



System Redesign Study

Executive Summary

May 2020



Executive Summary

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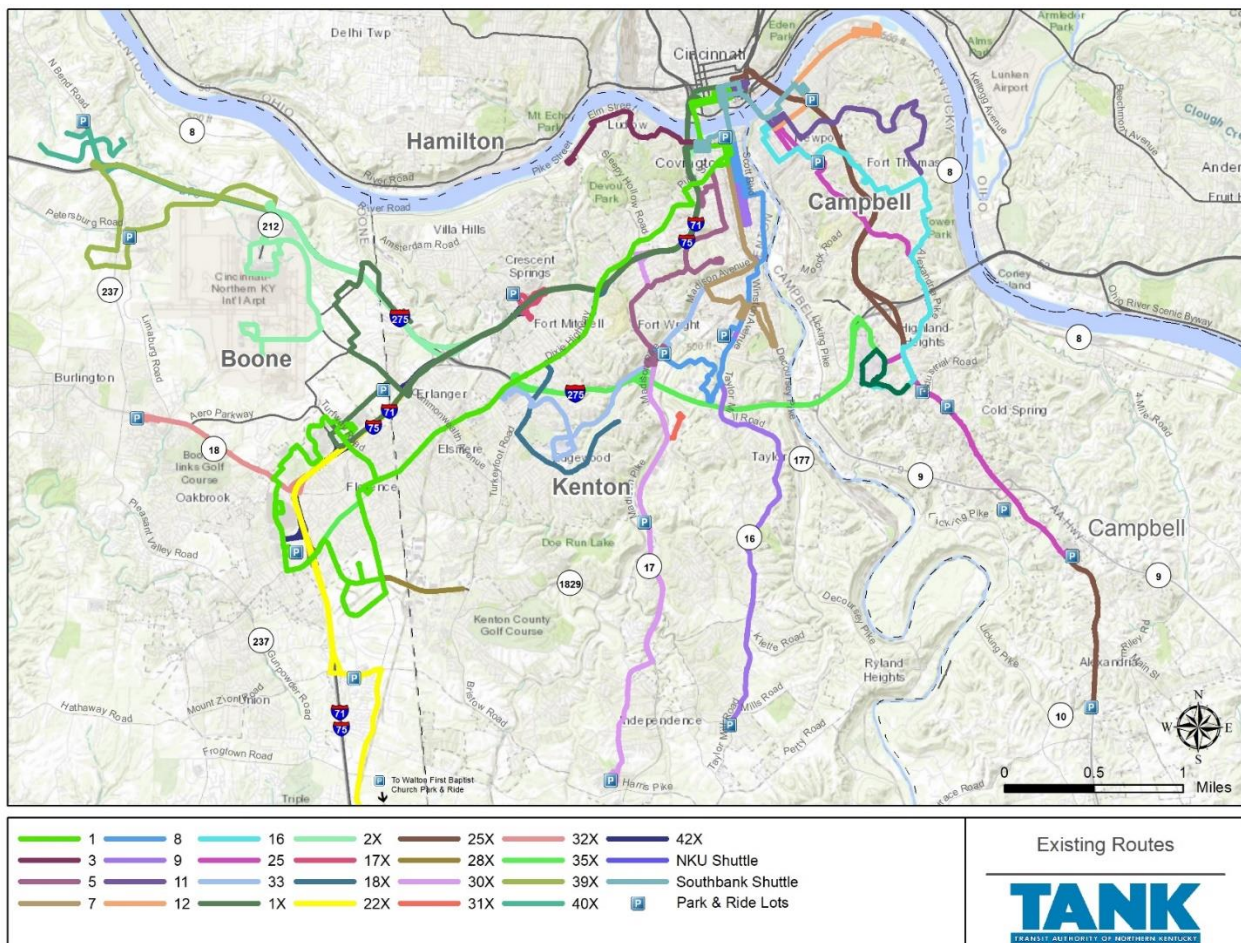


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SECTION 1: INTRODUCTION

The Transit Authority of Northern Kentucky (TANK) has undertaken a System Redesign Study to help re-imagine the agency’s current network structure. The expectation for the System Redesign Study is that a newly modified and enhanced system and service structure for TANK will have a near-term beneficial effect on service productivity and efficiency, while also impacting transit ridership in a positive fashion by improving transit operability and providing better mobility options for residents and visitors in the Northern Kentucky region. A map of TANK’s existing network is shown below in Map 1-1.

Map 1-1: TANK Existing Network



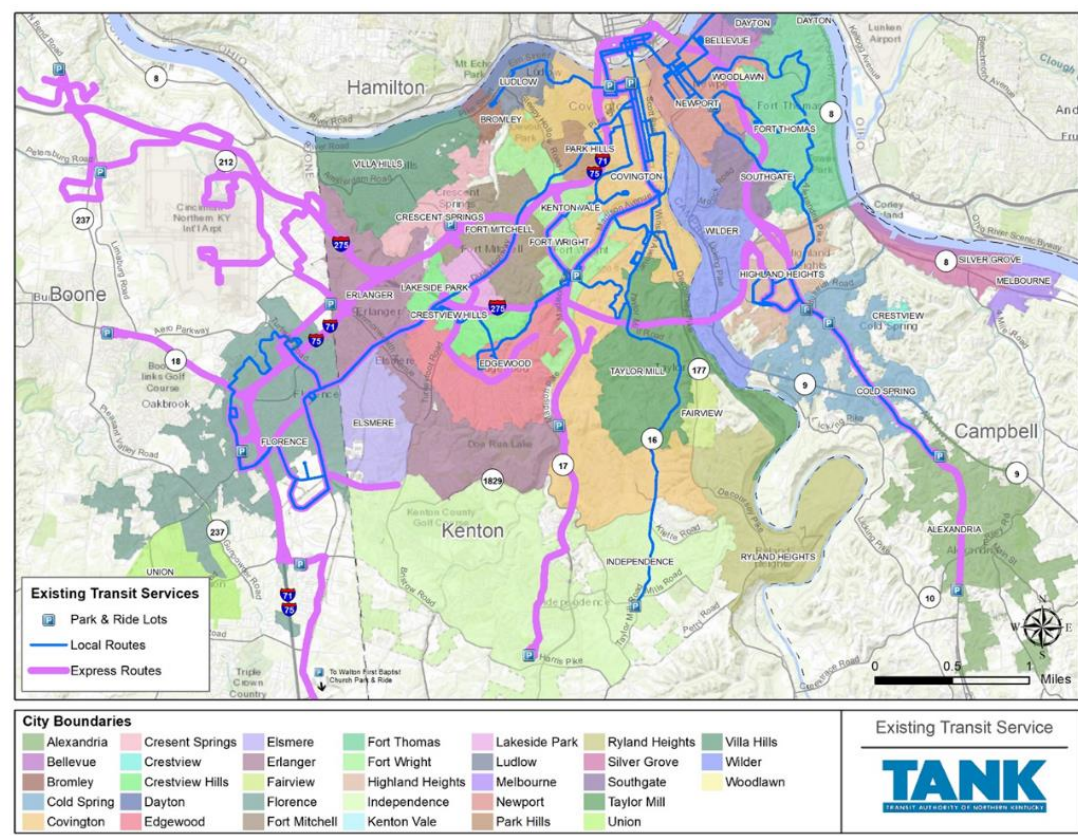


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SECTION 2: SYSTEM PROFILE

TANK operates in Northern Kentucky and connects to Cincinnati, Ohio, primarily serving the Kentucky counties of Kenton, Boone, and Campbell. The whole service area is bisected by the Ohio River, which separates TANK’s primary tri-county Kentucky service area from Cincinnati, as shown in Map 2-1. In addition to connecting workers to jobs, TANK aims to provide connectivity within its many residential suburbs and serve as a means of access to the region’s major cultural, sports, civic, and economic activities.

