	24	7	7	7	8	8
4	15	Fire Dept	None	City	16			16	8	6	9	9	10	9	7	6	10	7	5	7	6	6	7	7	6	6	7	8	8	8	9
9	30	Spring St Lot	All Day	City	39			39	38	38	39	39	38	37	39	36	37	35	36	31	20	24	23	25	22	28	28	25	37	28	21
10	36	City Hall	None	City	8			8	3	3	3	5	6	6	5	5	5	4	5	7	1	3	5	2	5	7	0	3	3	3	4
10	40	City Hall Annex	None	City	5			5	1	1	3	3	2	2	4	4	4	3	3	2	2	2	1	1	2	2	2	2	2	2	2
12	51	Bicentennial Lot	3 hour	City	58	3	35	96	51	56	68	63	51	42	71	41	29	57	61	48	50	61	68	71	68	62	57	45	48	51	46
<b>Subtotal</b>					<b>446</b>	<b>15</b>	<b>37</b>	<b>498</b>	<b>213</b>	<b>234</b>	<b>260</b>	<b>251</b>	<b>255</b>	<b>251</b>	<b>313</b>	<b>310</b>	<b>307</b>	<b>306</b>	<b>291</b>	<b>281</b>	<b>273</b>	<b>304</b>	<b>313</b>	<b>320</b>	<b>272</b>	<b>287</b>	<b>144</b>	<b>140</b>	<b>162</b>	<b>169</b>	<b>153</b>

City On-street Parking					Existing Supply				Cars - Friday						Cars - Monday						Cars - Wednesday											
Block Num	Id	Lot_Name	Restriction	Owner	UnRSVD	ADA	Other	TOTAL	9 am	10 am	11 am	12 pm	1 pm	2pm	9 am	10 am	11 am	12 pm	1 pm	2pm	9 am	10 am	11 am	12 pm	1 pm	2pm	10 am	11 am	12 pm	1 pm	2pm	
2	10	Union St	2 Hour	City On-Street	3			3	3	3	3	3	3	2	0	3	3	3	2	1	2	3	1	2	3	1	3	3	3	3	3	
4	19	Union St	2 Hour	City On-Street	15			15	15	15	15	15	18	14	15	15	15	15	15	14	5	9	14	14	14	13	7	7	11	10	15	
8	29	Spring St	All Day	City On-Street	11			11	8	7	6	5	9	9	10	11	11	11	9	10	3	3	3	3	4	4	6	7	8	6	6	
9	32	Market St	2 Hour	City On-Street	29	2		31	23	23	23	8	7	11	29	29	29	26	7	26	4	6	6	5	4	4	3	2	5	7	3	
9	33	Spring St	2 Hour	City On-Street	4			4	4	4	4	3	3	3	4	4	3	4	1	4	3	1	1	1	2	2	2	3	4	3	2	
10	41	Union St	2 Hour	City On-Street	21		1	22	18	13	7	22	22	9	22	22	19	20	22	22	19	18	19	16	16	17	19	18	22	21	19	
10	42	Barbrick Ave	2 Hour	City On-Street	3			3	3	3	3	3	2	3	3	3	3	3	3	3	3	2	1	1	3	2	2	2	2	2	1	
10	43	Market St	2 Hour	City On-Street	7			7	5	3	7	8	4	2	7	6	7	7	7	7	3	2	1	2	1	2	5	5	5	3	1	
11	49	Barbrick Ave	2 Hour	City On-Street	11			11	11	11	11	11	7	6	11	11	11	11	11	5	11	11	6	9	7	6	6	5	6	5	5	
11	50	Union St	2 Hour	City On-Street	5			5	5	5	5	5	5	5	5	5	5	5	4	5	5	5	5	4	5	5	5	5	5	5		
12	54	Cabarrus Ave	2 Hour	City On-Street	6			6	6	6	3	6	6	4	6	6	6	6	4	6	4	4	3	5	4	1	2	3	5	4	6	
12	55	Church St	2 Hour	City On-Street	3			3	3	3	3	3	1	1	1	3	3	3	1	3	2	3	3	1	2	3	2	2	2	2	2	
12	56	Means Ave	2 Hour	City On-Street	4			4	3	4	4	4	1	4	4	4	4	4	1	4	4	4	4	4	4	2	4	3	4	4	1	
12	57	Union St	2 Hour	City On-Street	13			13	13	13	13	13	11	13	13	13	13	13	13	12	8	13	13	13	11	11	12	13	13	13	14	
13	59	Means Ave	2 Hour	City On-Street	16	1		17	17	17	17	17	17	12	16	17	17	17	17	16	14	17	15	15	16	17	14	7	13	9	10	
14	66	McCachern Blvd	All Day	City On-Street	13			13	11	13	9	9	6	6	7	12	11	9	8	13	10	7	6	8	6	7	8	8	9	8	8	
14	67	Means Ave	2 Hour	City On-Street	4			4	3	3	3	2	2	1	2	4	4	4	1	4	4	2	3	3	4	4	2	2	2	4	4	
14	68	Church St	2 Hour	City On-Street	9			9	9	9	9	9	7	6	5	9	7	7	9	5	4	3	6	4	4	7	0	2	3	3	1	
15	74	Means Ave	2 Hour	City On-Street	7			7	6	7	4	3	3	2	6	7	7	4	3	7	4	6	4	3	7	6	0	1	0	0	0	
15	75	McCachern Blvd	30 Min	City On-Street	5			5	4	3	5	5	5	5	5	5	4	5	2	4	3	3	4	3	4	1	3	3	2	2	2	
16	80	McCachern Blvd	All Day	City On-Street	16			16	5	6	13	9	3	5	6	9	11	10	9	7	7	10	6	6	7	12	6	5	6	6	7	
17	82	McCachern Blvd	All Day	City On-Street	4			4	4	4	2	2	4	0	3	3	3	4	3	3	1	0	2	0	2	2	2	2	2	1	0	2
<b>Subtotal</b>					<b>209</b>	<b>3</b>	<b>1</b>	<b>213</b>	<b>179</b>	<b>175</b>	<b>169</b>	<b>165</b>	<b>146</b>	<b>123</b>	<b>180</b>	<b>201</b>	<b>196</b>	<b>191</b>	<b>152</b>	<b>181</b>	<b>123</b>	<b>132</b>	<b>126</b>	<b>123</b>	<b>129</b>	<b>129</b>	<b>113</b>	<b>108</b>	<b>131</b>	<b>120</b>	<b>117</b>	

# Downtown Parking Trend (2001-2015)

Parking Type	2001	2007	2015	% Change 2001-2007	% Change 2007-2015
On-Street (City)	212	192	213	-9%	+11% <sup>1</sup>
Off-Street (City/County)	1,036	1,043	1,025	+1%	-2%
Off-Street (Private)	1,225	1,036	1,118	-15%	+8% <sup>2</sup>
<b>TOTAL</b>	<b>2,473</b>	<b>2,271</b>	<b>2,356</b>	<b>-8%</b>	<b>+4%</b>

From 2007  
Parking Master  
Plan

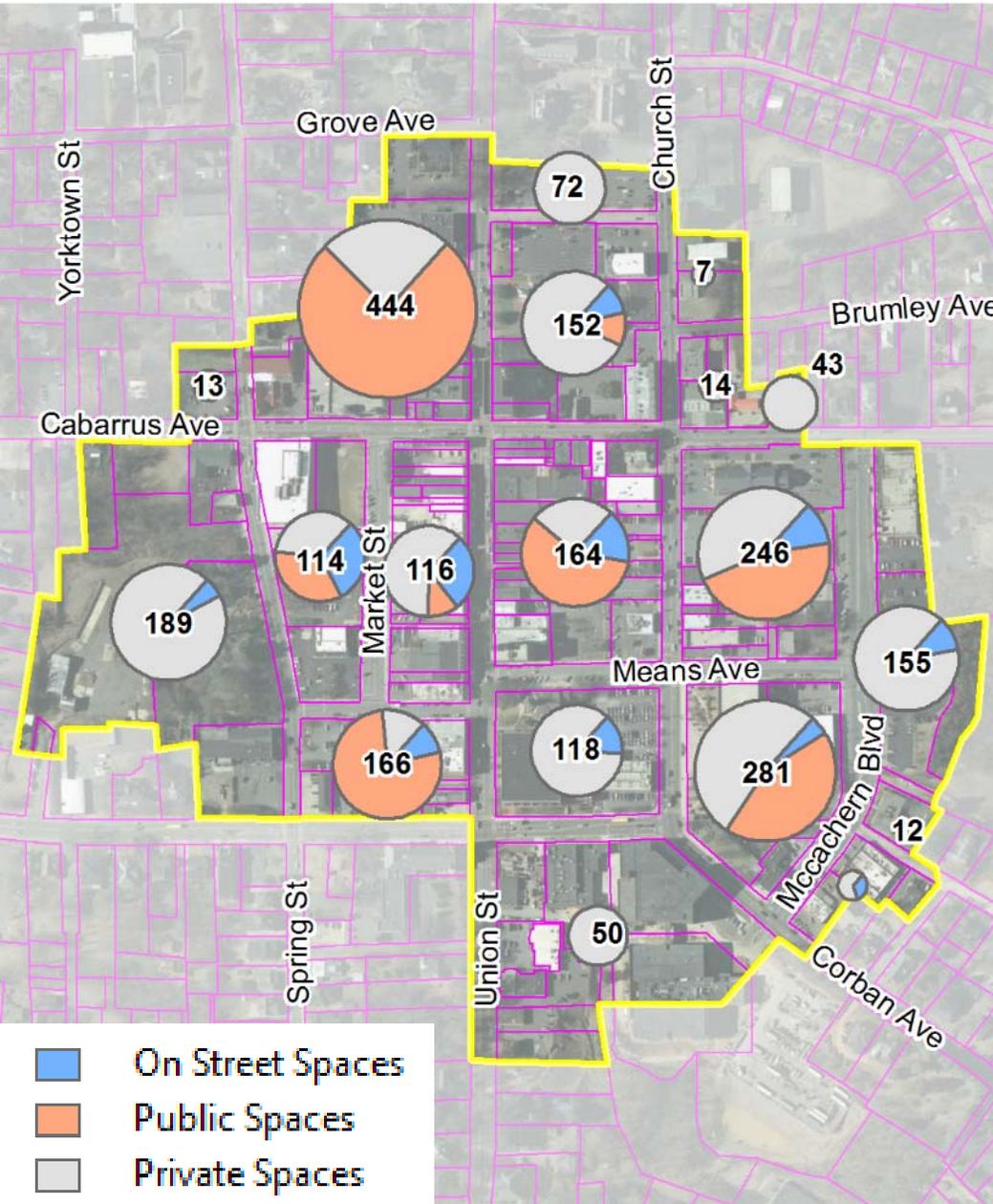
Collected  
March 20, 2015



<sup>1</sup> – Restriping of parking (on/off street)

<sup>2</sup> – Opening of Carolina Courts

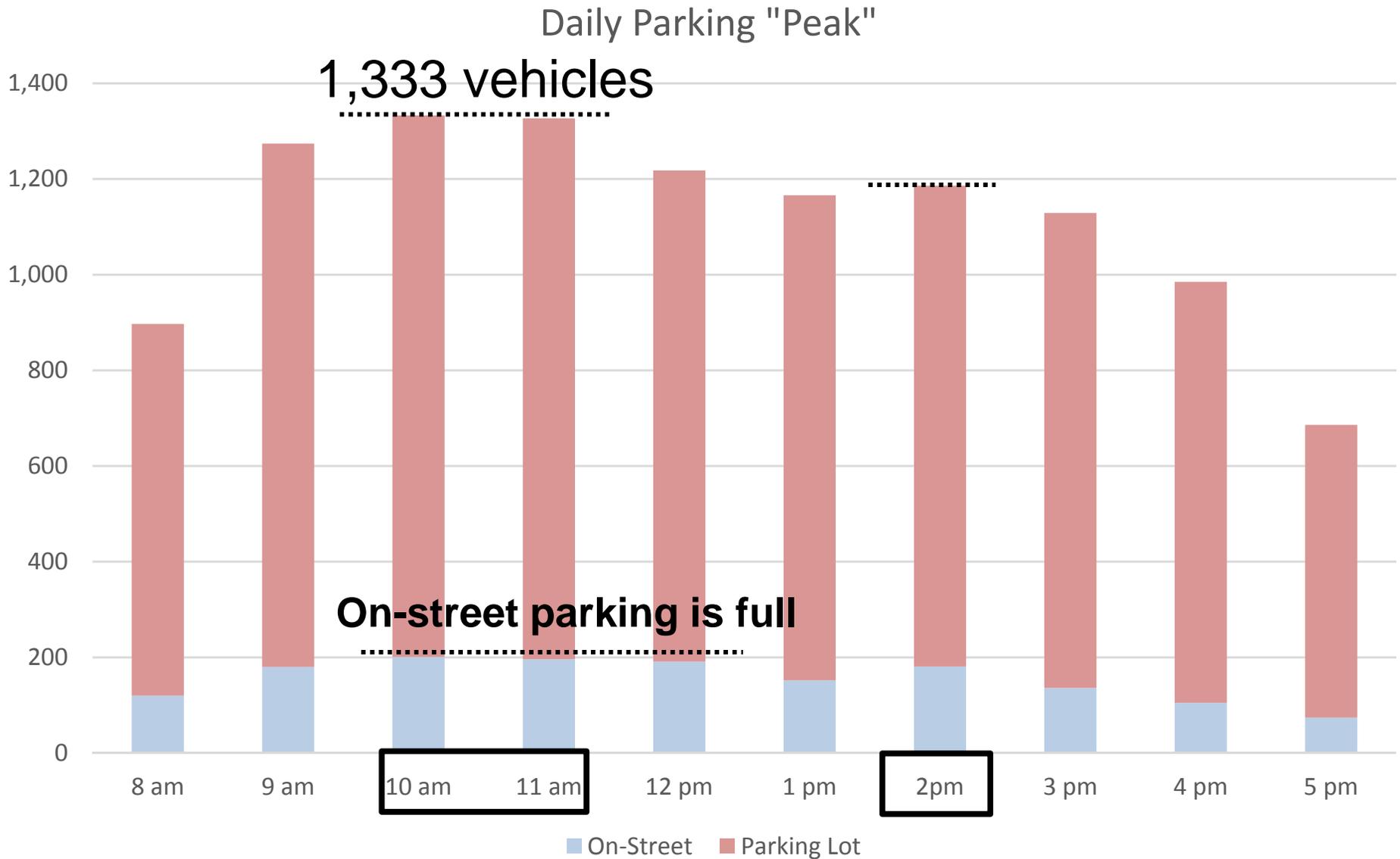
# Existing Conditions



Lot Type	Supply				Parking Supply			
	UnRSVD	ADA	Other	TOTAL	UnRSVD	ADA	Other	TOTAL
On-Street	209	3	1	213	9%	0%	0%	9%
Parking Lot	2,023	68	52	2,143	86%	3%	2%	91%
	2,232	71	53	2,356	95%	3%	2%	
Lot Owner								
Private	1,168	40	11	1,219	50%	2%	0%	52%
Public	1,064	31	42	1,137	45%	1%	2%	48%
Ownership Type								
Municipal-On-Street	209	3	1	213	9%	0%	0%	9%
Municipal-Off-Street	793	28	41	862	34%	1%	2%	37%
Private	1,168	40	11	1,219	50%	2%	0%	52%
Block Num	Includes On-Street and Off-Street							
1	12	1	0	13	1%	0%	0%	1%
2	427	15	2	444	18%	1%	0%	19%
3	67	5	0	72	3%	0%	0%	3%
4	145	7	0	152	6%	0%	0%	6%
5	7	0	0	7	0%	0%	0%	0%
6	14	0	0	14	1%	0%	0%	1%
7	43	0	0	43	2%	0%	0%	2%
8	181	8	0	189	8%	0%	0%	8%
9	112	2	0	114	5%	0%	0%	5%
10	114	1	1	116	5%	0%	0%	5%
11	160	6	0	166	7%	0%	0%	7%
12	125	4	35	164	5%	0%	1%	7%
13	112	3	3	118	5%	0%	0%	5%
14	240	6	0	246	10%	0%	0%	10%
15	262	7	12	281	11%	0%	1%	12%
16	151	4	0	155	6%	0%	0%	7%
17	12	0	0	12	1%	0%	0%	1%
18	48	2	0	50	2%	0%	0%	2%

