Project Definition

TECHNICAL MEMORANDUM

Pulse Cermak Line

August 2024

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LIST OF ABBREVIATIONS

ADA	Americans with Disabilities Act
ART	Arterial Rapid Transit
ASAP	All Stations Accessibility Program
AVL	Automatic Vehicle Location
BAT	Business Access and Transit
BIL	Bipartisan Infrastructure Law
BRT	Bus Rapid Transit
CAG	Corridor Advisory Group
CEQ	Council on Environmental Quality
CIG	Capital Investment Grant
CLG	Certified Local Governments
CMAP	Chicago Metropolitan Agency for Planning
CMAQ	Congestion Mitigation and Air Quality
CRP	Carbon Reduction Program
CTA	Chicago Transit Authority
DCE	Documented Categorical Exclusion
DOT	Department of Transportation
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
GC	General Contractor
HARGIS	Historic and Architectural Resources Geographic Information System
ICE	Innovation, Coordination & Enhancement
IDOT	Illinois Department of Transportation
IGA	Intergovernmental Agreement
IIC	Invest in Cook
MPH	Miles per Hour
MPO	Metropolitan Planning Organization
NEPA	National Environmental Policy Act
NOFO	Notice of Funding Opportunity
NR	National Register
O&M	Operations and Maintenance
OTP	On-time Performance
PMO	Program Management and Oversight Consultant
RAISE	Rebuilding American Infrastructure with Sustainability and Equity
RFP	Request for Proposals
ROW	Right of Way
RTA	Regional Transit Authority
RTSPIP	Regional Transit Signal Priority Implementation Program
SCC	Standard Cost Categories
SHPO	State Historic Preservation Office
SIP	Stakeholder Involvement Plan

TIP	Transportation Improvement Program
TSP	Transit Signal Priority
USDOT	United States Department of Transportation
VA	Veterans Affairs
YOE	Year of Expenditure

Executive Summary

Through Pace's strategic vision plan, *Driving Innovation*, Pace is committed to advancing the Pulse arterial bus rapid transit (BRT) program to provide fast, frequent, and reliable bus service on heavily traveled corridors in northeastern Illinois. With two Pulse lines in service (Milwaukee Line and Dempster Line) and two more entering final design (95th Street Line and Halsted Line), the Pulse Cermak Line will be Pace's fifth branded Pulse line.