Map 2-1: City Boundary Map

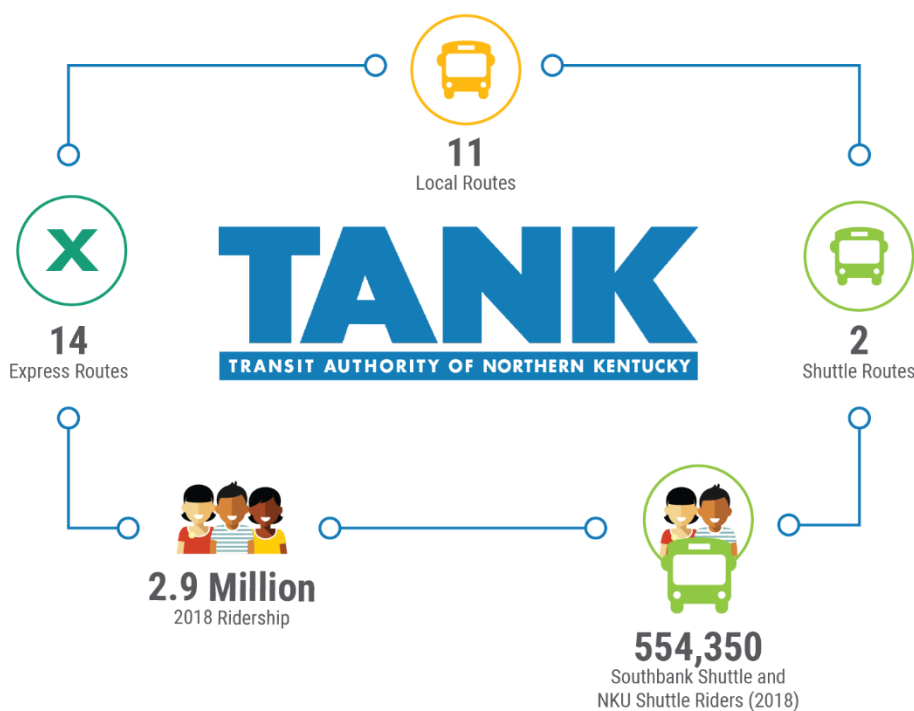


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2.1 System Characteristics

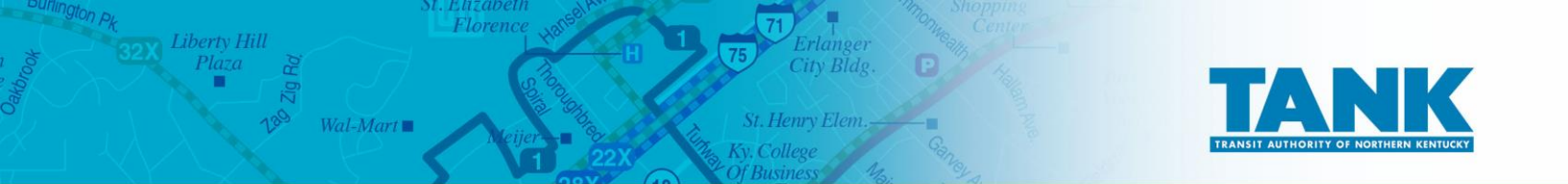
TANK offers a variety of services through its public transportation network. Currently, the agency operates 11 local routes, 14 express routes, and 2 shuttles (Southbank Shuttle and the Northern Kentucky University Campus Shuttle). Additionally, TANK provides Americans with Disabilities Act (ADA) complementary paratransit service via its RAMP service. Some of TANK’s key characteristics are shown below, in Figure 2-1.

Figure 2-1: System Characteristics



2.2 Community Characteristics

A review of TANK’s community characteristics was conducted using the most recent data from the American Community Survey (ACS) five-year estimates. Some of the key community characteristics are shown in Figure 2-2. Also, it is important to recognize that all areas of the Northern Kentucky region have experienced moderate population and job growth since 2010. It is likely that this growth can be largely attributed to an increase in industrial uses/entities in the region, such as Amazon and DHL, which are both located near the Cincinnati/Northern Kentucky International Airport (CVG) in Boone County.



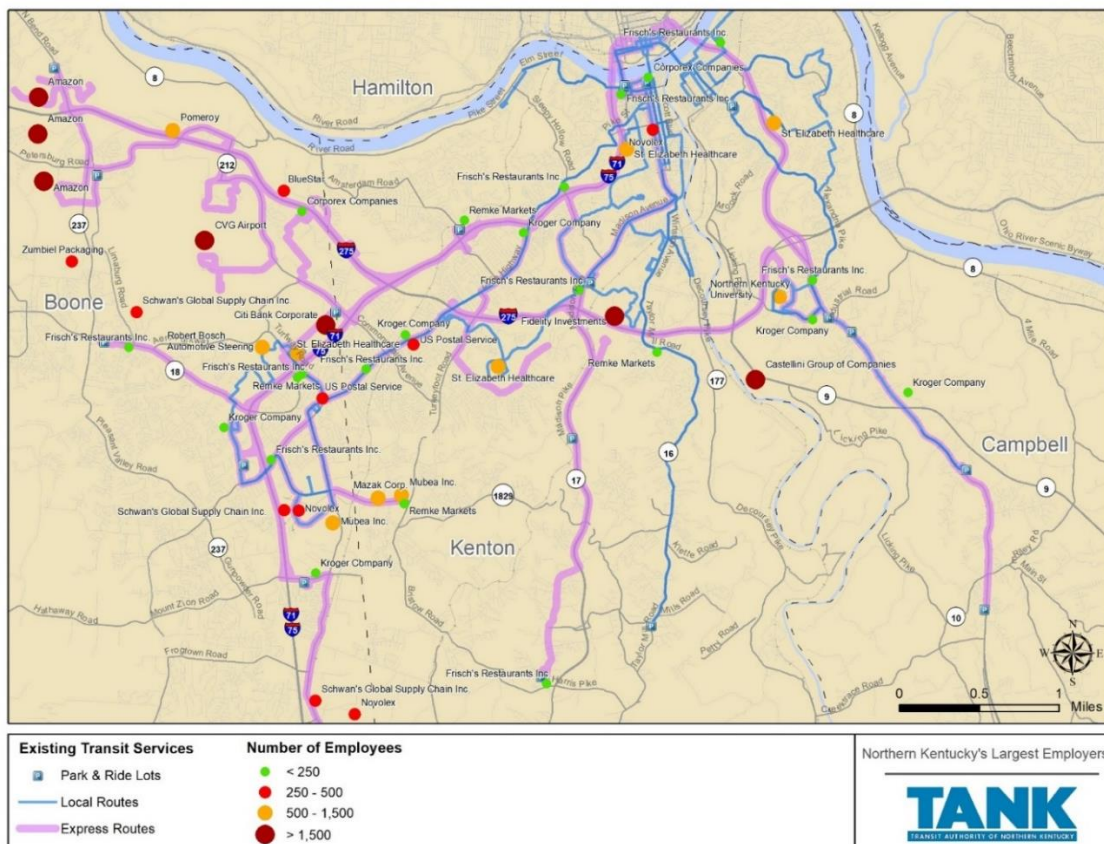
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Figure 2-2: Community Characteristics



A geographic assessment of where major trip generators are located in a transit agency’s service area in comparison to its route network is typically conducted to determine how potentially effective the existing transit service is at serving the key places that people in the community want and/or need to access. Map 2-2 shows the largest employers in TANK service area, which often can be large transit trip generators depending on the nature of the business or activity there.