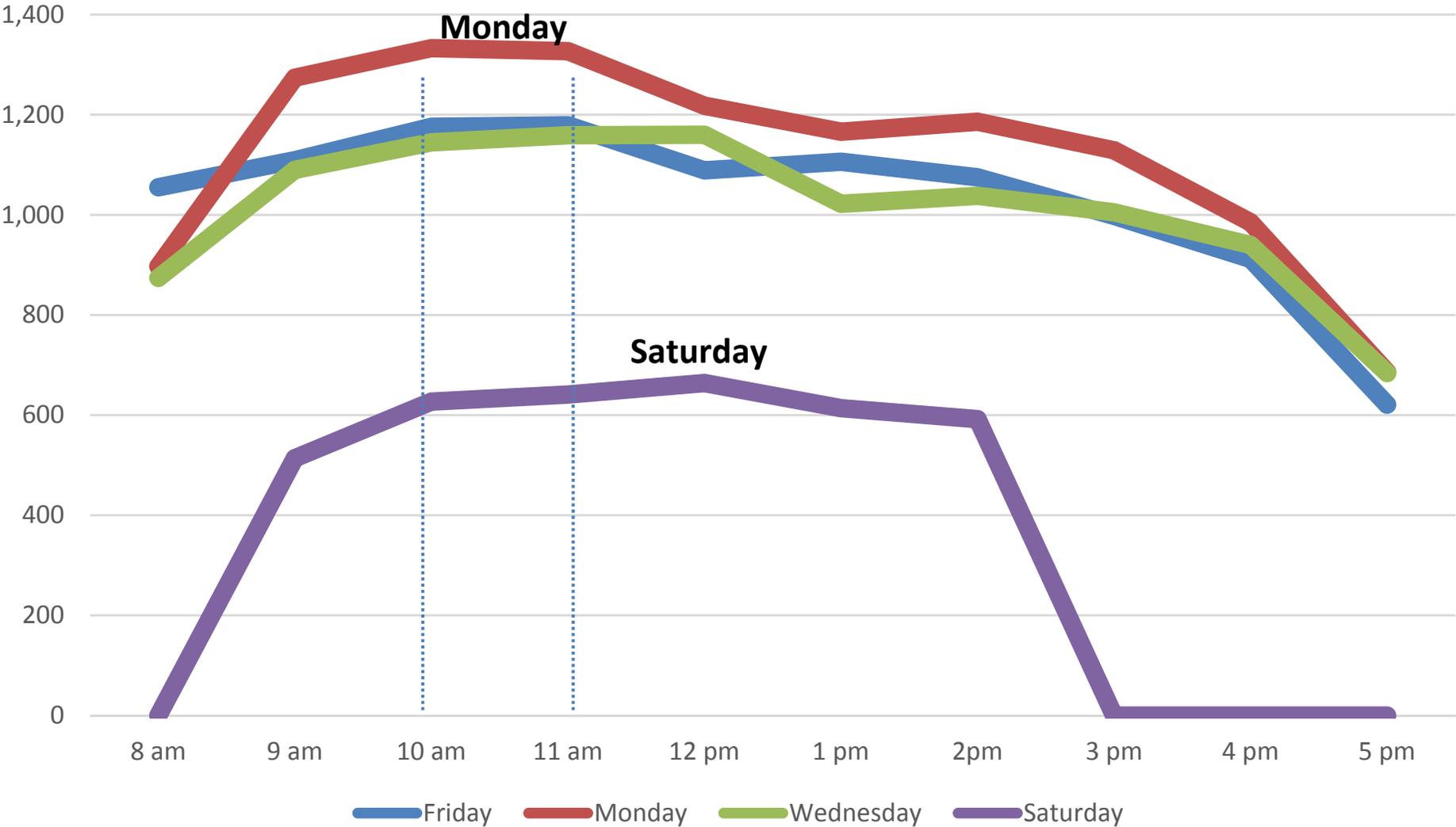


# "Peak" Hour Parking = Max # Vehicles



# Peak Hour Parking Comparison

Comparison of Daily Peaks

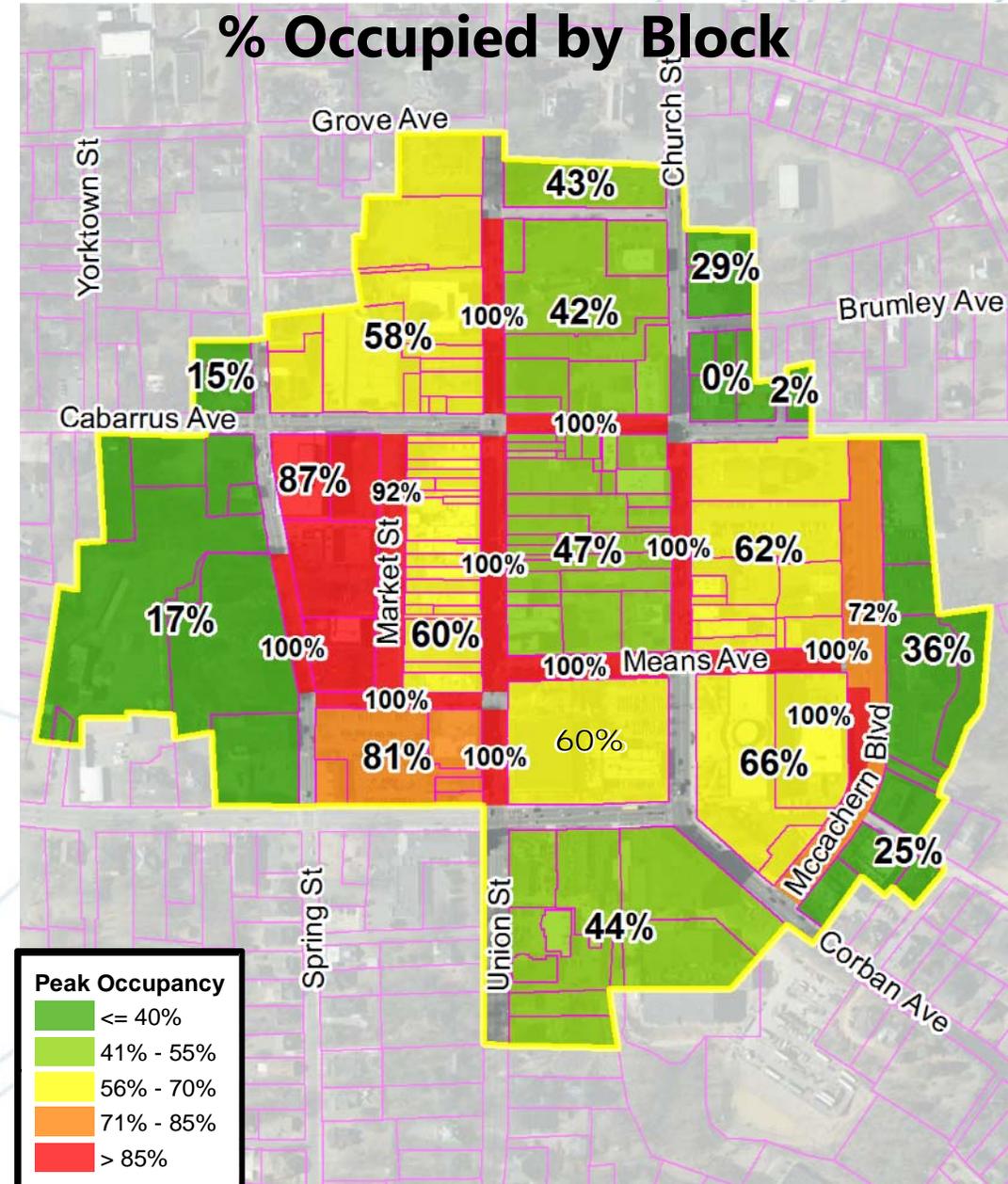


# Monday @ 10 am Peak Hour

## Highest Demand Areas

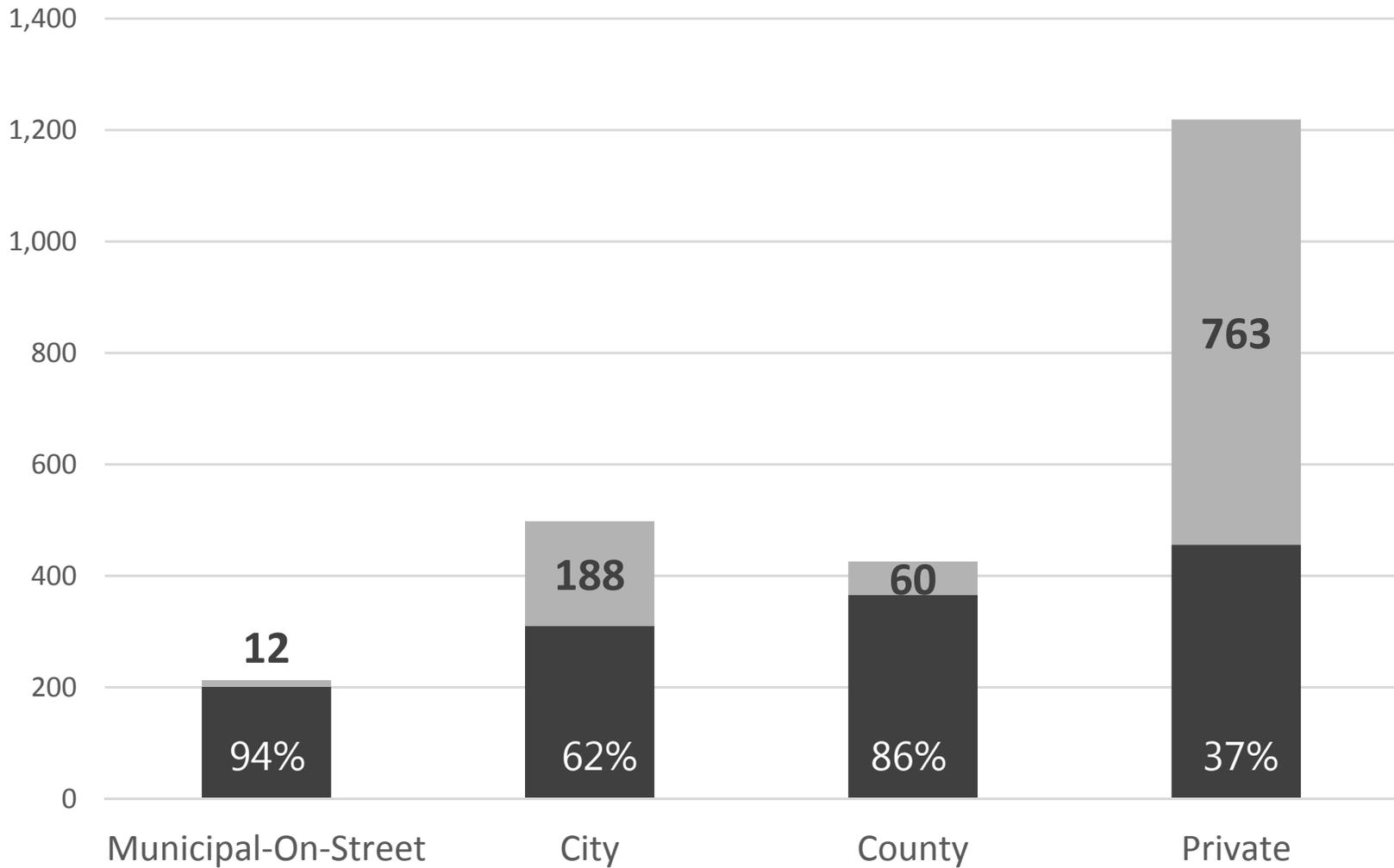
1. On-Street Parking
2. City lot on Spring St
3. County lots on Barbrick/Corban

Parking Space Type	Spaces	Cars	%
Municipal-On-Street	213	201	94%
Municipal-Off-Street	924	676	73%
Private	1,219	456	37%
	2,356	1,333	57%



# Monday @ 10 am Peak Hour

Occupied and Empty Spaces by Owner



■ Cars ■ Empty

1,333 cars  
1,023 empty



# **Appendix C – Future Conditions Analysis**

Future Parking Demand Analysis - Projects List

Num	Address	Name	Heated SF	Block	Floors	Street Use	Upper Floor use	Vacant	Restaurant	Retail	Office	Residential	TOTAL	Residential Units	Residential Beds	Parking Demand Ratios (per 1,000 FW)						Parking Demand
																Vacant	Restaurant	Retail	Office	Residential	Other	
																4	2.5	3	1.5	1		
4	Union Street N	vacant Concord Telephone Co. bldg.	5,280	4	2	residential	residential					5,280	5,280	4	4	-	-	-	-	6.0	-	6.00
14	Union Street N	vacant historic bank building	1,844	4	1	office					1,844		1,844			-	-	-	5.5	-	-	5.53
14/18	Union Street N	Hotel Concord - vacant upper floors	27,512	4	5	retail	residential			5,502		22,010	27,512	34	34	-	-	13.8	-	51.0	-	64.76
22	Union Street N	Old theater building	9,690	4	1	retail				9,690			9,690			-	-	24.2	-	-	-	24.23
26	Union Street S	City Hall	20,000	10	2	office	office				20,000		20,000			-	-	-	60.0	-	-	60.00
30	Union Street S	Kitty City	8,180	10	2	retail	residential			4,090		4,090	8,180	3	6	-	-	10.2	-	9.0	-	19.23
57	Union Street S	Cabarrus Savings Bank Bldg (upper floors)	15,888	12	5	retail	residential			888		15,000	15,888	23	23	-	-	-	-	34.5	-	34.50
66	Union Street S	City Hall Annex	14,304	10	2	office	office				14,304		14,304			-	-	-	42.9	-	-	42.91
2	Corban Ave SW	Vacant gas station	1,156	11	1	retail				1,156			1,156			-	-	2.9	-	-	-	2.89
16	Church St N	Vacant building (Mills Bldg., former electric supply)	3,780	6	1	retail				3,780			3,780			-	-	9.5	-	-	-	9.45
24	Church St N	Vacant building (Serv Co)	600	5	1	retail				600			600			-	-	1.5	-	-	-	1.50
29	Cabarrus Ave E	Church Street Lofts	30,149	4	3	vacant	residential	10,050				20,099	30,149	26	30	-	-	-	-	45.0	-	45.00
61	Cabarrus Ave W	New restaurant near Carolina Courts	2,800	8	1	restaurant			2,800				2,800			-	14.0	-	-	-	-	14.00
35	Cabarrus Ave W	New City Hall	76,176	9	4	office	office				76,176		76,176			-	-	-	125.6	-	-	125.62
77	Union St S	Cabarrus County Courthouse	-	13	1	government															142.0	142.00
<b>Totals</b>			<b>217,359</b>					<b>10,050</b>	<b>2,800</b>	<b>25,706</b>	<b>112,324</b>	<b>66,479</b>	<b>217,359</b>	<b>90</b>	<b>97</b>	<b>-</b>	<b>14.0</b>	<b>62.0</b>	<b>234.1</b>	<b>145.5</b>	<b>142.0</b>	<b>597.6</b>
								5%	1%	12%	52%	31%										

Note:

Cabarrus County Courthouse visitors are expected to increase by 500 daily visitors by 2020