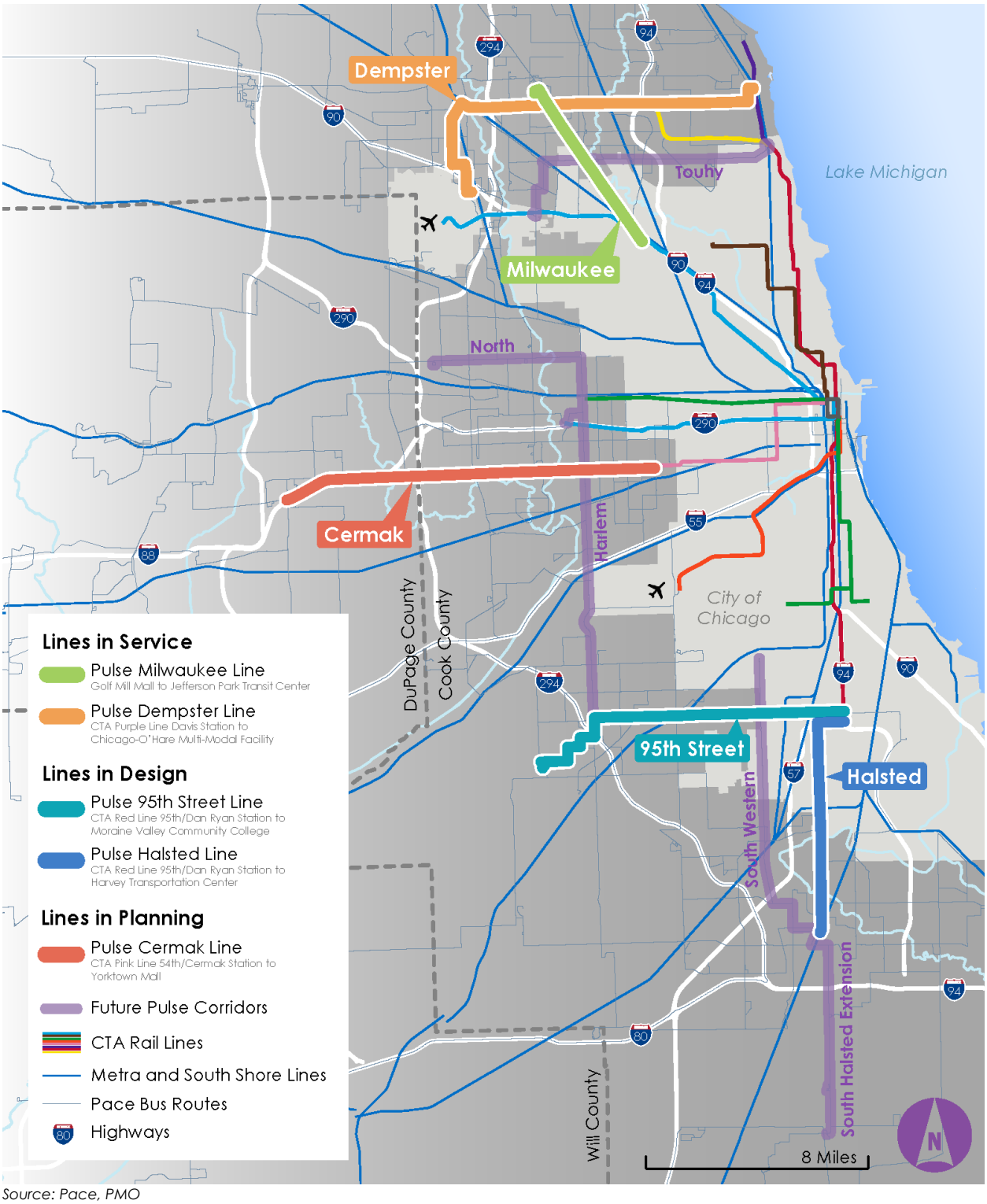
Pulse Program Overview

Pace's arterial bus rapid transit program, later branded as Pulse, was initially defined in a 2009 study[1] that proposed a network of high-frequency, limited-stop services on heavily traveled corridors in Pace's service area. Since then, Pace has implemented two Pulse lines, on Milwaukee Avenue in 2019 and on Dempster Street in 2023. Two more lines on Halsted Street and 95th Street are being designed and are expected to enter service in 2028-29. The Pulse Cermak Line will be Pace's fifth Pulse line, and future corridors have been identified for further study, as shown in Figure ES-1. Pulse enhances the transit experience by offering high quality service and amenities, and includes the following features:

- Frequency of every 15 minutes or better at most hours, seven days per week;
- Limited stops and bus priority features through innovations such as transit signal priority (TSP) that make service more reliable and direct;
- Pulse-branded buses with Wi-Fi and interior digital information screens; and
- Modern, easy-to-identify stations with improved ADA accessibility, heated shelters designed with community expression, pavement snowmelt systems, benches, bike racks, trash receptacles, real-time bus tracker information, and near-level boarding platforms to make it easier to get on and off the bus.

[1] Pace Suburban Bus (2009). Arterial Rapid Transit Study. https://www.pacebus.com/sites/default/files/2020-06/STV-2009_1_PaceART-FinalReport.pdf

FIGURE ES-1 PACE PULSE PROGRAM, CURRENT AND FUTURE LINES



Source: Pace, PMO

Defining the Project

This report defines the features and characteristics of the Pulse Cermak Line. The Cermak Road / 22nd Street corridor was identified in 2001 as a potential location for rapid transit service in Pace's previous strategic plan, *Vision 2020*. Since then, Pace, along with regional and local entities, has studied the corridor for rapid transit service through various efforts.