Map 2-2: Major Trip Generators

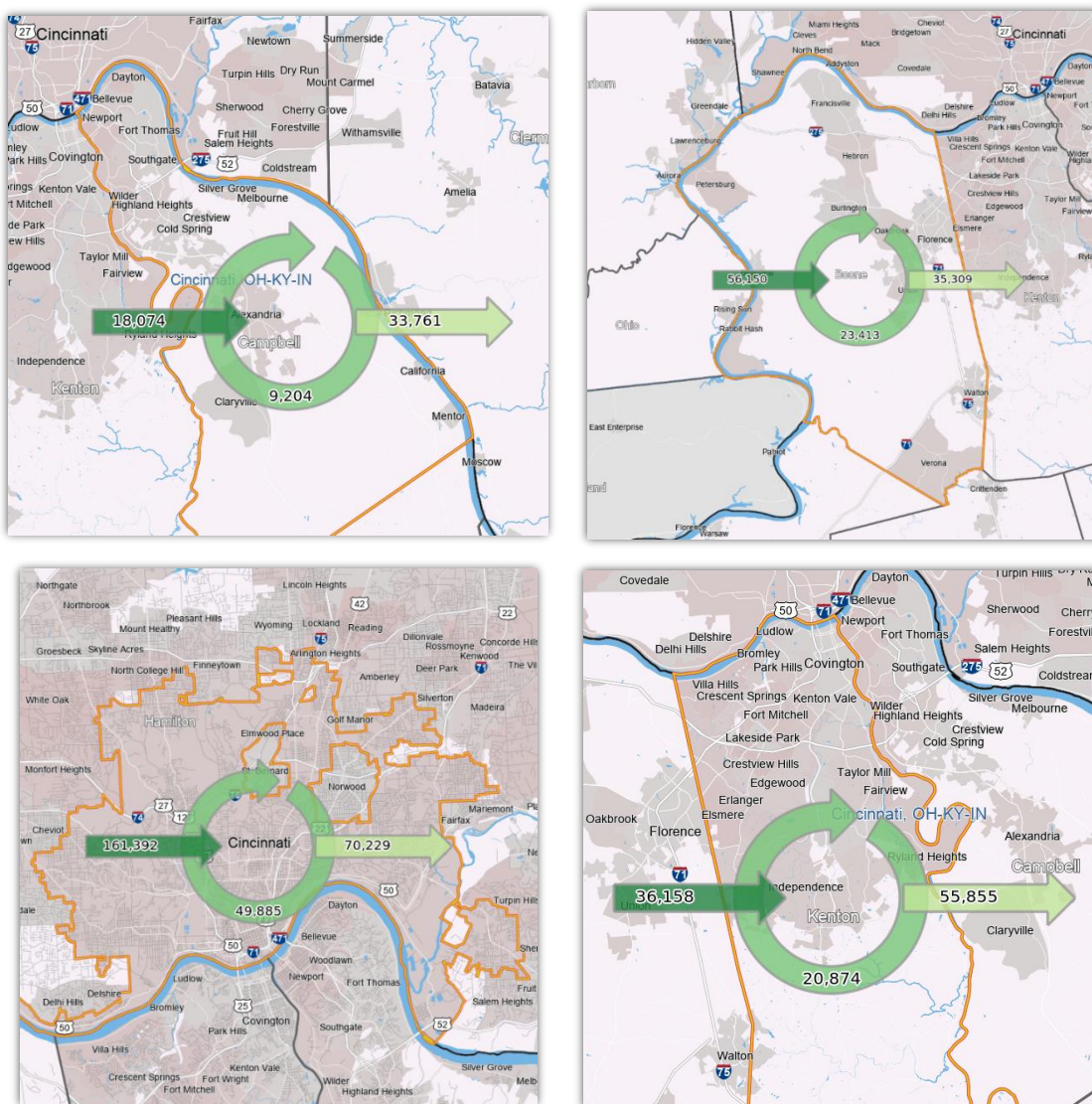


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2.3 Commuting Patterns

Commuting trends were evaluated for persons within the TANK service area, as well as the commuting trends occurring within and between each county. Transportation to work trends among the three Northern Kentucky counties are very similar, whereas the City of Cincinnati has a more diverse mode share, with more transit use and pedestrian activity. Specifically, the use of public transit is over three times higher in Cincinnati than for any of the counties in the service area, and the rate of walking is, on average, over twice as high. Figure 2-3 graphically depicts data from the Longitudinal Employer-Household Dynamics (LEHD) database, specifically origin-destination employment statistics. (Note that the graphics do not indicate the specific directionality of the worker flows within each county.)

Figure 2-3: LEHD Commuter Flows





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SECTION 3: PUBLIC OUTREACH

Extensive public outreach activities were conducted for the System Redesign Study. The process was designed to ensure that feedback could be received and accumulated continuously throughout the redesign process from not only key stakeholders and agency representatives, but also from residents throughout the service area. Additionally, TANK staff and operators were interviewed to ensure that their voice also was represented in the system redesign effort.

Table 3-1 presents a “quick glance” at the extent of public and agency comments that were received about the redesign process during the various events that were held from August 2019 through January 2020.

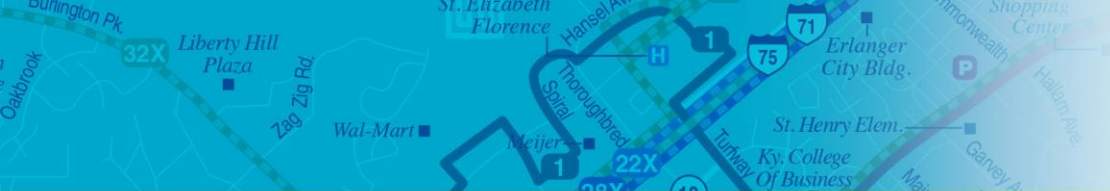
Table 3-1: Public Comments Received

TYPE AND NUMBER OF COMMENTS RECEIVED
• 414 emails
• 40 voicemails
• 10 feedback forms (Public Open House on August 29, 2020)
• 35 feedback forms (Public Open House on January 7, 2020)
• 25 Facebook comments
• 15 Fiscal Court public comments
• 10 official city/agency letters
• 7 hand-written letters
• 2 petitions

Table 3-2 shows when each of the redesign meetings, workshops, and other outreach opportunities were held. Many of these meetings also provided an opportunity for in-person feedback.

Table 3-2: Dates of Public Feedback

DATE AND VENUE TYPE	
August 28 & 29, 2019	Stakeholder meetings
August 29, 2019	Public Open House (33 attendees)
January 7 & 8, 2020	Stakeholder meetings
January 7, 2020	Public Open House (97 attendees)
January 8, 2020	TANK Board Meeting
January 9, 2020	Kenton County Fiscal Court Meeting
January 14, 2020	Boone County Fiscal Court Meeting (2 citizens commented)
January 15, 2020	Campbell County Fiscal Court Meeting (13 citizens commented)
February 5 and 10, 2020	City of Covington Meetings



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3.1 Study Goals and Strategies

Based on the issues and needs consistently expressed by stakeholders, agency representatives, TANK staff and operators, and the public, a series of goals were developed to help govern the process of the redesign effort. The goals are presented in the following bullets subdivided into the three key overarching goal areas of Efficiency, Effectiveness, and Speed/Reliability.