2% are expected to arrive via transit

4% are expected to arrive via drop off

94% are expected to drive, and would need parking

472 New daily visitor parking demand (94% x 500)

30% assumed peak-hour adjustment factor (10-11 am)

**142 New peak-hour parking demand generated by 2020**

**Future Parking Demand Analysis**

**Total Inventory (Square Foot)**

	Vacant	Restaurant	Retail	Office	Residential	Other	Total	Vacancy Rate
Street Level	10,050	2,800	25,706	38,040	2,640	0	79,236	12.7%
Upper Floor	0	0	0	74,284	63,839	0	138,123	0.0%
<b>Total Floor Area</b>	<b>10,050</b>	<b>2,800</b>	<b>25,706</b>	<b>112,324</b>	<b>66,479</b>	<b>0</b>	<b>217,359</b>	<b>4.6%</b>

**Note:** Examples Include...

- Vacant: Anything not currently occupied; under construction
- Restaurant: Fast food; seated dining; coffee shop; bakery, café, ice cream shop; wine bar; etc.
- Retail: Most other commercial uses (see above table)
- Office: Government; law; professional offices
- Residential: Upstairs lofts; currently no apartments/condos in study area
- Other: Library; recreation;

	Vacant	Restaurant	Retail	Office	Residential	Other	Total	Vacancy Rate
<b>Existing SF</b>	<b>253,222</b>	<b>37,498</b>	<b>120,331</b>	<b>653,759</b>	<b>2,100</b>	<b>65,061</b>	<b>1,131,971</b>	
Redeveloped Properties (Existing)	154,775	0	9,592	34,304	0	0	198,671	
Redeveloped Properties (Future)	10,050	2,800	25,706	112,324	66,479	0	217,359	
Net SF Change	-144,725	2,800	16,114	78,020	66,479	0	18,688	
% SF Change	-57%		13%	12%	3166%			
<b>Future SF</b>	<b>108,496</b>	<b>40,298</b>	<b>136,446</b>	<b>731,779</b>	<b>68,579</b>	<b>65,061</b>	<b>1,150,659</b>	

**Existing Conditions**

Land Uses	SqFt	% SqFt	Dwellings	Parking Rate	Est Spaces	Actual Spaces
Vacant	253,222	22%		0.0	-	2,356
Other	65,061	6%		1.0	65	
Residential	2,100	0%	2	1.5	3	
Retail	120,331	11%		2.5	301	
Office	653,759	58%		3.0	1,961	
Restaurant	37,498	3%		4.0	150	
	<b>1,131,971</b>		<b>2</b>		<b>2,480</b>	<b>2,356</b>

**Note**

- 2,480 ITE manual estimated number of spaces
- 2,356 Current parking supply (number of spaces)
- 124 Over-estimated existing parking demand
- 0.95 Reduction-factor
- 1,333 AM Peak Hour maximum number of vehicles observed
- 1,023 AM Peak Hour empty spaces
- 57% AM Peak Hour occupancy rate
- 90% Parking demand margin of error
- 1,481 Effective demand (assumes 10% cushion for non-observed workers)
- 875 Raw surplus parking spaces
- 999 Surplus of parking between ITE and Effective demand
- 0.60 Reduction-factor (Effective demand / ITE estimated)

**Includes:**

- Private
- Public
- On-Street

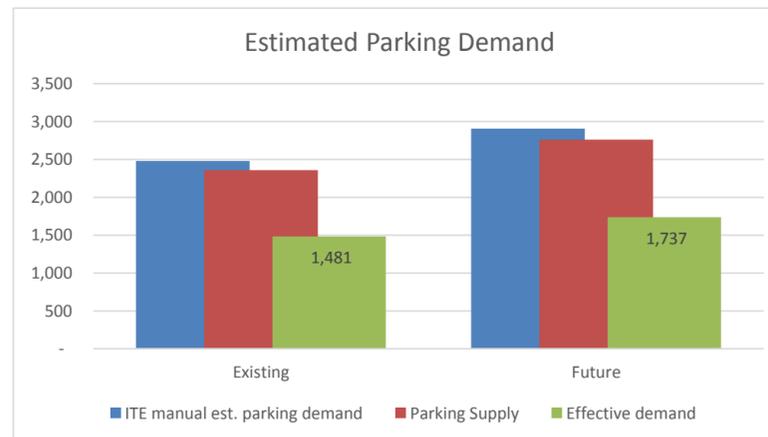
Existing	Future
2,480	2,908 ITE manual est. parking demand
2,356	2,762 Parking Supply <i>*Needed to maintain existing ratio of spaces:demand</i>
1,481	1,737 Effective demand

**Future Conditions**

Land Uses	SqFt	% SqFt	Beds	Parking Rate	Est Spaces	Actual Spaces
Vacant	108,496	9.4%		0.0	-	2,317
Other	65,061	5.7%		1.0	65	
Residential	68,579	6.0%	97	1.5	146	
Retail	136,446	11.9%		2.5	341	
Office	731,779	63.6%		3.0	2,195	
Restaurant	40,298	3.5%		4.0	161	
	<b>1,150,659</b>		<b>97</b>		<b>2,908</b>	<b>2,317</b>

**Note**

- 2,908 ITE manual estimated number of spaces
- 2,317 Current number of spaces
- (591) Estimated total shortfall of parking
- 85% Desired Peak Hour occupancy rate (search margin)
- 428 ITE manual estimated new parking demand
- 0.60 Reduction-factor
- 256 Estimated new parking demand from identified future projects



256 Number of spaces needed based on maintaining the existing ratio of "Demand":Supply  
This represents a 0.51 reduction factor of the ITE parking generation estimate

# Future Development Projects

- |     |                                   |                     |
|-----|-----------------------------------|---------------------|
| 1.  | Concord Telephone Co Building     | Residential         |
| 2.  | Historic Bank Building (hotel)    | Office/Services     |
| 3.  | Hotel Concord                     | Residential/Event   |
| 4.  | Old Theater Building              | Retail              |
| 5.  | City Hall                         | Office              |
| 6.  | Kitty City                        | Retail/Residential  |
| 7.  | Cabarrus Savings Bank Bldg.       | Residential         |
| 8.  | City Hall Annex                   | Office              |
| 9.  | Vacant Gas Station Corban Ave     | Retail              |
| 10. | Mills Building                    | Retail              |
| 11. | Vacant Serv Co Church St          | Retail              |
| 12. | Church Street Lofts               | Residential         |
| 13. | 61 Cabarrus Ave (Carolina Courts) | Retail (restaurant) |
| 14. | New City Hall                     | Office              |
| 15. | New City Park                     | Recreation          |

# Future Land Uses by SqFt

- Data from Planning & Community Development

Land Uses	SqFt	% SqFt	Change	Change
Vacant	108,496	9%	-144,725	-13%
Other	65,061	6%	-	-
Residential	53,579	5%	+51,479	+5%
Retail	135,558	12%	+15,226	+1%
Office	731,779	64%	+78,020	+7%
Restaurant	40,298	4%	+2,800	0.2%
	<b>1,134,771</b>		<b>2,800</b>	



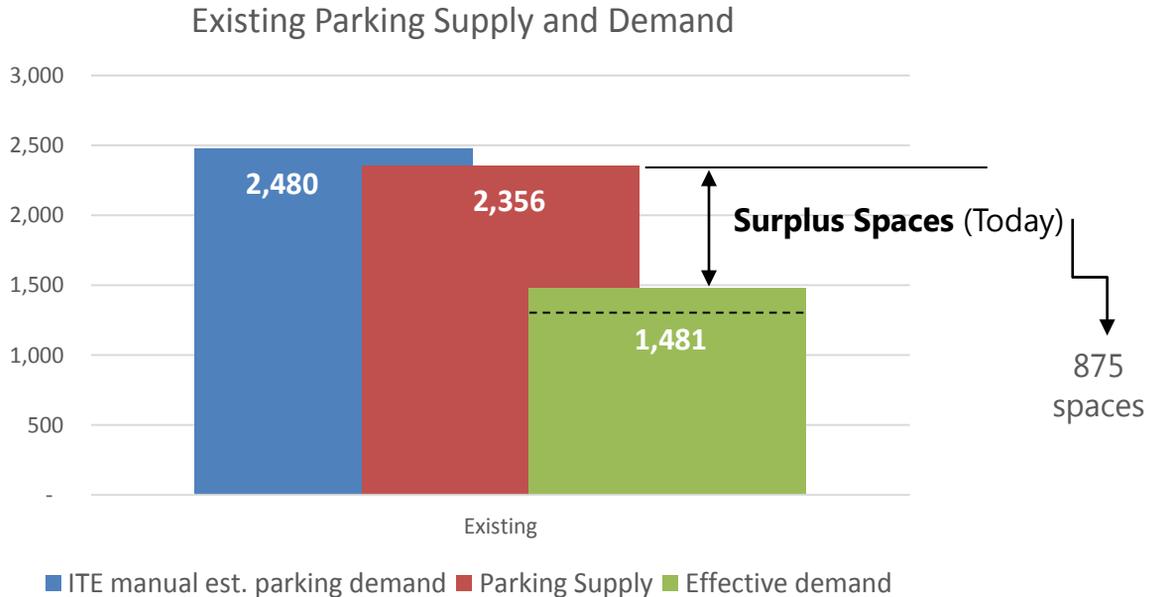
# What does this mean?

- ITE manual suggests **2,906** parking spaces are needed by 2020
  - Downtown currently has **2,356** parking spaces
  - Balance of **550** spaces (shortfall)

Land Uses	SqFt	Parking per 1,000 SqFt	Est Demand
Vacant	108,496	-	-
Other	65,061	1.0	65
Residential	53,579	1.5 x 97 beds	146
Retail	135,558	2.5	339
Office	731,779	3.0	2,195
Restaurant	40,298	4.0	161
	<b>1,134,771</b>		<b>2,906</b>

# What does this really mean?

- ITE manual suggests **2,480** parking spaces are needed TODAY
  - Downtown currently has **2,356** parking spaces
  - ITE manual probably *over-estimates* demand for Concord (~5%)



# Who owns those surplus spaces?

Ownership	Spaces	Peak Cars	% Occupied	Demand*	Surplus
On-Street	213	201	94%	223	-10
CITY	498	310	62%	344	154
COUNTY	426	366	86%	407	19
Private	1,219	456	37%	507	712
<b>Total</b>	<b>2,356</b>	<b>1,333</b>	<b>57%</b>	<b>1,481</b>	<b>875</b>

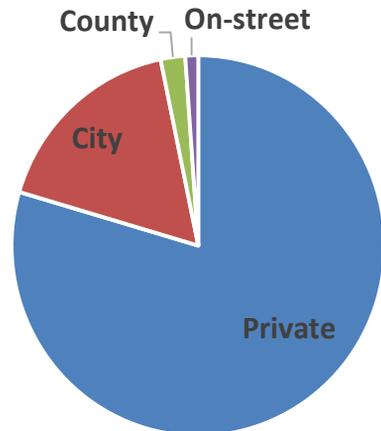
Cabarrus Ave  
Garage

Private owners control 81% of unoccupied spaces (i.e. surplus)

# Existing Surplus Parking

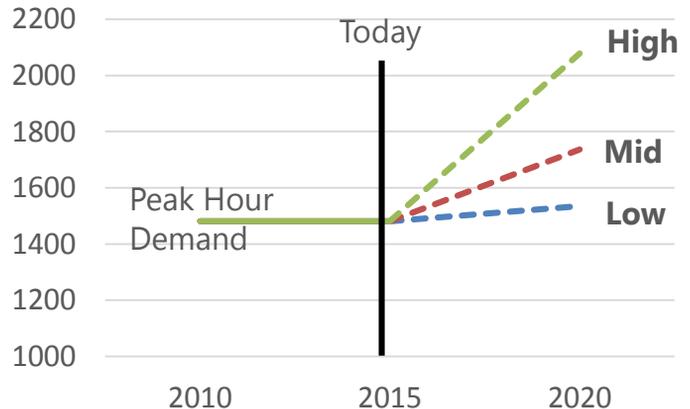
- 875 existing surplus spaces
  - 712 spaces are private (81%)
  - 173 spaces are public
    - 154 City,
    - 19 County;
    - **-10** on-street space **deficit**
  - **163 effective public spaces in surplus (2015)**

Existing Surplus (875 spaces)



# Future Conditions

- Future Parking Demand 2020
  - **High Demand:** 598 spaces
  - **Mid Demand:** 256 spaces
  - **Low Demand:** 93 spaces



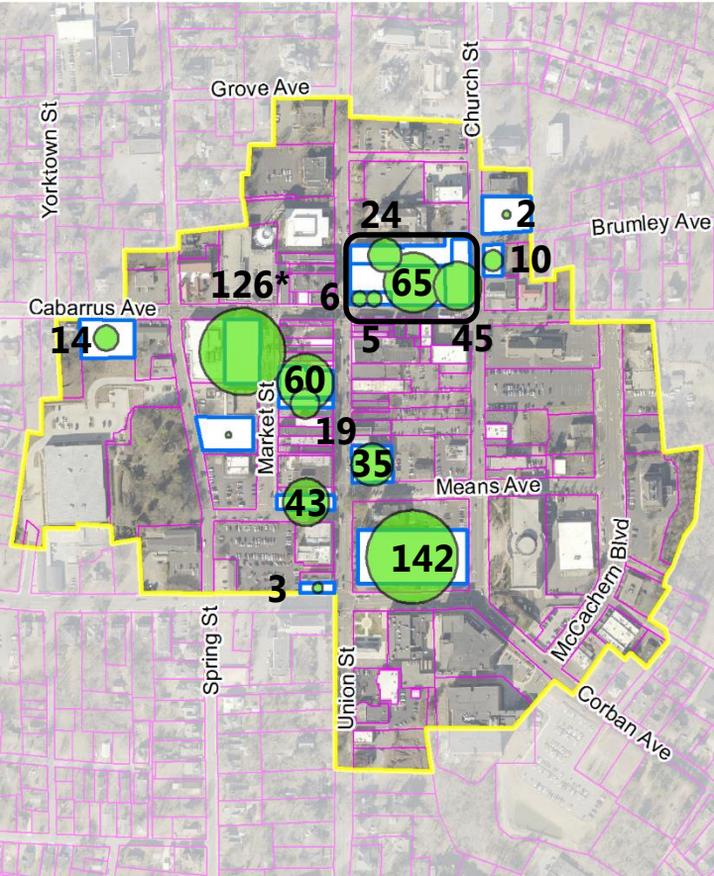
# Future Conditions

- Future Parking Demand 2020 – Methodology
  - **High Demand:** Estimates new parking demand from building square footage (sq.ft.) according to ITE Manual
  - **Mid Demand:** Reduces ITE Manual estimate based on current utilization (2015 data)
  - **Low Demand:** Assumes that current surplus will absorb a portion of the mid demand

# Future Conditions

- Future Parking Demand 2020
  - **High Demand: 598** spaces based on ITE manual (sq.ft.)
    - Public Parking only
      - +126 (net) City Hall building (76,000 sq.ft.)
      - +142 County Courthouse increased visitor demand (per day)
      - 268 new demand for public parking
  - **Mid Demand: 256** spaces based on current use
    - 1,737 *future* demand / 2,980 ITE demand = 60%
    - 1,481 existing demand / 2,480 ITE demand = 60%
    - 256 future demand increase
  - **Low Demand: 93** spaces
    - [256]–[163 existing surplus] = 93 new demand

# Locations of Future Demand



Where are the future projects?