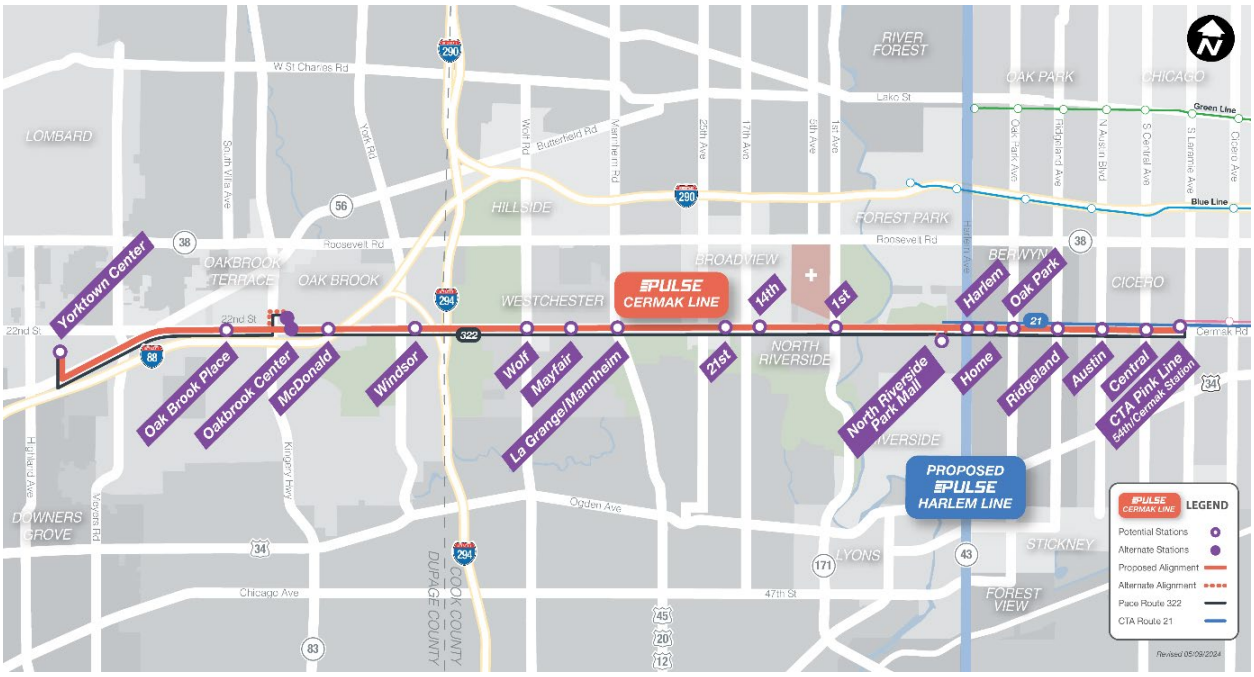
An integral east-west mobility option for Chicago's western suburbs, the corridor traverses a wide range of communities and connects to the regional rail network via the terminus of the CTA Pink Line in Cicero. It remains a vital daily pathway for thousands of residents and workers to access employment, education, shopping, health care, regional trails, hotels, and restaurants. By investing in this corridor, Pace is committed to advancing equity and opportunity for its riders. The goal of this Project Definition study is to describe the Pulse Cermak Line in a level of detail sufficient to begin the federally required National Environmental Policy Act (NEPA) documentation during the Environmental Review phase and make the project eligible for federal funding. Pace aims to apply for federal grants for design and construction with service planned to begin by 2030.