- Efficiency
 - Reduce redundancy of route coverage
 - Reduce cost per rider
 - Reduce county subsidy per rider
 - Achieve more sustainable financial and ridership projections
- Effectiveness
 - Enhance network connectivity
 - Improve access to jobs
 - Improve access to higher frequency transit in high density residential areas
 - Make system easier to understand and use
- Speed/Reliability
 - Improve travel times, especially to jobs
 - Improve directness of travel



Based on the established goals to govern the redesign process, potential strategies then were identified to help empower the process to aggressively address the goals. The strategies utilized are as follows:

- Focus on frequency and efficiency over coverage, especially in core
- Eliminate highly unproductive service
- Reallocate resources into key routes to enhance frequency and span of service
- Consolidate local service in major urban corridors and improve frequency
- Consolidate and shorten park-and-ride express service
- Establish a specific identity/purpose for each route (to cut down on redundancy and facilitate use)
- Provide better service and access to CVG
- Conduct driver reliefs on the road to reduce out of direction travel
- Better delineate between local and express services to facilitate use and cut down on overlapping routes into downtown core
- Tighten RAMP's ADA boundary definition to fit any proposed new (and likely smaller) fixed-route service area
- Implement flex circulator services where appropriate to fill in service gaps efficiently (as resources allow)



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- Establish transit infrastructure and bus stop guidelines to improve the TANK brand recognition, accessibility of bus stops, and improve customer amenities
- Expand use of technology to facilitate enhanced awareness of services, improve use of TANK services, and make it more convenient and attractive as a mobility option

3.2 Evolution of the 2020 Redesign Network Based on Input

Due to the specific focus of the study, transit routing and operating modifications were analyzed and prioritized throughout the project to work towards the development of an implementable set of service recommendations. Extensive data collection and analysis were performed in the early stages of the project to evaluate existing service performance, coverage, and potential new markets, as well as determine whether existing service levels and types were effective in providing the necessary mobility to the community.

Based on this preliminary analysis of the TANK system and its operating environment, as well as the input received from the first wave of outreach in August 2019, the project team developed an initial network concept that was presented to TANK staff. Though well-received, the concept was determined to be more appropriate as a future system vision and it became termed the Aspirational Network. Based on staff input, this network was modified and the new network became known as the Proposed 2020 Redesign Network, which is shown in Map 3-1.

During the second wave of outreach in early January 2020, a significant level of interest was shown in the proposed revisions. The input levels were so extensive that TANK staff elected to extend the comment period to the end of that month, primarily to allow residents to provide feedback who were unable to attend the prior outreach events, as well as give more time for agencies and stakeholders to provide additional input concerning their needs based on the newly-proposed network.

Throughout the extended comment period, TANK staff received 414 emails, 40 voicemails, 35 feedback forms, 25 Facebook comments, 15 Fiscal Court public comments, 10 official city/agency letters, and 7 hand-written letters. In addition, TANK staff also held two additional meetings with the City of Covington. Table 3-3 provides a breakdown of the number of comments received by route during the extended comment period.

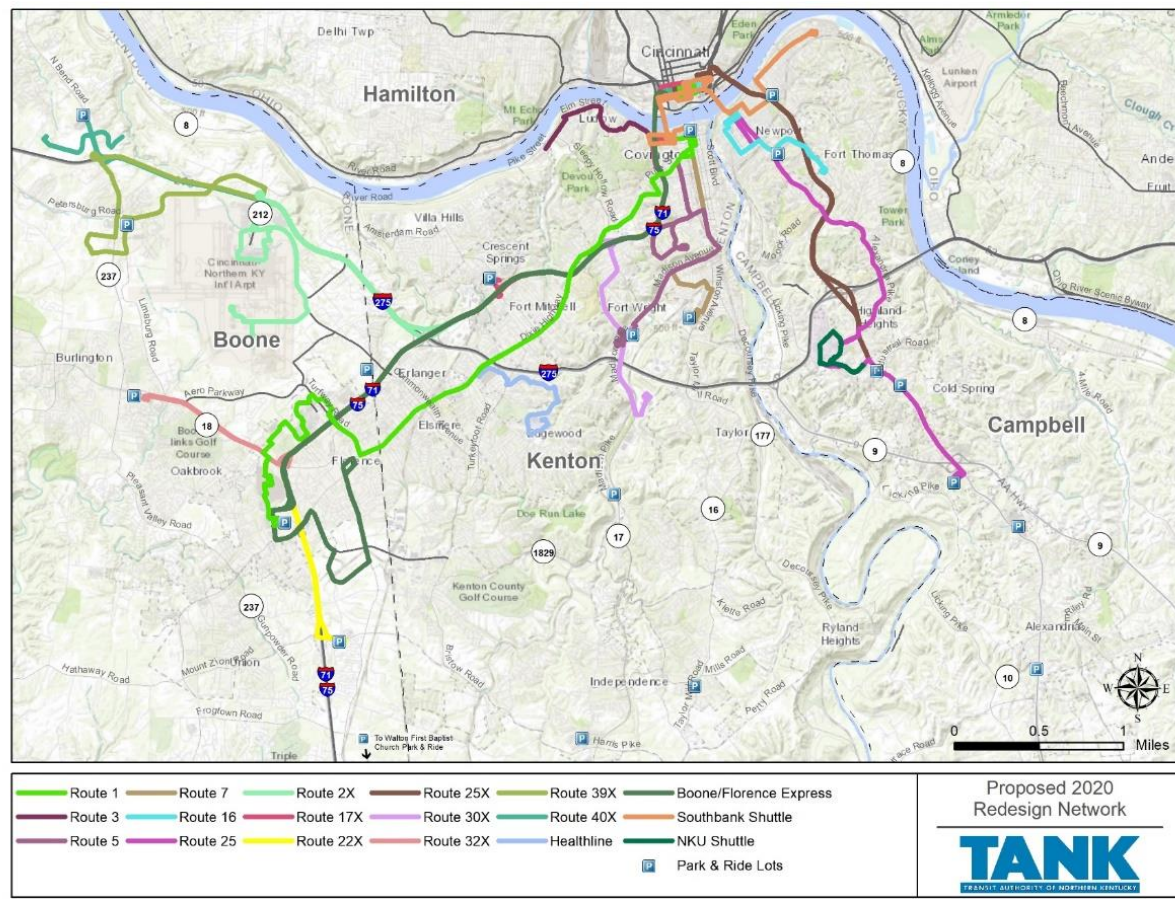
Table 3-3: Comments Received by Route

#1	#5	#7	#8	#9	#11	#12/SBS	#16	#25	#33
19	8	10	113	14	23	53	23	59	16
#1X	#2X	#17X	#18X	#22X	#25X	#30X	#35X	#42X	General
30	6	18	10	8	22	18	22	15	39



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Map 3-1: Proposed 2020 Redesign Network



Based on the additional input received during the extended comment period, the Proposed 2020 Redesign Network was tweaked further to help address the key concerns expressed about specific modifications, especially to particular routes that were creating unintended hardships for some patrons. The tweaks resulted in the development of a final network that was termed the Approved 2020 Redesign Network.