- 598 new parking demand
- 14 restaurant
- 62 retail use
- 234\* office use
- 146 residential use
- 142 courthouse

**+146** Hotel Concord block

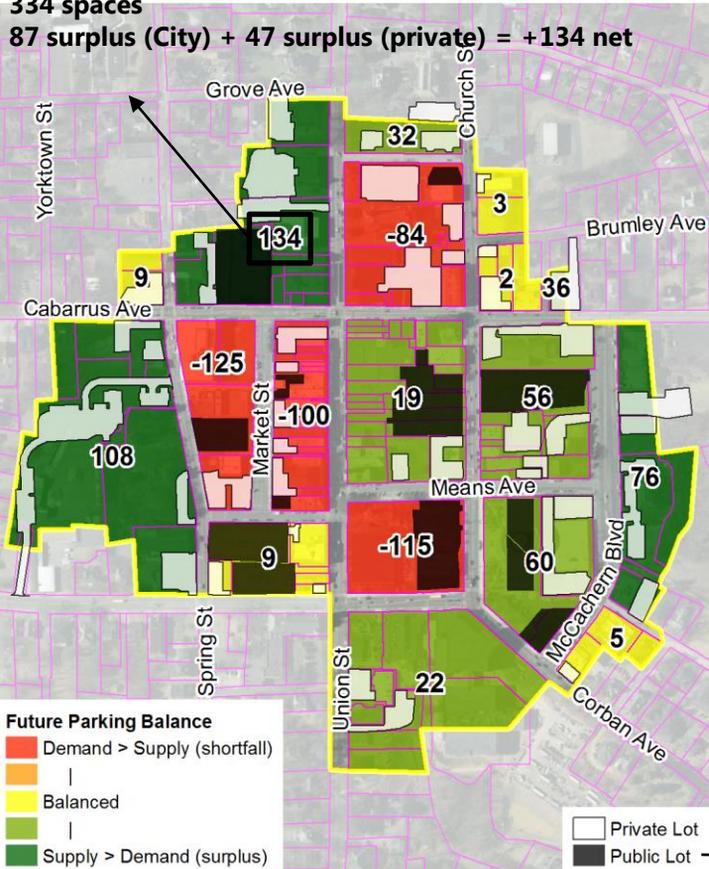
**126\*** *Net* new parking demand; employees relocating from City Hall & Annex

# Locations of Surplus/Shortfall

222 cars ~ 247 demand

334 spaces

87 surplus (City) + 47 surplus (private) = +134 net



Where is Demand > Supply?

- RED

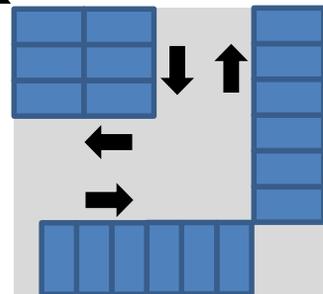
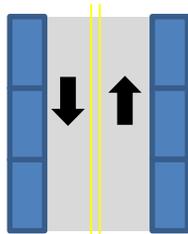
Where is Supply > Demand?

- GREEN

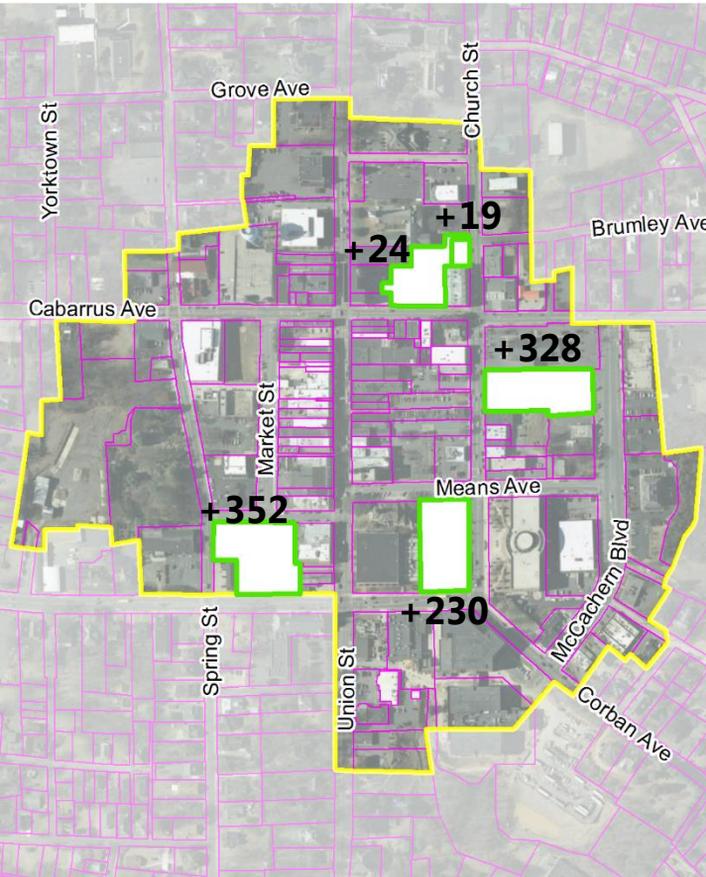
[Surplus] - [New Demand] = [Balance]

# Cost/Space Considerations

- Financial costs of building NEW parking
  - **\$4,500 per space off-street lot**
  - **\$18,000 per space in garage (4x the cost)**
- Land required for parking
  - 180 sq ft for on-street space
  - 270-400 sq ft for parking lots/garage



# Supply Improvements



Where could parking be added?

- A. Hotel Concord site +24
- B. Church St lofts +19
- C. County Lot on Church +328
- D. County Lot on Corban +352
- E. County Courthouse +203  
(Underground)

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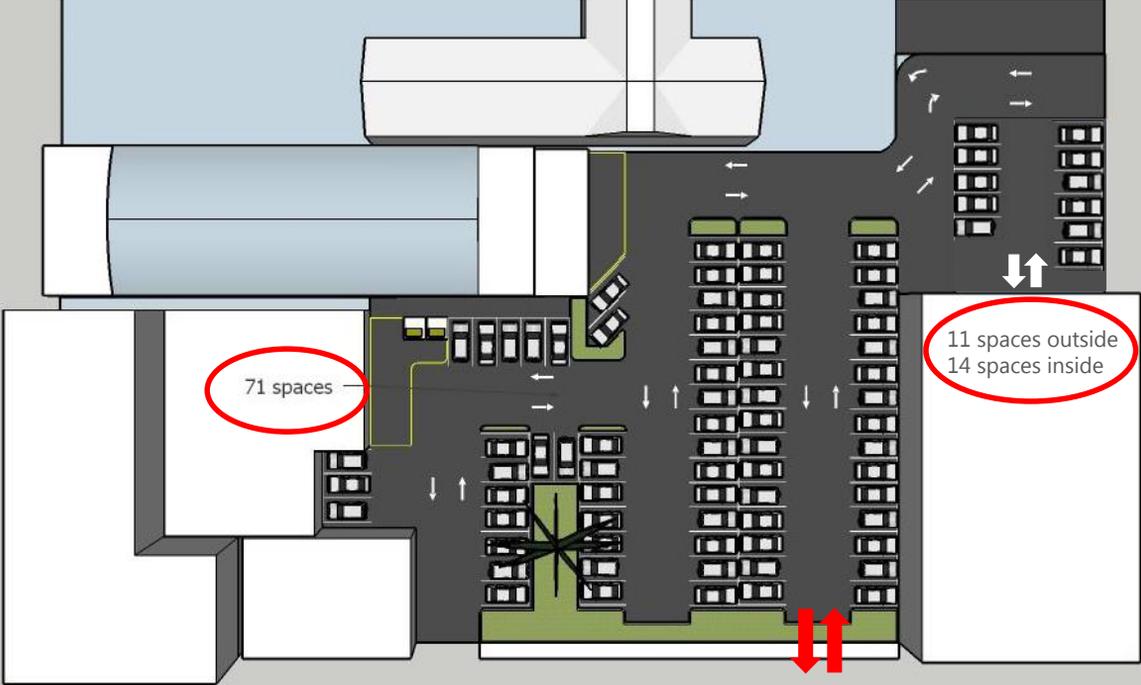
**926** net new spaces

**You don't need all of these!**

# Hotel Concord & Church St Lofts

+43  
spaces  
(net)

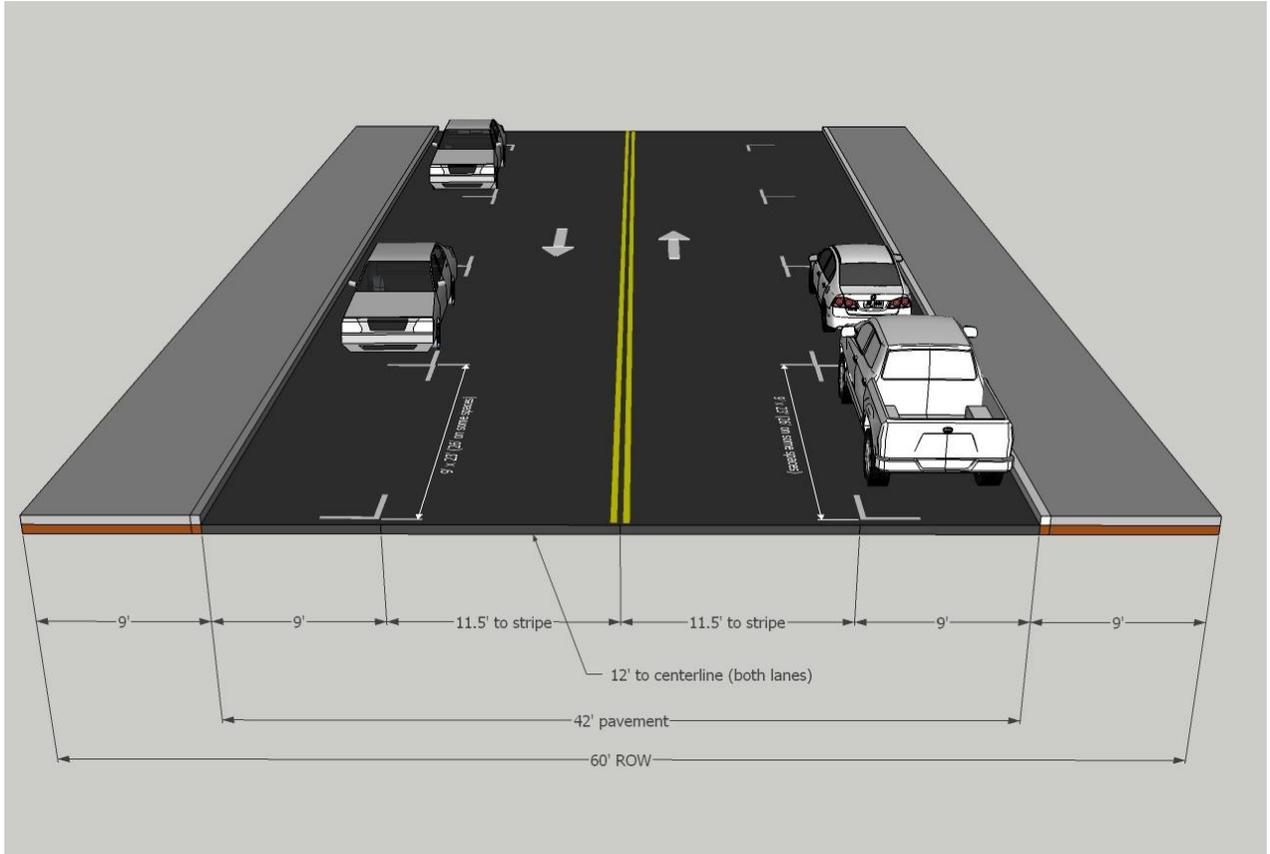
Union St. N



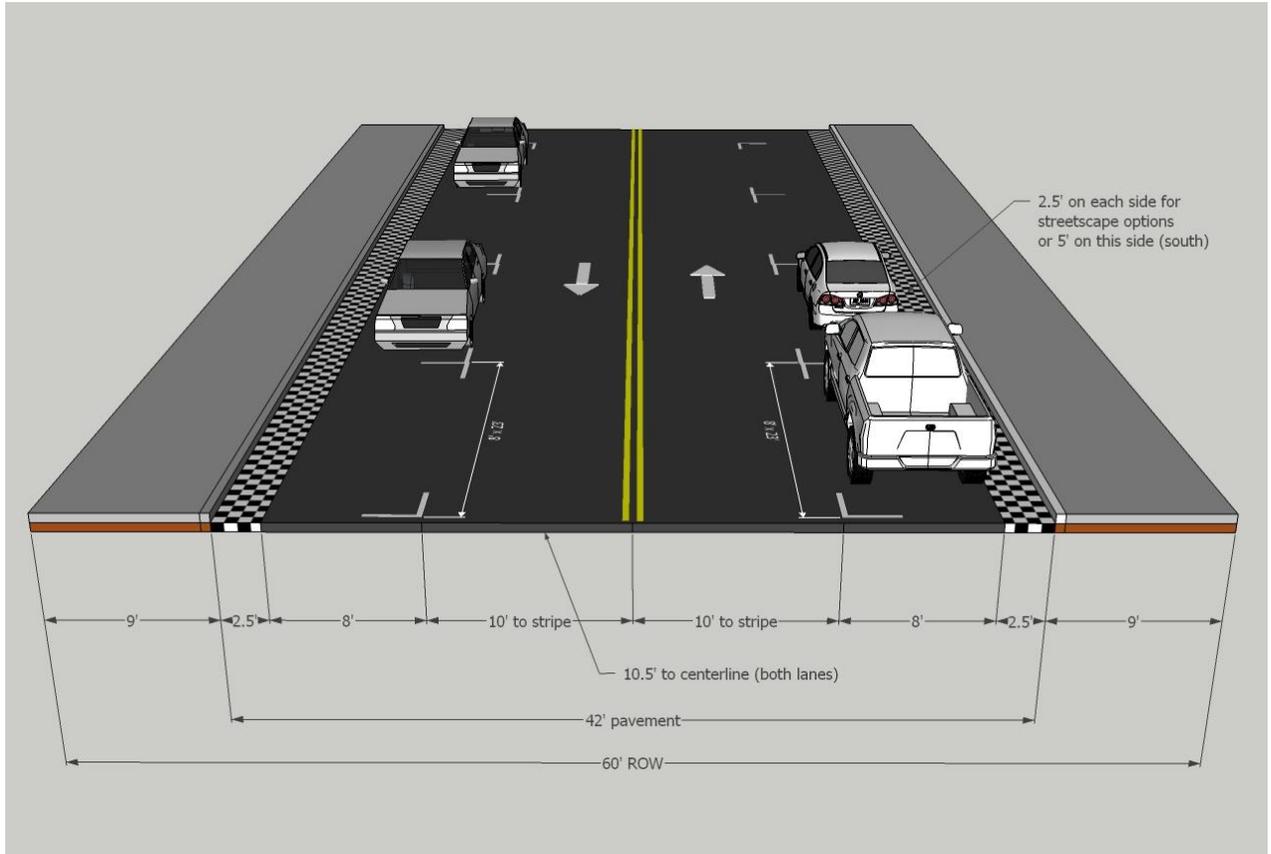
Church St. NE

Cabarrus Ave. E

# Union St. – Existing Cross-Section



# Union St. – Future Restripe Concept



# County Lot on Church



Church St

McCachern Blvd

Up



124 spaces per level  
4 levels  
**496 total new spaces**  
-114 spaces EXISTING