Through Project Definition, Pace is applying the Pulse program features to the corridor, analyzing and incorporating input from key stakeholders to reach conclusions on the following:

- Recommended stations and amenities at various locations, with conceptual design drawings;
- Desired service and operating plan;
- Potential locations for bus priority treatments; and
- Capital cost estimates.

The Project Definition study serves as a reference and resource for Pace, project stakeholders, and the public. Figure ES-2 depicts an overview of the Pulse Cermak Line's potential service alignment and station locations.

FIGURE ES-2 PULSE CERMAK LINE POTENTIAL ALIGNMENT AND STATIONS



Source: Pace, PMO

As documented in this report, the Pulse Cermak Line is defined by the following characteristics, all of which will be refined during the Environmental Review phase of the project:

- Extends approximately 14 miles in length, operating east-west along Cermak Road, 22nd Street, and Butterfield Road between the CTA Pink Line 54th/Cermak station in the Town of Cicero and the Yorktown Center area in the Village of Lombard. The line will traverse ten municipalities including Cicero, Berwyn, Forest Park, North Riverside, Broadview, Westchester, Hillside, Oak Brook, Oakbrook Terrace, and Lombard.
- Serves 19 station locations, including two termini; two intermediate, off-street single platform stations; and 15 intermediate on-street station pairs, where stations are on opposite sides of the street. One of the off-street intermediate stations is in the Village of Oak Brook at Oakbrook Center, where two options will continue to be studied into the Environmental Review phase.
- Connects the CTA Pink Line 54th/Cermak station to numerous Pace and CTA current and planned bus services in Cook and DuPage counties, including the existing Pace Route 322 and CTA Route 21, as well as the future Pulse Harlem Line and express bus service on I-294.
- Serves major destinations near the Cermak / 22nd Street corridor. These include the CTA Pink Line 54th/Cermak station, Unity Junior High School, commercial and

retail centers in Cicero and Berwyn, Morton East and West High Schools, North Riverside Park Mall, Loyola University Medical Center, Hines Veterans Affairs (VA) Hospital, numerous Cook County Forest Preserve sites (including the Salt Creek Trail, Miller Meadow, and Westchester Woods), Broadview Village Square, Oakbrook Center, and Yorktown Center.

- Provides frequency of at least every 15 minutes for most hours of operation, which would be approximately 5 a.m. to 1 a.m. with slight variation between weekday, Saturday, and Sunday/Holiday service. Pulse would complement hourly local Pace Route 322 service and also existing CTA Route 21 service on the eastern portion of the corridor.
- Benefits from transit signal priority (TSP) technology, which Pace intends to deploy at more than 40 intersections on the corridor. TSP enables buses to communicate automatically with traffic signals and catch up when running behind schedule.
- Other treatments, such as queue jumps and bus priority lanes, will continue to be studied. They are intended to be included in the project where feasible.