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SECTION 4: APPROVED 2020 REDESIGN NETWORK

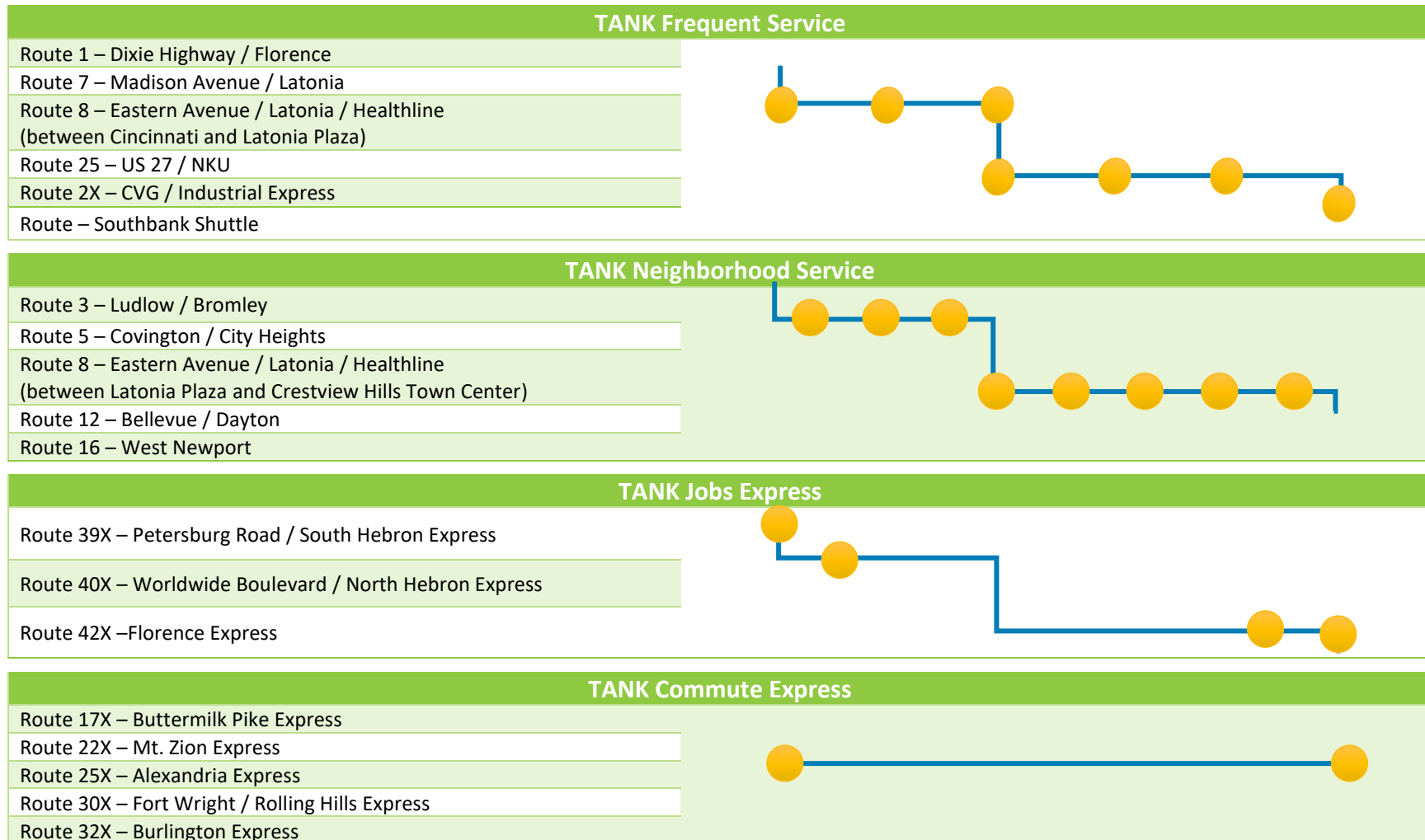
The final Approved 2020 Redesign Network resulting from this effort is broken down into four distinct service types to show the community the various mobility options that they will be getting with a reconceptualized TANK service network. The Approved 2020 Redesign Network still has the benefits of the prior iterations (e.g., decreases the number of vehicles operated in maximum (peak) service, considers on-road driver reliefs, reduces redundancy, increases span of service, and improves frequency), but does so in a less impactful way to current TANK riders.

In addition, the Approved 2020 Redesign Network still focuses on a slightly more frequent and efficient network, primarily in the core areas where transit is needed the most. However, it also is closer in nature to the existing TANK network, thereby addressing many of the critical concerns that were brought up about some of the proposed route modifications.

Figure 4-1 show the Approved 2020 Redesign Network routes and service types. Map 4-1 shows the Approved 2020 Redesign Network. Map 4-2 through Map 4-5 show the four distinct service types. Finally, in Map 4-6, a network overlay map is presented to compare the Approved 2020 Redesign Network with the existing TANK network.

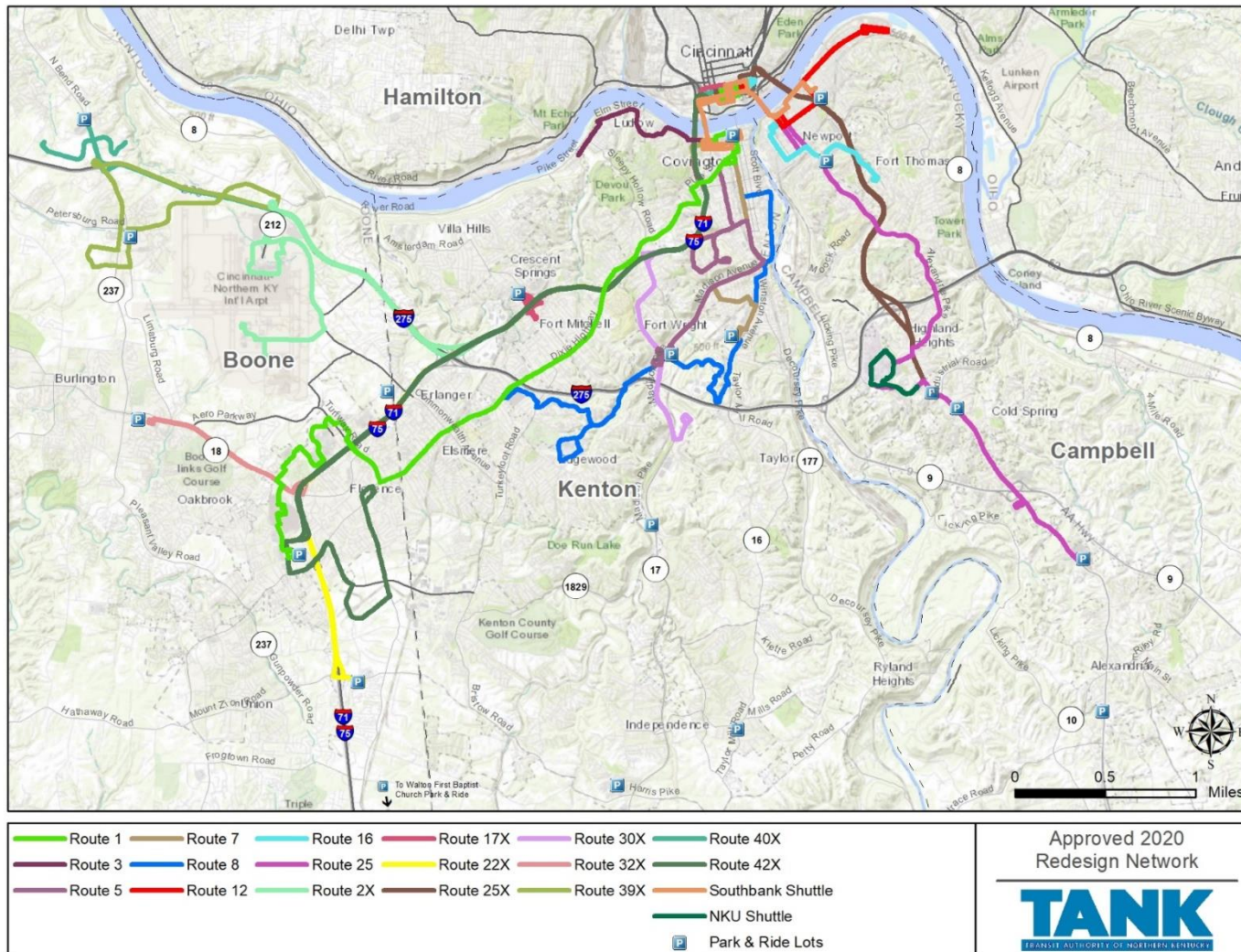
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Figure 4-1: Approved 2020 Redesign Network Routes and Service Types