Up

**382 net parking spaces**  
@ \$18k per space  
\$8.9 million construction cost

# County Lot on Barbrick-Corban

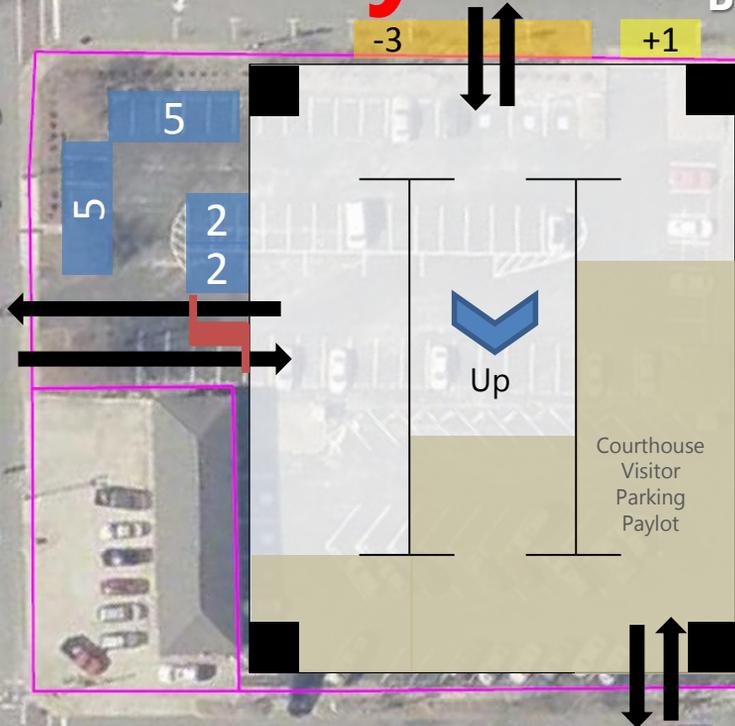
# Most Likely

Spring St

Barbrick Ave

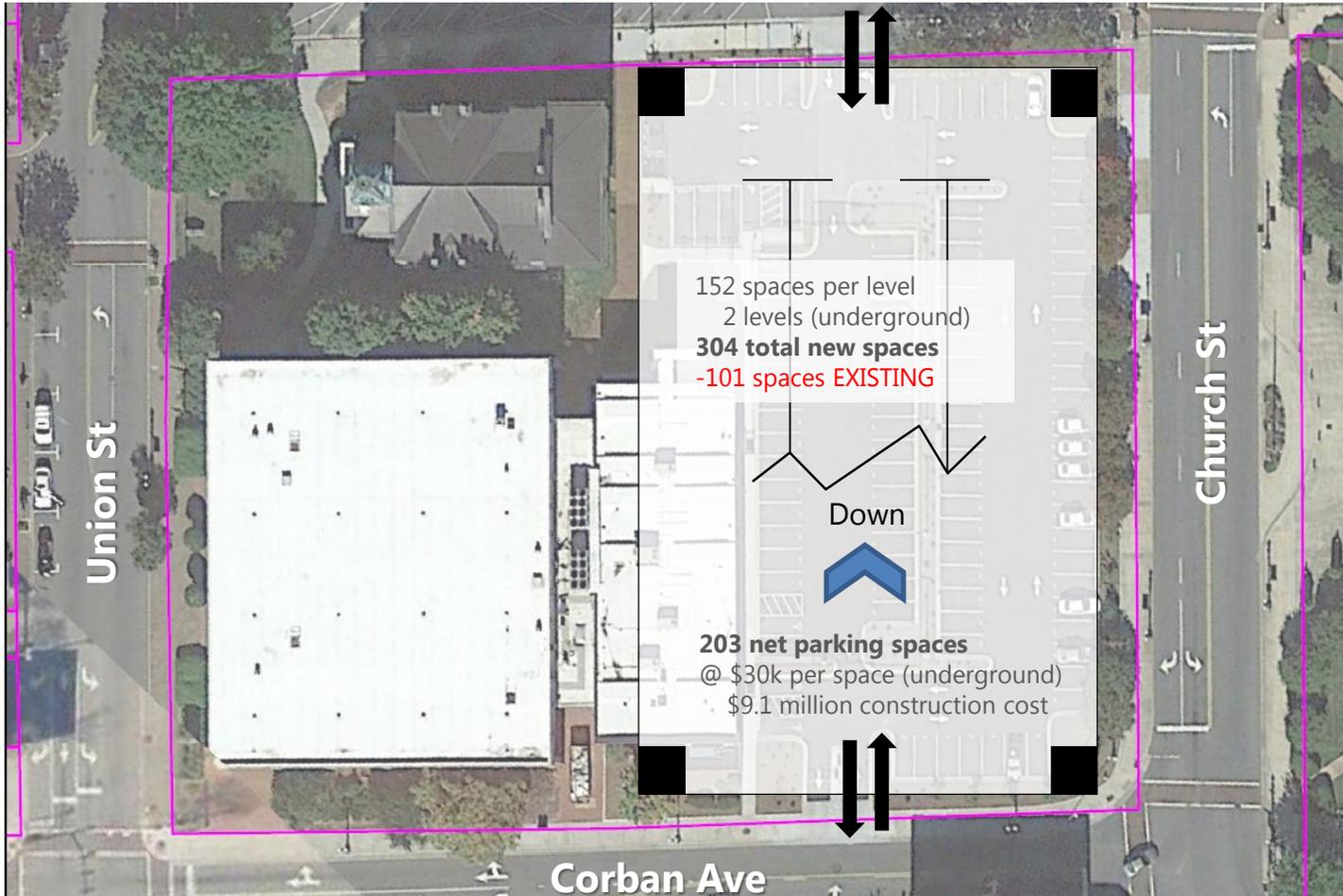
Union St

Corban Ave



120 spaces per level  
4 levels  
**480 total new spaces**  
-128 spaces EXISTING  
-2 spaces on-street  
+14 spaces retained  
**364 net parking spaces**  
@ \$18k per space  
\$8.64 million construction cost

# County Courthouse



## Does Concord NEED a Garage? ...

- **Not yet!** ... however, in the near future we will need one. Planning/design may occur in 1-2 years and construction in 2-4 years. The timeline will be dependent on any changes to the Cabarrus County Courthouse.
- Low-Cost / Quick-win Improvements
- Higher-Cost / Challenging Improvements
- These will delay the need for a garage

# Overview of Parking Solutions

## Private Parking

### **Solution is:**

- Short-term
- Cheap
- Limited in scope
- Complex to manage (multiple property owners)
- Potential revenue for private owners

## Rate of Delay for More Public Parking

- Extended with more private parking shared use agreements
- Shortened with increased public parking demand (i.e. courthouse)

## Public Parking

### **Solution is:**

- Long-term
- Expensive
- Comprehensive
- Simpler to manage (public entity owns parking garage)



**Appendix D –  
Traffic Operations  
Memorandum**

To: City of Concord  
 66 Union St. South  
 Concord, North Carolina 28025

Date: June 25, 2015

Memorandum

Project #: 38476.00

From: Anthony Tagliaferri, PE

Re: Traffic Operations and Circulation – One-Way vs. Two-Way  
 Operation of Market and Union Streets

The City of Concord is considering the conversion of two streets in their downtown core from two-way operation to one way operation. Union and Market Streets (depicted in Figure 1) are parallel downtown streets but have quite different characteristics.

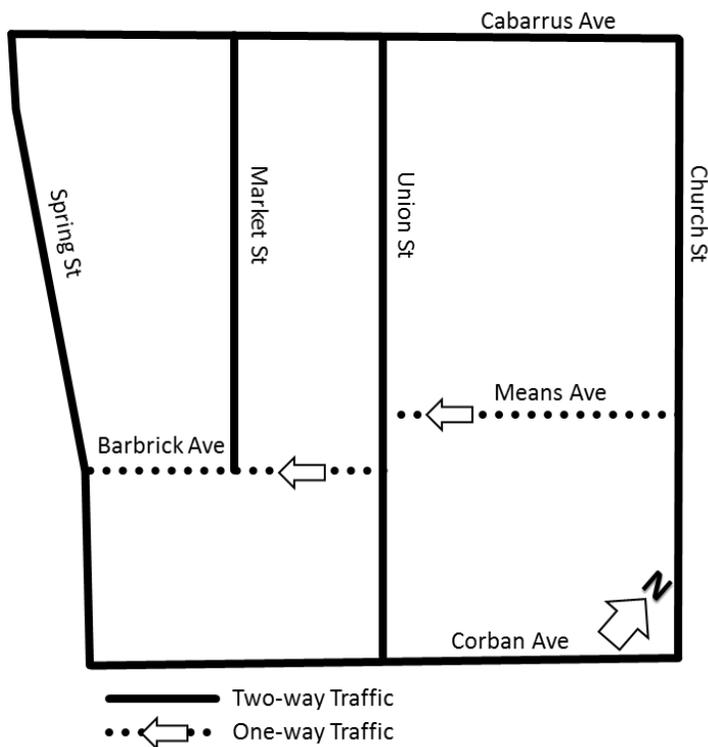


Figure 1. Existing Traffic Flow in Downtown Concord, NC

### Downtown Study Area Streets

The following is a descriptive account of the streets that make up the study area in this analysis:

#### Union Street

- Union Street is a two-lane roadway with businesses fronting both sides of the street throughout the two-block study area. There is a mid-block, unsignalized, pedestrian crossing on Union Street, 40 parallel parking spaces on both sides of the street, and storefront sidewalks on both sides of the street.

- There is a two-phase traffic signal (one phase for east/west traffic, the other phase for north/south traffic) at the intersection of Union Street and Cabarrus Avenue, at the northern terminus of the study area, and a three-phase traffic signal (one additional phase for 'protected' left turning movements) at the intersection of Union Street and Corban Avenue, just southeast of the study area. All other intersections of Union Street in the study area, including the intersection of Union Street and Barbrick Avenue (which provides access to Market Street), are unsignalized.
- According to the NCDOT, the 2012 Average Annual Daily Traffic (AADT) along Union Street was 6,200 vehicles per day (vpd) in the two-block section of roadway under consideration for conversion. This value is for both directions of Union Street; therefore, if Union Street were to be converted to one-way operation, this volume is expected to decrease by a significant amount.

#### Market Street SW

- Market Street is a two-lane roadway throughout the two-block study area. The northeast side of the street is fronted by the backside of Union Street businesses (with adjacent off-street parking spaces) and the southwest side of the street is fronted by parking lots and the future Concord City Hall (including a drive-thru bill payment area). Market Street has a more rolling terrain over its length, while Union Street is flatter. There are seven (7) parallel parking spaces on the northeast side of the street, 31 angle parking spaces on the southwest side of the street, and curbside sidewalks on both sides of the street.
- Both terminal intersections of Market Street are unsignalized.
- No NCDOT AADT information is available on Market Street.

#### Barbrick Avenue SW

- Barbrick Avenue is a one-way, one lane roadway running from Union Street toward Spring Street, with an intersection with the terminus of Market Street in between. There are 14 total parallel parking spaces on both sides of the street.
- No NCDOT AADT information is available on Barbrick Avenue.

#### Means Avenue SE

- Means Avenue is a one-way, one lane roadway running from Church Street toward Union Street, terminating just to the northwest of the Union Street/Barbrick Avenue intersection. There are 17 angle parking spaces on the southeast side of the street and four (4) parallel parking spaces available on the northwest side of the street.
- No NCDOT AADT information is available on Means Avenue.

#### Cabarrus Avenue

- Cabarrus Avenue is a two-lane roadway in the study area. There are no parking spaces within the short one-block study area along Cabarrus Avenue. Storefronts and sidewalks are present on both sides of the street, and the new Concord City Hall and Police Department are located on the southeast corner of the intersection of Cabarrus Avenue and Market Street.
- There is a two-phase traffic signal at the intersection of Union Street and Cabarrus Avenue, at the northern terminus of the study area, and a two-phase traffic signal at the intersection of Spring Street and Cabarrus Avenue, just southwest of the study area. The City of Concord parking deck

access is located just to the southwest of the intersection of Cabarrus Avenue and the northern terminus of Market Street.

- According to the NCDOT, the 2012 Average Annual Daily Traffic (AADT) along Union Street was 6,200 vehicles per day (vpd) in the two-block section of roadway under consideration for conversion. This value is for both directions of Union Street; therefore, assuming half the traffic travels in each direction over the course of a day, the 2012 AADT along Union Street is approximately 3,100 vpd in each direction.

## **Two-Way to One-Way (and vice versa) Street Conversions**

The trend in the past several decades is toward the conversion of one-way streets to two-way operation. In fact, no research of substance could be found on a conversion of two-way streets to one-way operation. A comprehensive analysis of one-way versus two-way operation was performed for the Transportation Research Board (TRB) by Walker, Kulash, and McHugh (1998). This research highlighted several aspects of one-way and two-way street operation for all users of the transportation facility.

The researchers found motorists, especially “occasional visitors” to downtown that are not regular users of the study area roadways, “are often confused and disoriented on encountering a one-way street network. Often, these motorists are able to see their destination but are shunted away from it by the one-way streets.” Meanwhile, pedestrians encounter fewer potential conflicts with moving vehicles along one-way streets, but the “number of potential conflict sequences increases” because the pedestrian can be unsure which direction traffic is moving on a particular one-way street or intersection of streets, causing additional confusion and factoring in crossing decisions.

Transit users can also become discouraged when “a visitor who is dropped off at a stop downtown on a one-way street may not realize that the transit stop for his [or her] return trip is actually located one block away on a different street,” while “in a two-way system, transit stops for a particular route can be located across the street from each other, eliminating this confusing situation.” Additionally, downtown business owners in the researched communities cited one-way street operations as a deterrent to their sustainability because their storefronts are inaccessible to half the motorists or transit users on a particular one-way street segment. Vine Street in Cincinnati was singled out in the research document, as “40% of businesses in this economically depressed downtown corridor closed after the street was converted from two-way to one-way.”

Conversions from one-way streets to two-way operation have recently been undertaken or are being undertaken in cities such as:

- Rochester, New York (2014-ongoing)
- Lexington, Kentucky (2015-ongoing)
- Charleston, South Carolina (2011-2012)
- Fargo, North Dakota (2009-2010)
- Owensboro, Kentucky (2009-2010)
- Louisville, Kentucky (2009-2010)
- Sacramento, California (2006-ongoing)
- Charlotte, North Carolina (2008-ongoing)
- Durham, North Carolina (2009)
- Harrisburg, Pennsylvania (2015)
- Napa, California (2014)
- Cedar Rapids, Iowa (2015-ongoing)

These conversions provide evidence that the trend in urban downtowns is to either maintain or re-establish two-way roadway operations. However, one common theme among these projects is the scope of the two-way

conversion. The street networks in question are much larger than Concord's proposed conversion of Union and Market Streets, impacting many more businesses.

Both one-way and two-way street systems have a number of technical advantages and disadvantages relating to transportation. Both systems can be engineered to be functional and as safe as possible for all modes of travel.

Some of the advantages and disadvantages of one-way and two-way street systems for this particular study area are as follows:

*Advantages of Two-Way Union and Market Streets*

- Create less-confusing circulation patterns which are more intuitive to users.
- Reduce indirect routes, which can reduce travel time, fuel consumption, and emissions.
- Allow for direct emergency vehicle access instead of a circuitous route.
- Maintain increased exposure of adjacent businesses on Union Street to passing motorists.
- Two-way streets with bike lanes or routes are preferable to bicyclists for wayfinding. Two-way streets are favored by transit users for improved transfers between routes.
- Provides consistent two-way traffic pattern along the entirety of the Union Street corridor, instead of two-way/ one-way/ two-way inconsistency from segment to segment.

*Disadvantages of Two-Way Union and Market Streets*

- Traffic congestion at the two-way intersections could generally be higher for a longer segment, but for this short segment, this is likely negligible.
- Angle parking on Union Street might be feasible under its current cross-section width, through this would require narrowing of both travel lanes and parallel on-street parking spaces.
- Two-way streets increase the number of conflict points at intersections, and may increase certain types of crashes, but again for this short segment, this is likely negligible.
- Reduces opportunity to increase traffic capacity if ever needed.
- With only one lane in each direction, traffic control may be required during emergencies.
- Two-way operation provides fewer opportunities for street trees along the street frontage, unless lanes are significantly narrowed.

*Advantages of One-Way Union and Market Streets*

- Fewer automobile conflict points at intersections and pedestrians need only watch for traffic in one direction. The pedestrian must know what direction traffic is moving for this advantage to be realized.
- Left turns into the street from driveways or side streets have fewer conflicts.
- Barbrick Avenue and Cabarrus Avenue can provide circulation for Union and Market Street users, if Union Street is marked southeast-bound only and Market Street is marked northwest-bound only.
- One-way streets generally provide more vehicular capacity and long lines of turning vehicles don't block through lanes.
- One-way streets can accommodate more on-street angle parking, and perhaps more sidewalk width if desired, on Union and Market Streets. Drivers have the option to park on both sides of the street.
- One-way Union Street could accommodate more street trees and provide a long-term tree canopy along the street frontage.

### Disadvantages of One-Way Union and Market Streets

- One-way street systems without uniform patterns are confusing, especially to visitors and to users who have been used to the current two-way operation for long periods of time.
- One-way streets can result in higher speeds and be perceived as a barrier to pedestrian crossings.
- One-way streets can increase certain types of pedestrian accidents.
- Higher speeds on one-way streets can increase crash severity, and one-way streets have the potential for wrong way, head-on collisions.
- Undesirable for transit users as they separate routes and transit stop locations.
- One-way streets can create circuitous emergency response routes.
- One-way streets that eliminate turning movements at some intersections will increase them at others.
- Reduces exposure of businesses to passing motorists.

### **Impacts on Parking and Pedestrian Facilities**

Maximizing on-street parking has been the primary driver of this analysis, followed by increasing the available sidewalk width along Union Street storefronts. Traffic volumes, capacities, and speeds are not necessarily the most pressing issue, as it is in many cases, making this a unique case. *The City has analyzed several alternatives for additional parking spaces with a conversion of Market and Union Streets to one-way and determined the following parking gains* that could be realized on Union Street, Market Street, Barbrick Avenue, and Means Avenue:

- Existing Parking Conditions: 104 total on-street parking spaces (Figure 2)
- Alternative 1: Maximize existing parking (no traffic conversions): 1 space gained on Union, 4 spaces gained on Market, 2 spaces gained on Barbrick, 3 spaces gained on Means; 114 total spaces (Figure 3)
- Alternative 2: Maximize on-street parking along Barbrick by converting to reverse-angle parking, 4 spaces gained (Figures 4 & 5)
- Additional Alternatives discussed at the end of this memo:
  - Convert **only Market Street** to one-way: 6 spaces gained on Market Street; 122 total spaces (Figures 7 & 8)
  - Convert both Union and Market Streets to one-way (clockwise): 23 spaces gained on Union Street; 145 total spaces (no parking permitted in front of Courthouse) (Figure 9)
  - Convert both Union and Market Streets to one-way (counterclockwise): 19 total spaces gained on Union Street; 141 total spaces (Figure 10)

The provision of sidewalk dining could result in the removal of up to 12 existing parking spaces on Union Street according to City analysis. Widening of the entire sidewalk without removing parking could be accommodated by converting to a one-way traffic operation along Union Street, and shifting the curb and parking by 12'. This would be a substantial capital improvement project involving underground utilities.

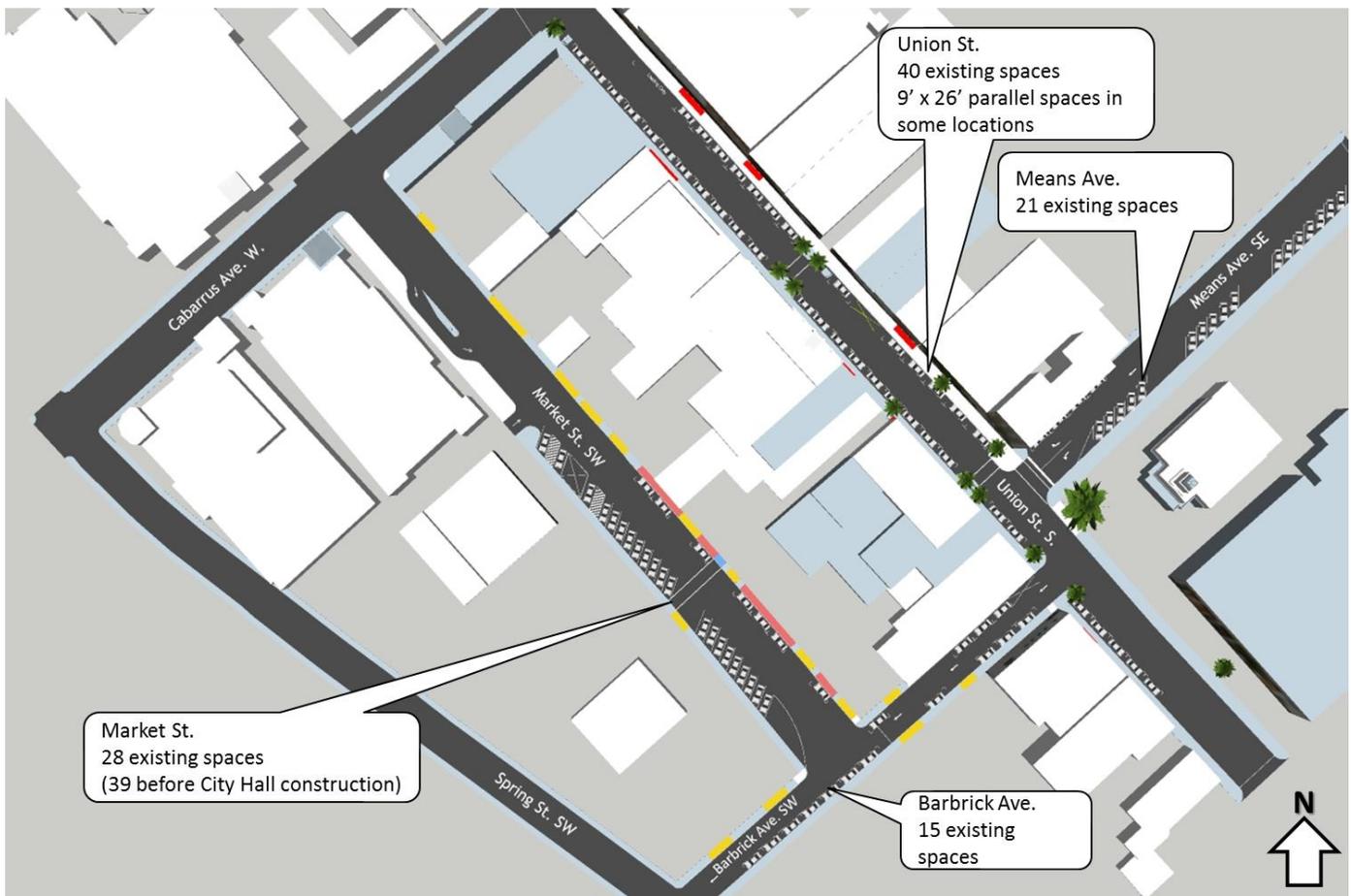
An alternative approach would be to maintain two-way operation but adjustments made to favor sidewalk width directly in front of restaurants, and maintaining parking spaces at other frontages. This approach could be challenging to implement without displaying favoritism towards existing restaurant business owners. The

resulting curbline would be irregular, alternating from parking to sidewalk, and back to parking. The irregular curbline would be minor inconvenience compared with the capital expense of relocating curb, gutter, and utilities.

Additional options for improving the sidewalk environment include the conversion of parking spaces into parklets (<http://www.seattle.gov/transportation/parklets/history.htm>), which are small extensions of the sidewalk into the roadway for seating, landscaping, or other sidewalk amenities. Parklets are best implemented as temporary, pilot projects to gauge public interest, and then transitioning to permanent over time.

A final consideration includes permitting limited sidewalk dining (one or two tables per restaurant) located adjacent to specific storefronts. Many will argue that diners feel uncomfortable as they sit closer to parked cars, so limiting the number of tables is the most appropriate compromise for diners, pedestrians, and parkers.

### Existing Conditions



**Figure 2. Existing Parking Conditions near Union and Market Streets**

Yellow curbfaces are no-parking areas

Alt. 1 – Add 10 spaces

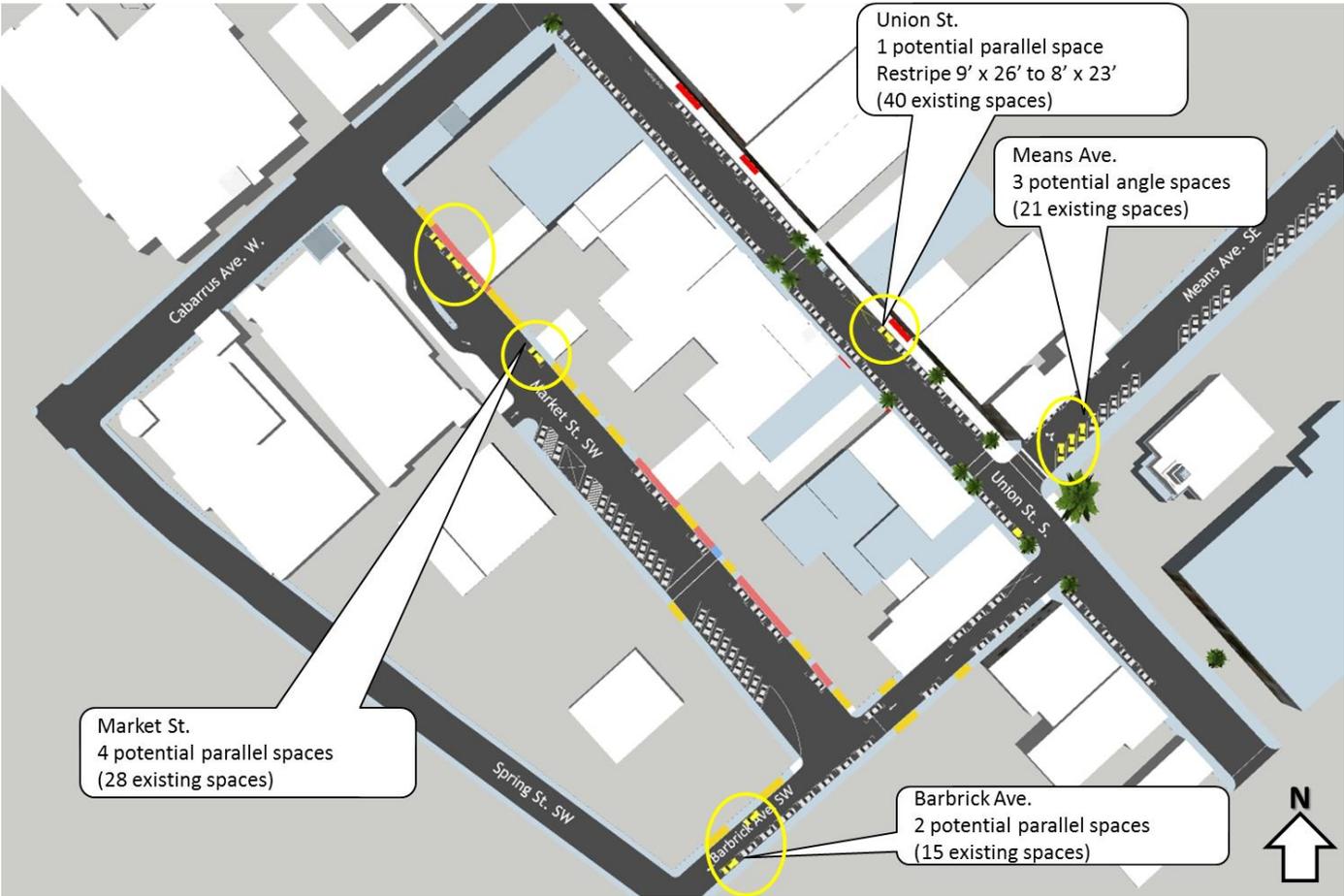
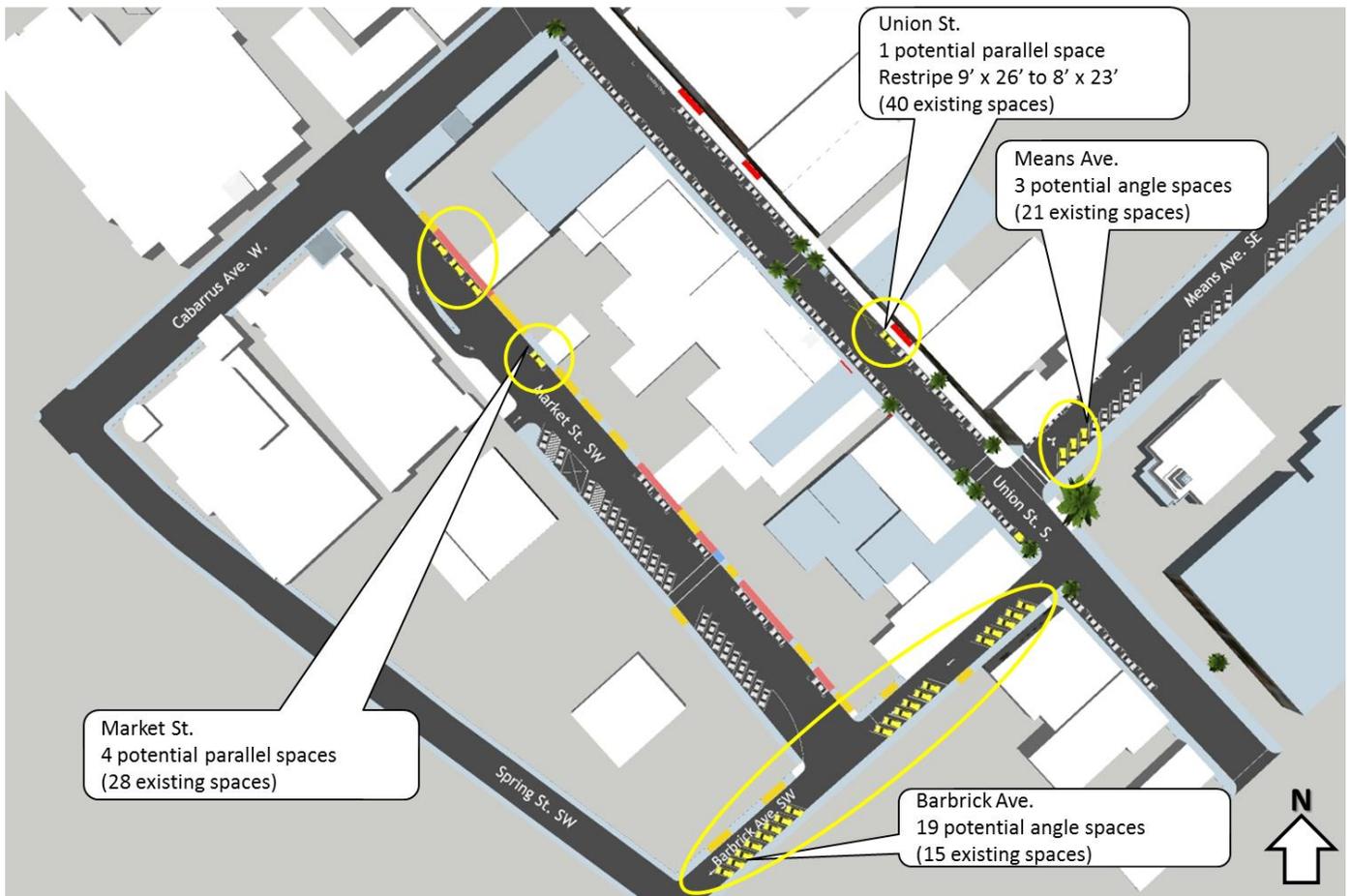


Figure 3. Alternative #1 Parking Design for Union, Market, Means, and Barbrick

New spaces gained are circled in yellow .