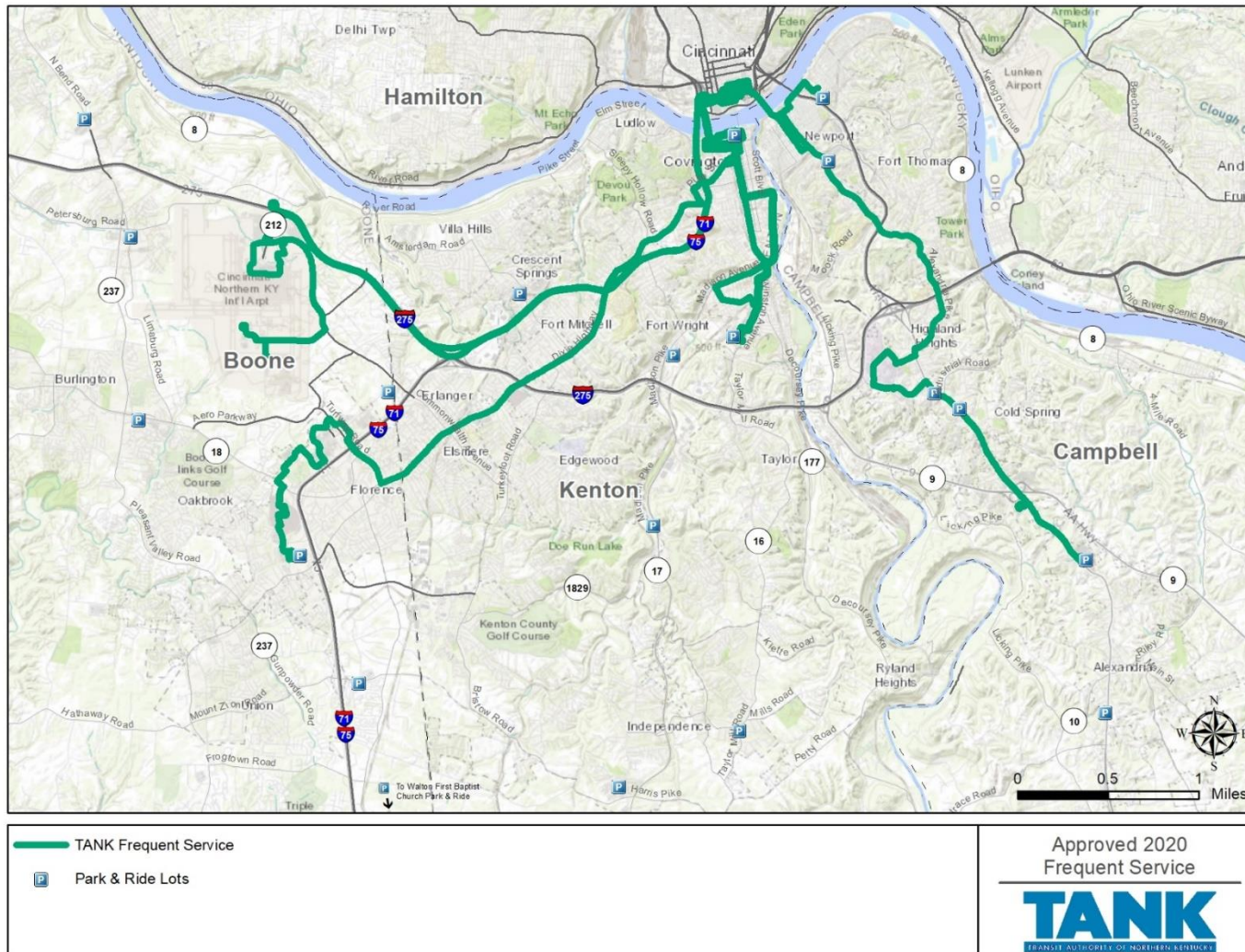
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Map 4-1: TANK Approved 2020 Redesign Network



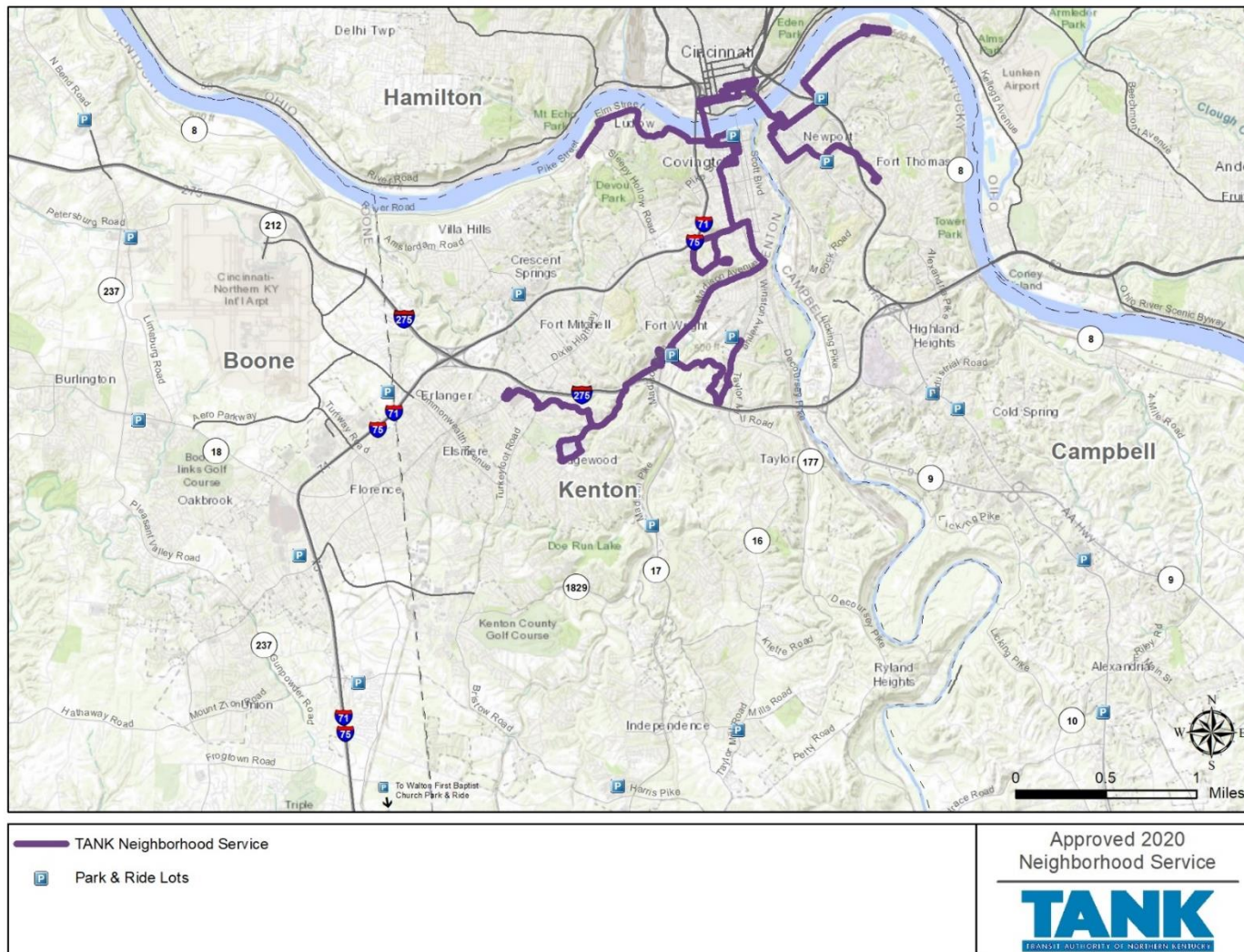
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Map 4-2: TANK Frequent Service



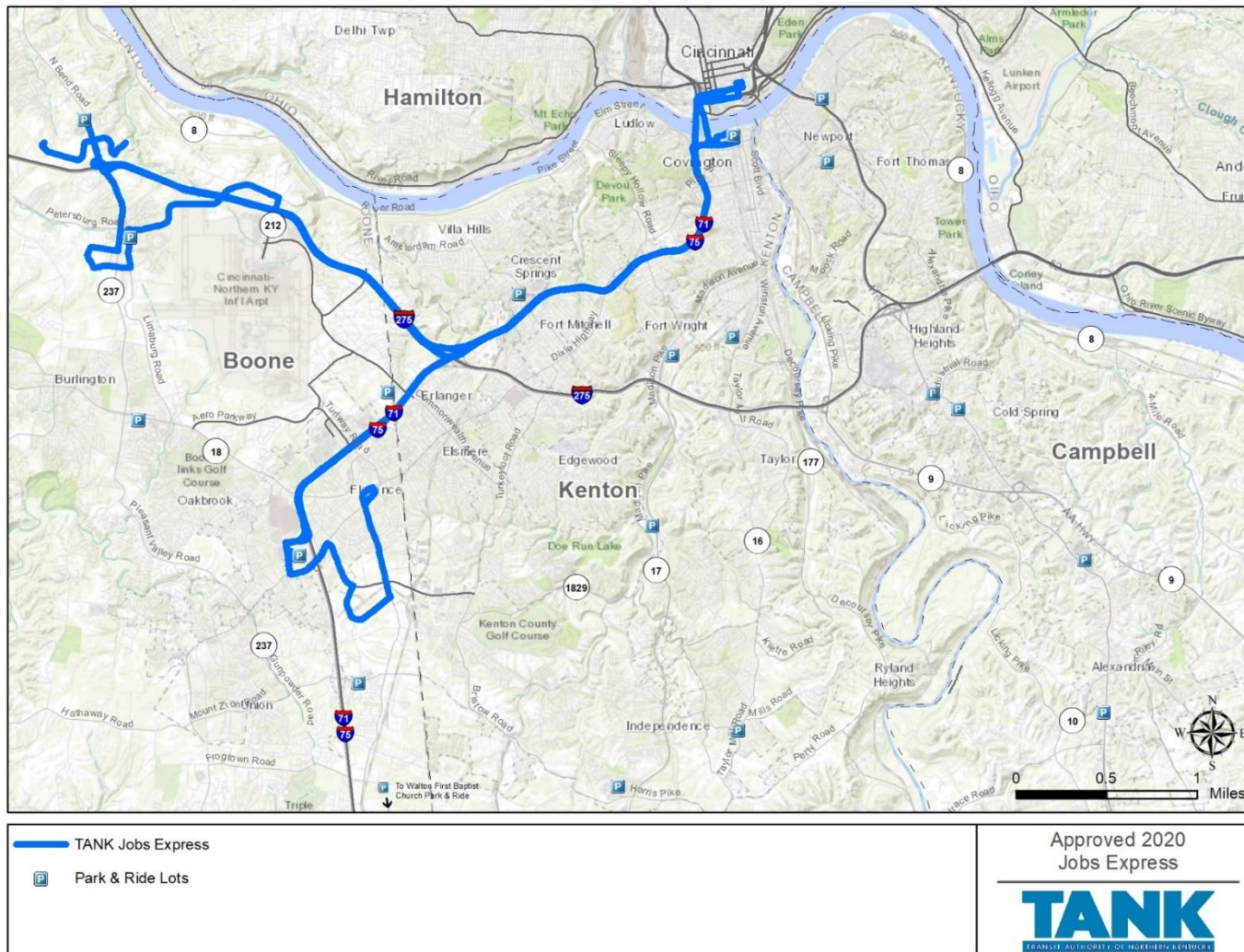
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Map 4-3: TANK Neighborhood Service



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Map 4-4: TANK Jobs Express



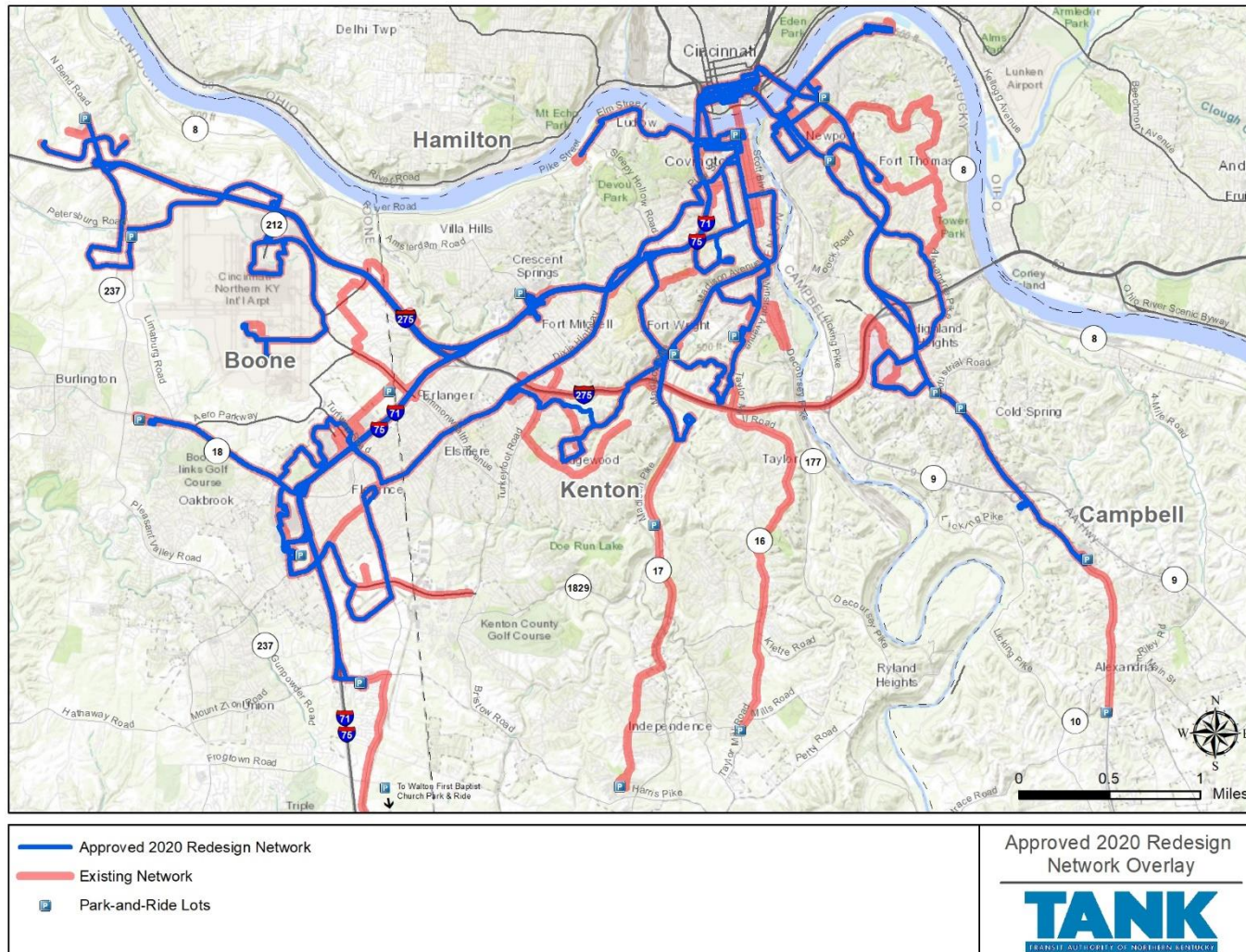
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Map 4-5: TANK Commute Express