Alt. 2 – Add 12 spaces



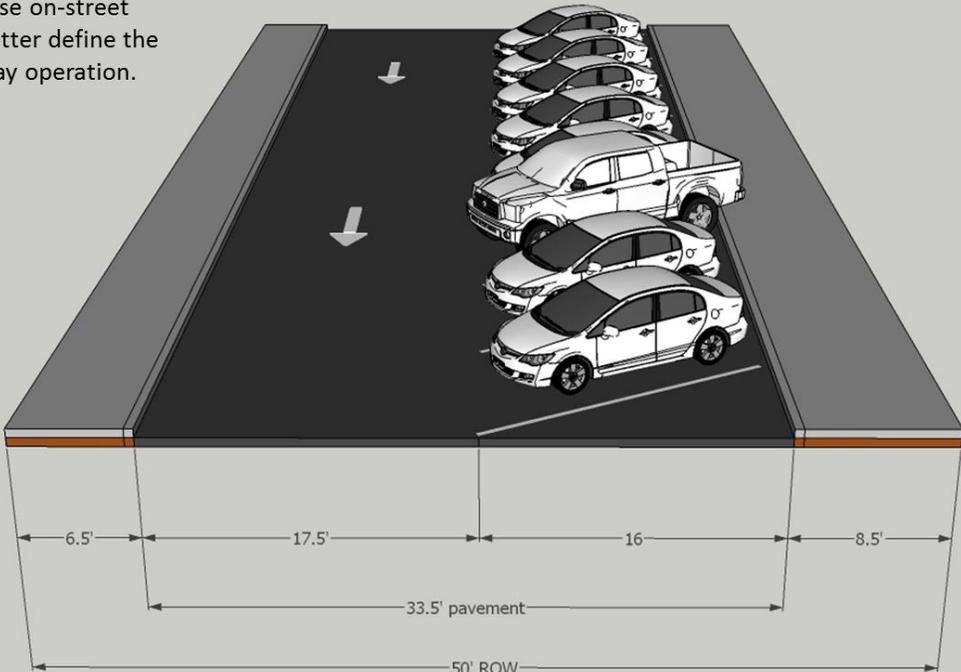
**Figure 4. Alternative #2 Parking Design for Barbrick Ave**

New spaces gained are circled in yellow; Barbrick Ave is a net gain of +2 over the alternative #1 design, and maintains one-way traffic flow southwest-bound.

Includes alternative #1 design for Union, Market, and Means Streets.

### Barbrick Ave. – Potential Future Conditions

Parking along Barbrick Ave. parking could be converted to 60-degree reverse angle parking. This will increase on-street parking and better define the street's one-way operation.



**Figure 5. Alternative #2 Parking Design for Barbrick Ave – Street Cross-section**

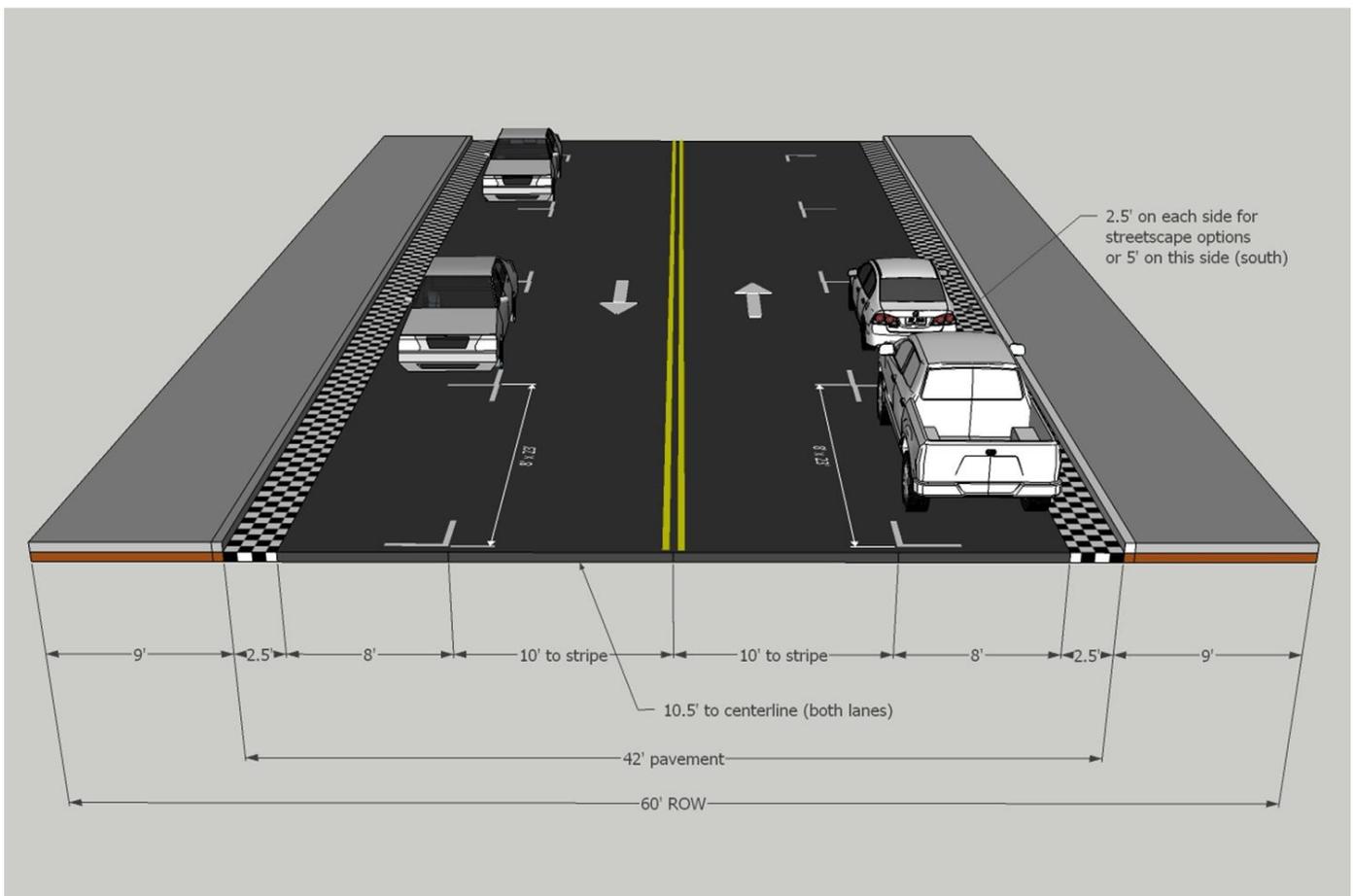
Four new spaces could be gained by this redesign.

## Narrowing of Travel Lanes

The City has also discussed narrowing of travel lanes along Union St from the current 11.5' width to 10' wide in conjunction with narrowing of the on-street parking stalls from the current 9' width to 8' wide. This alternative would allow for a 2.5' shift of (both sides of) the curb & gutter, storm drain utility, and sidewalk, as well as increased street tree infiltration areas along both sides of Union St (Figure 6).

While the ability to maintain two-way operation is favorable, 10-foot travel lanes can create disadvantages such as the potential for sideswipe collisions, difficulty for service trucks to make deliveries, possible requirements to restrict any truck traffic larger than a smaller box-type or delivery truck, and visibility issues if these lanes are narrowed. This alternative is feasible, and would have to be evaluated by a certified traffic engineer, with approval from the City engineer, and District engineer (NCDOT).

### Union St. – Potential Future Conditions



**Figure 6. Potential Union Street Cross Section Alternative**

Potential width gained is indicated in white/ black checkerboard texture, totaling 5' of sidewalk width.

## Conversion Recommendations

It is not recommended to convert Union or Market Streets from two-way to one-way operation for several reasons, most notably:

- The short one-way segment length causes inconsistency along Union Street, which could lead to confusion and wrong-way driving/ crashes.
- On-street parking gains could be realized on adjacent streets or through other parking maximization techniques (narrowing lanes, wayfinding to adjacent lots, valet, etc.), allowing for more street trees, sidewalk widening, sidewalk dining, and parklets.
- Visibility of businesses on Union Street would be significantly reduced due to loss of all traffic heading in the opposite direction of the one-way street alignment.

It appears that opportunities are available to narrow the two lanes of Union Street and use the narrowed-lane width to provide, parklets, street tree spaces, and/ or wider sidewalks along the corridor (Figure 6). *This concept is preferred to a one-way conversion and should be further studied from an engineering perspective before any conversion is considered.*

While maintaining two-way operation is the recommended alternative, if a one-way conversion was to take place, *Market Street is a more viable candidate* than Union Street. Market Street does not have the business frontage of Union Street, and the City Hall drive-thru bill payment facility can be accommodated by either a one-way or two-way facility. Market Street would operate more efficiently as a one-way street in a northwest-bound direction, away from Barbrick Avenue toward Cabarrus Avenue. This would allow for a familiar clockwise circulation pattern for drivers making only right-turns: Barbrick Avenue, right to Market Street, right to Cabarrus Avenue, and right to Union Street (Figure 7).

## **Additional Alternatives Considered**

If Market Street traffic flow were reversed to southwest-bound, drivers would have to turn right on Barbrick Avenue and utilize Spring Street and either Corban Avenue or Cabarrus Avenue to return to Union Street, resulting in increased driver confusion (Figure 8). This is not a preferred alternative.

If Union Street were to be converted to one-way operation, in keeping the pattern established by Figure 7, it would operate more efficiently as a one-way street in the southeast-bound direction. This would allow the following circulation pattern: Union Street, left to Barbrick Avenue, right to Market Street, right to Cabarrus Avenue, and right to Union Street. This direction of operation would also allow better one-way operation from Cabarrus Avenue all the way to Corban Avenue, if desired (Figure 9). This is not a preferred alternative, however clockwise direction would be preferable.

If the City desired to reverse the directions of both Union and Market Streets in a one-way scenario, where Union Street operated in a northwest-bound direction and Market Street operated in a southeast-bound direction, consideration should be made to reversing the operation of Barbrick Avenue from southwest-bound to northeast-bound. That conversion would allow for counter-clockwise traffic circulation (Figure 10). Failing to reverse Barbrick Avenue, vehicles along Market Street would be forced to turn right on Barbrick Avenue and utilize Spring Street and either Corban Avenue or Cabarrus Avenue to return to Union Street, resulting in additional turns and increased driver confusion.

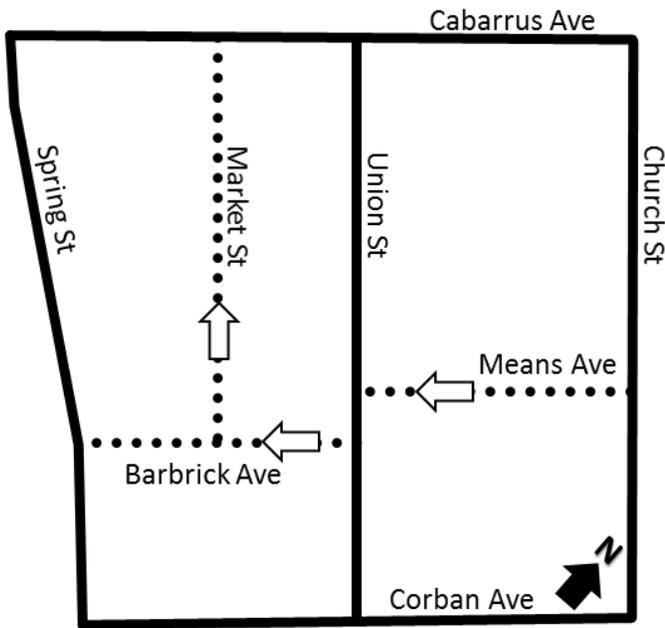


Figure 7. Market Street One-way (northwestbound)

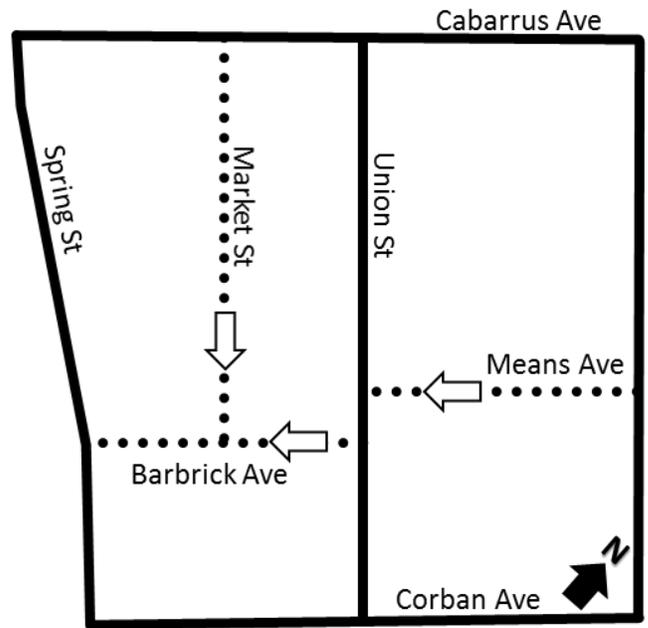


Figure 8. Market Street One-way (southwestbound)

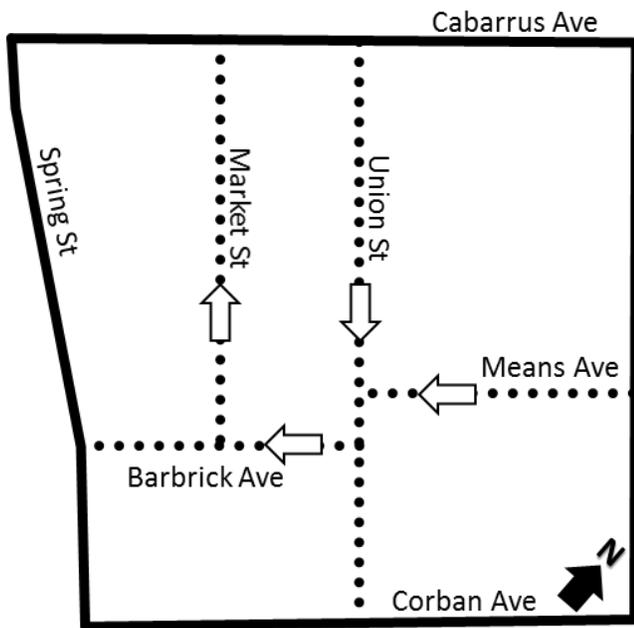


Figure 9. Union and Market Street One-way (clockwise)

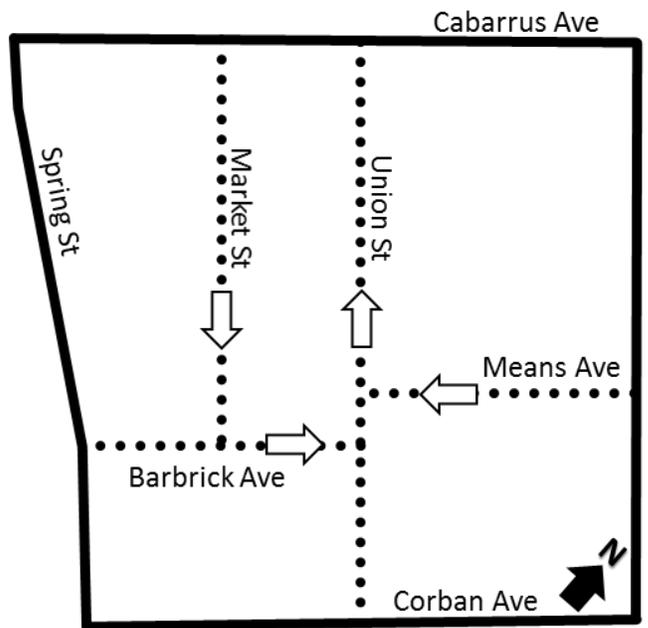


Figure 10. Union and Market Street One-way (counter-clockwise)

Note: For illustrative purposes only; none of these are to be considered a preferred alternative.