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Map 4-6: Approved 2020 Redesign Network Overlay





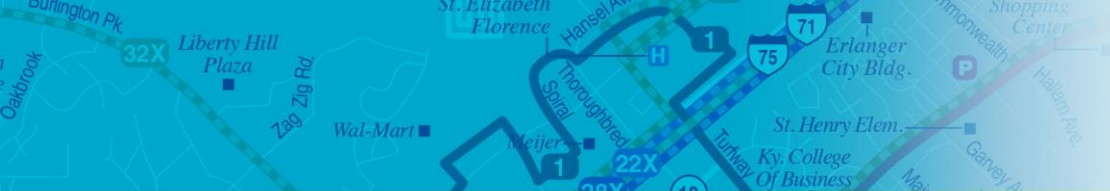
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SECTION 5: IMPLEMENTATION PLAN

The recommended improvements included in the System Redesign Study are the result of an extensive network evaluation and data review/evaluation process. The improvements identified fall into the categories of Service, Capital/Infrastructure, and Policy, as shown in Table 5-1. Frequency improvements are based on the Approved 2020 Redesign Network, which also will be refined as it is implemented to account for continuing changes in travel patterns, congestion, land use, and other factors that affect the way transit and transportation systems evolve and operate. Tables 5-2 to 5-4 show the frequency by route for weekday, Saturday, and Sunday over a 5-year period. In Tables 5-2 through 5-4, routes with split frequencies, for example the Route 1 at 20/40, reflects that service for Route 1 operates every 20-minutes until 8:00 PM and then frequency is reduced to every 40-minutes after 8:00 PM. For commuter routes, such as the Route 30X, the first number is the AM peak frequency and the second number is the PM peak frequency.

Table 5-1: Phased Implementation Plan

Fiscal Year>	2020	2021	2022	2023	2024	2025
Weekday Peak Fleet	51	51	51	51	51	51
New/Modified Routes	Title VI Analysis for Approved 2020 Redesign Network	Local Routes: 1, 3, 5, 7, 8, 12, 16, 25, Southbank Shuttle Express Routes: 2X, 17X, 22X, 25X, 30X, 32X, 39X, 40X, 42X				
	Implement ADA Service Area Changes					
Weekday Frequency Modifications	<ul style="list-style-type: none"> •15-minute frequency: Southbank Shuttle, Route 40X (AM) •20-minute frequency: Routes 1, 7, 8 •21-30-minute frequency: Routes 25, 2X, 17X, 25X, 30X (PM), 39X (AM), 40X (PM), 42X (peak) •31-40-minute frequency: Routes 3, 5, 8, 12, 16, 22X, 30X (AM), 32X, 39X (PM) •40-minute Evening Frequency: Routes 1, 25 •Greater than 40-minute frequency: Route 42X (off-peak) •60-minute evening frequency: Routes 3, 5, 12, 16 					
	Implement Saturday and Sunday frequency modifications					
Eliminated Routes	Local Routes: 9, 11 Express Routes: 1X, 18X, 28X, 31X, 33, 35X					
Planning + Capital	Bus Stop Consolidation or Feasibility Study	Implement bus stop changes				
Estimated Service Hours	201,538		201,538	201,538	201,538	201,538



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Table 5-2: Frequency Implications – Weekday (minutes)

Fiscal Year>	2020	2021	2022	2023	2024	2025
Route 1	20 / 40	20 / 40	20 / 40	20 / 40	20 / 40	20 / 40
Route 3	40 / 60	40 / 60	40 / 60	40 / 60	40 / 60	40 / 60
Route 5	40 / 60	40 / 60	40 / 60	40 / 60	40 / 60	40 / 60
Route 7	40 / 60	40 / 60	40 / 60	40 / 60	40 / 60	40 / 60
Route 8	40 / 60	40 / 60	40 / 60	40 / 60	40 / 60	40 / 60
Route 12	40 / 60	40 / 60	40 / 60	40 / 60	40 / 60	40 / 60
Route 16	40 / 60	40 / 60	40 / 60	40 / 60	40 / 60	40 / 60
Route 25	25 / 40	25 / 40	25 / 40	25 / 40	25 / 40	25 / 40
Route 2X	30	30	30	30	30	30
Route 17X	25	25	25	25	25	25
Route 22X	32	32	32	32	32	32
Route 25X	30	30	30	30	30	30
Route 30X	32 / 30	32 / 30	32 / 30	32 / 30	32 / 30	32 / 30
Route 32X	40	40	40	40	40	40
Route 39X	30 / 35	30 / 35	30 / 35	30 / 35	30 / 35	30 / 35
Route 40X	15 / 30	15 / 30	15 / 30	15 / 30	15 / 30	15 / 30
Route 42X	30 / 60	30 / 60	30 / 60	30 / 60	30 / 60	30 / 60
Southbank Shuttle	15	15	15	15	15	15

Table 5-3: Frequency Implications – Saturday (minutes)

Fiscal Year>	2020	2021	2022	2023	2024	2025
Route 1	30 / 60	30 / 60	30 / 60	30 / 60	30 / 60	30 / 60
Route 3	60	60	60	60	60	60
Route 5	60	60	60	60	60	60
Route 7	40 / 60	40 / 60	40 / 60	40 / 60	40 / 60	40 / 60
Route 8	40 / 60	40 / 60	40 / 60	40 / 60	40 / 60	40 / 60
Route 12	60	60	60	60	60	60
Route 16	60	60	60	60	60	60
Route 25	45 / 60	45 / 60	45 / 60	45 / 60	45 / 60	45 / 60
Route 2X	30	30	30	30	30	30
Route 17X						
Route 22X						
Route 25X						
Route 30X						
Route 32X						
Route 39X	81 / 41	81 / 41	81 / 41	81 / 41	81 / 41	81 / 41
Route 40X	30 / 86	30 / 86	30 / 86	30 / 86	30 / 86	30 / 86
Route 42X	60	60	60	60	60	60
Southbank Shuttle	15	15	15	15	15	15



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Table 5-4: Frequency Implications – Sunday (minutes)

Fiscal Year>	2020	2021	2022	2023	2024	2025
Route 1	30 /60	30 /60	30 /60	30 /60	30 /60	30 /60
Route 3	60	60	60	60	60	60
Route 5	60	60	60	60	60	60
Route 7	40 /60	40 /60	40 /60	40 /60	40 /60	40 /60
Route 8	40 /60	40 /60	40 /60	40 /60	40 /60	40 /60
Route 12	60	60	60	60	60	60
Route 16	60	60	60	60	60	60
Route 25	45 /60	45 /60	45 /60	45 /60	45 /60	45 /60
Route 2X	30	30	30	30	30	30
Route 17X						
Route 22X						
Route 25X						
Route 30X						
Route 32X						
Route 39X	81 / 41	81 / 41	81 / 41	81 / 41	81 / 41	81 / 41
Route 40X	30 / 86	30 / 86	30 / 86	30 / 86	30 / 86	30 / 86
Route 42X	60	60	60	60	60	60
Southbank Shuttle	15	15	15	15	15	15



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