# **Appendix E – Wayfinding Memorandum**

To: City of Concord  
 66 Union St. South  
 Concord, North Carolina 28025

Date: June 25, 2015

Memorandum

Project #: 37476.00

From: Anthony Tagliaferri, PE

Re: Downtown Concord Vehicle and Pedestrian Wayfinding

The City of Concord is considering its downtown parking and wayfinding networks. VHB Engineering NC, PC has been retained to investigate these networks and provide a planning-level analysis and recommendations that are not to intended to be used for construction within the right of way. Figure 1 provides a visual perspective of Concord's downtown parking system and existing pedestrian wayfinding signage.

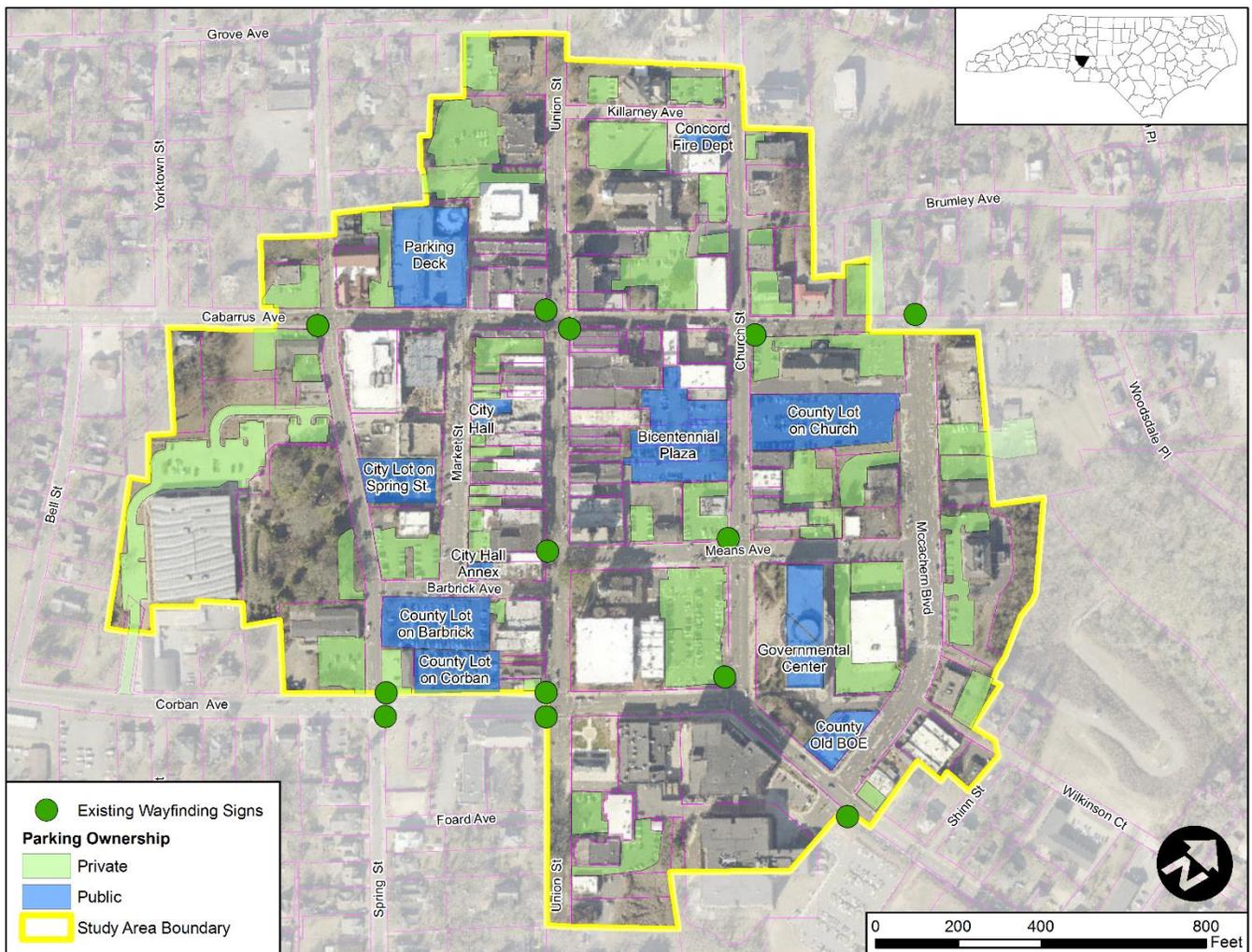


Figure 1. Downtown Concord Parking and Wayfinding.

## Vehicular Wayfinding

Drivers entering downtown Concord have a variety of parking options, especially on weeknights and weekends, throughout the downtown core. It may not always be obvious to the driver which lots are open to them and at what times. Additionally, there are varied time limits for parking in different locations.



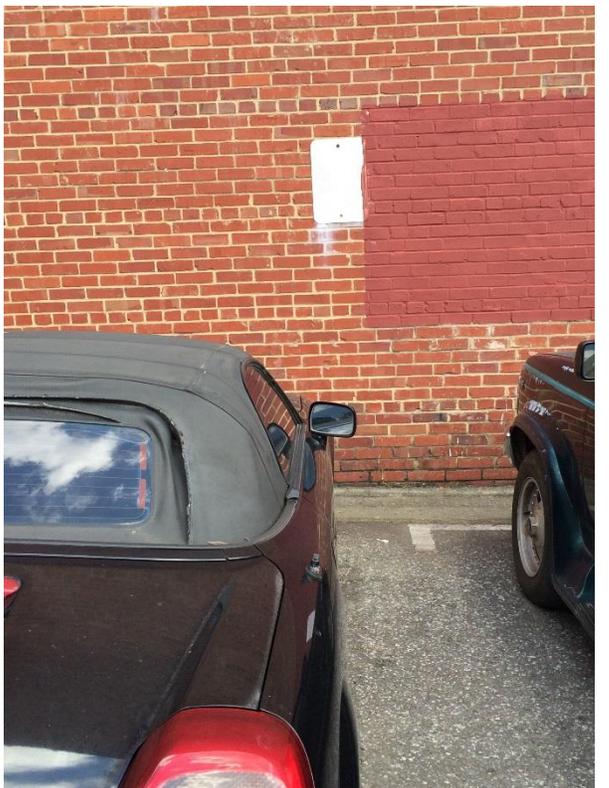
The two signs above are found at the entrances to two separate Cabarrus County parking lots. The lots appear welcoming to drivers, with the large, familiar green “P” prominently displayed. However, the parking restrictions, which are quite strict on weekdays during business hours, are printed toward the bottom of the sign, in a font that is very small for a driver in motion to read. The driver may only be capable of reading this text after parking and approaching the sign on foot.



The Bicentennial Plaza parking lot and Cabarrus Avenue parking deck are the most accessible parking facilities to drivers on weekdays during business hours. These lots display 3-hour parking restrictions that are again difficult for a driver in motion to read. The picture above left is the sign displayed to drivers at the entrance to the Bicentennial Lot and the picture above right displays the small bollard sign displayed to drivers upon entering the Cabarrus Avenue Deck. Both parking facilities provide the driver a clear message that public parking is available, but the restrictions attached to each facility are much smaller and difficult to read.

The Bicentennial Lot contains a portion of reserved parking spaces that are not open to the public. These spaces are marked on the pavement but the driver does not anticipate them until he or she is in the lot and arrives at the spaces. Larger signs notifying drivers of both the time and space restrictions would help wayfinding at all public lots. The large green “P” is inviting, but drivers are not always welcome where they are being invited. All public parking lots could benefit from a more consistent message to drivers as to their limitations before the driver enters the facility.

Private parking is much more restrictive in most cases. Almost all lots are restricted in one way or another, and many signs are faded, small, or otherwise difficult to read. Most private parking signs do not follow guidelines from the Manual on Uniform Traffic Control Devices (MUTCD) and violate driver expectation. This mix of different signs may be contributing to the perception that “there is no place to park downtown.” Any efforts to work with stakeholders to upgrade private parking and wayfinding signs to a more consistent standard could prove beneficial to those seeking parking downtown. The following examples of mixed parking signage types and inconsistent messages were spotted within downtown Concord:





## Pedestrian Wayfinding

Once parked in a space or once a pedestrian or bicyclist has entered downtown Concord, an existing *pedestrian wayfinding system* is provided to guide users of municipal facilities. These signs are attached to traffic signal or street light poles. These 13 guide signs provide clear messages to users and are well-crafted and located.



There is limited available information for the pedestrian toward non-municipal destinations. Some cities, such as Charlotte, have introduced a “directory” style pedestrian wayfinding system, similar to that shown below:



The scope and level of detail of a Concord pedestrian wayfinding system could be narrower than that of Charlotte, but it could become a mechanism in which attractions, restaurants, and shops could provide better guidance to patrons once they have parked in strategic locations.

Signage could be created that minimizes the City's or CDDC's necessary maintenance to a semi-annual, annual, or biannual update. Sign assemblies, similar to those found at many bus shelters, with a weatherproof enclosure housing a poster-grade color map could provide a strong message to patrons while being easy to update or maintain. Additionally, these poster-grade maps could be updated with technology such as QR code links or other web links to allow anyone to scan the link and receive a replica of the map in digital form on a smartphone or tablet.

## Other Considerations and Recommendations

Pedestrian traffic signals were not observed at any signalized crosswalks in the downtown core area, with the exception of the intersection of Corban Avenue and Church Street. Pedestrian traffic signals with countdown displays can provide a measure of comfort for the pedestrian that has parked a short distance away and must navigate to his or her final destination through one or more of these signalized intersections.

The MUTCD regulates only signs that are within the public right-of-way (directly visible from the street), and does not have authority over parking signs on private property. The MUTCD does, however, provide a standardized, consistent message for the City to use as a template for consideration within its development ordinance guidelines. This should not preclude the City from encouraging the use of MUTCD-compliant sign types, with standard font sizes and design. The City may also revise their downtown development ordinance to *require* MUTCD-compliant signage for private businesses. Anything less than an ordinance would merely be a recommendation, not a requirement. Signage can be adorned with additional backplates or external designs that maintain the MUTCD-standard message while providing a personalized look for the City and especially the downtown area. Even something as simple as adorning the top of a parking sign with a City logo can provide a decorative touch while maintaining the driver's focus on the sign's message and consistency.

The current pedestrian wayfinding signage installed by the City is a significant aid to those who have parked their car or entered the downtown core area on foot or by bicycle, if they are navigating to a municipal facility. Consideration of a more robust pedestrian wayfinding system, providing the user visual access to more downtown attractions, could prove beneficial to efforts to encourage parkers to use public parking facilities that require a short walk to the downtown core area. This improved vehicular wayfinding system (Figure 2) should direct visitors from the north (Church St heading southbound) to the Cabarrus Ave Garage. Visitors arriving from the east (Cabarrus Ave heading westbound) and west (Cabarrus Ave heading eastbound) should be directed to the same parking destination. Visitors approaching from the south (Corban Ave or Union St heading northbound) should be directed to either the County Lot(s) on Barbrick and Corban, or the County lot on Church. This type of system encourages unfamiliar users toward peripheral parking areas, though they may still choose to search for on-street spaces if they desire.

Existing vehicle wayfinding signage does lead the user to open parking facilities, but often the welcoming large green "P" is followed by limiting restrictions in small fonts or on small signs that the driver may not see or read correctly, or read just enough to create confusion and uncertainty when navigating downtown. Parking area signage in private parking lots carries many mixed messages, many of which are not compliant with the MUTCD. This inconsistency can further discourage or confuse drivers navigating through downtown. Efforts to create a clear, legible, and consistent message across parking signage could prove beneficial to users of downtown Concord parking facilities.

Additionally, the Cabarrus County Convention and Visitors Bureau (CVB) has been developing a county-wide wayfinding system to bring travelers to certain areas of the County. Downtown Concord will be a focus area of this wayfinding system, where the City's and CDDC's wayfinding efforts can complement this regional system. Collaboration with the CVB's work can provide a specific downtown message that is consistent with the CVB's efforts.

For examples of municipal wayfinding systems, the City should view projects undertaken by Cloud Gehshan Associates (<http://cloudgehshan.com/work/by-client>) or similar design firms that develop comprehensive signage plans.

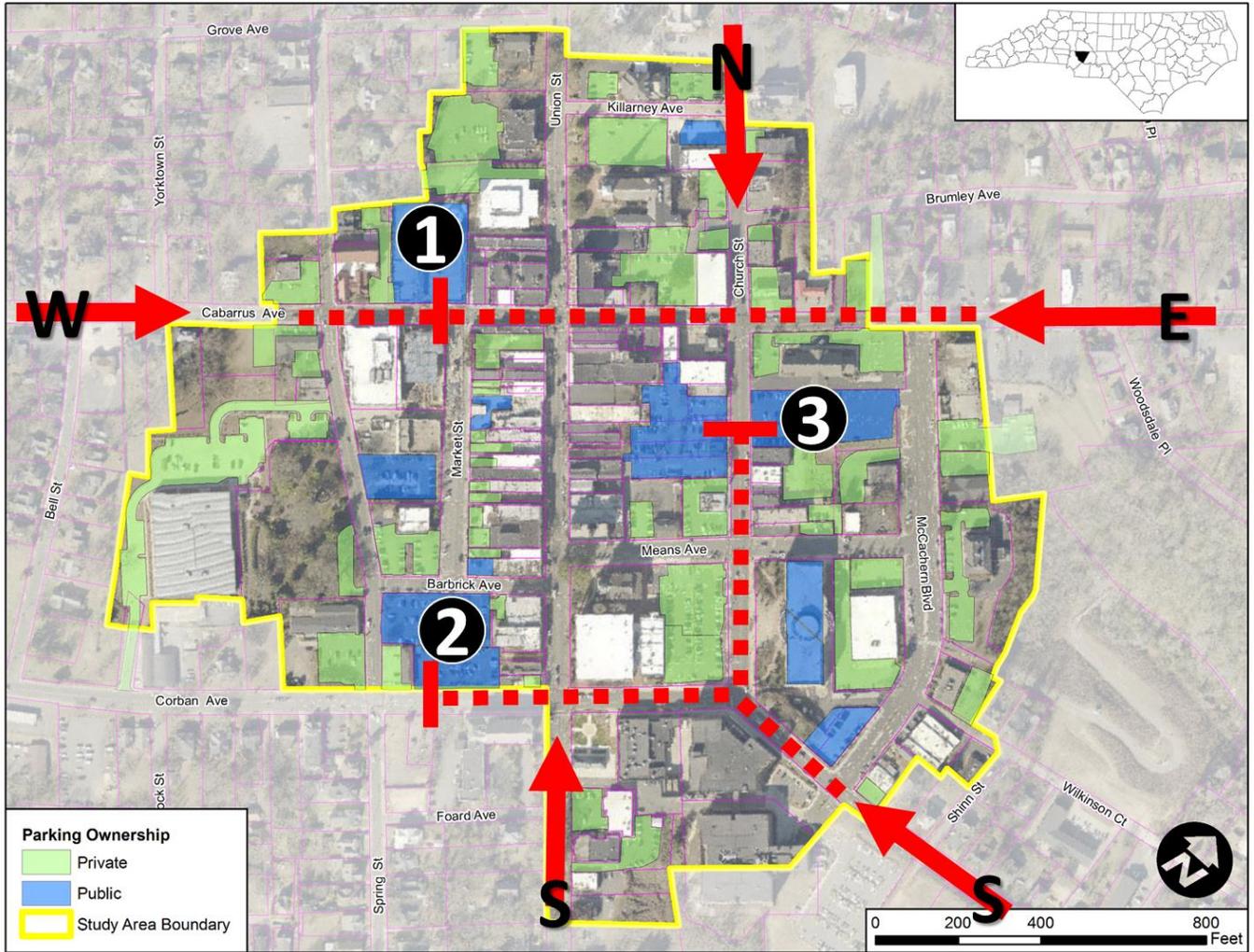


Figure 2. Vehicular Routing to Nearest Public Parking Areas by Direction.