Project Features and Characteristics

Stations

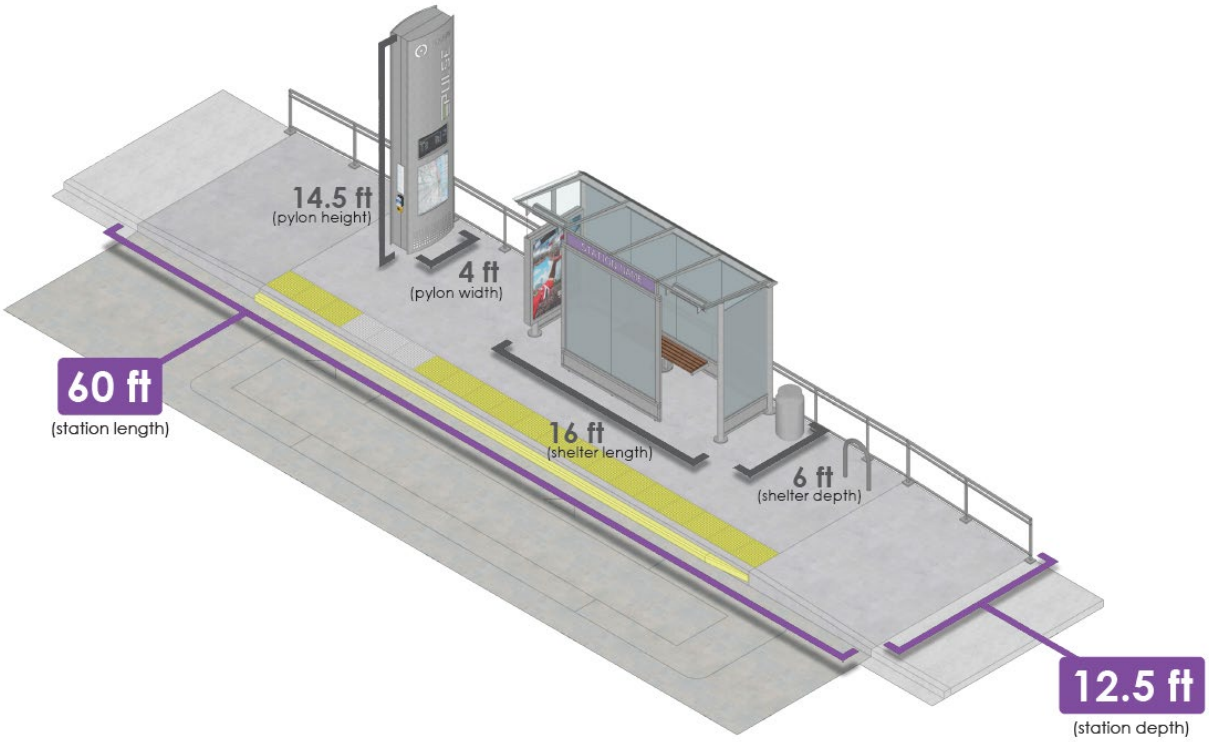
Station pairs (i.e. eastbound and westbound at intersections), as well as four bidirectional stations, were explored at 24 locations at the outset of Project Definition. The Pulse project team, including Pace staff and the program management and oversight consultant (PMO), collaborated with the Corridor Advisory Group (CAG) to analyze existing conditions, consider future development along with roadway infrastructure projects, and identify 19 preferred station locations.

The Pulse Cermak Line service will primarily operate in public right-of-way (ROW) with up to three station locations entirely on private property. The eastern terminus will utilize the existing bus facility at the CTA Pink Line 54th/Cermak station – no further improvements are currently recommended at that location. The western terminus is planned to be integrated into a private drive adjacent to Yorktown Center in Lombard and will include a single, longer platform design to accommodate Pulse and local buses. The intermediate stations at the North Riverside Park Mall and Oakbrook Center (alternate location) are also planned to be on private property. The North Riverside Park Mall and alternate Oakbrook station will feature a single, longer platform design to accommodate multiple routes traveling in both directions, including the Pulse Cermak Line, Pace Route 322, and CTA Route 21. The remaining intermediate stations will be designed to accommodate standard Pulse station layouts developed for previous Pulse lines. On-street station locations will consist of a pair of station sites — one in each

direction — and will use available public ROW where possible, though private easements may be required.

Figure ES-3 illustrates the Pulse standard station design. It has a 12.5-foot by 60-foot footprint, featuring a 12-inch near-level boarding platform with Americans with Disabilities Act (ADA) compliant ramps at both ends connecting the station to the surrounding sidewalk network. Smaller, more compact stations with a modified feature set will be used where necessary to accommodate constrained ROW conditions while still maintaining ADA compliance. All stations will accommodate Pace's fleet of 40-foot buses. Stations between the North Riverside Park Mall in North Riverside and Central Avenue in Cicero will also be shared with CTA; they will have 11-inch platforms and will be lengthened to accommodate the 60-foot articulated buses used on CTA Route 21.

FIGURE ES-3 STANDARD STATION LAYOUT



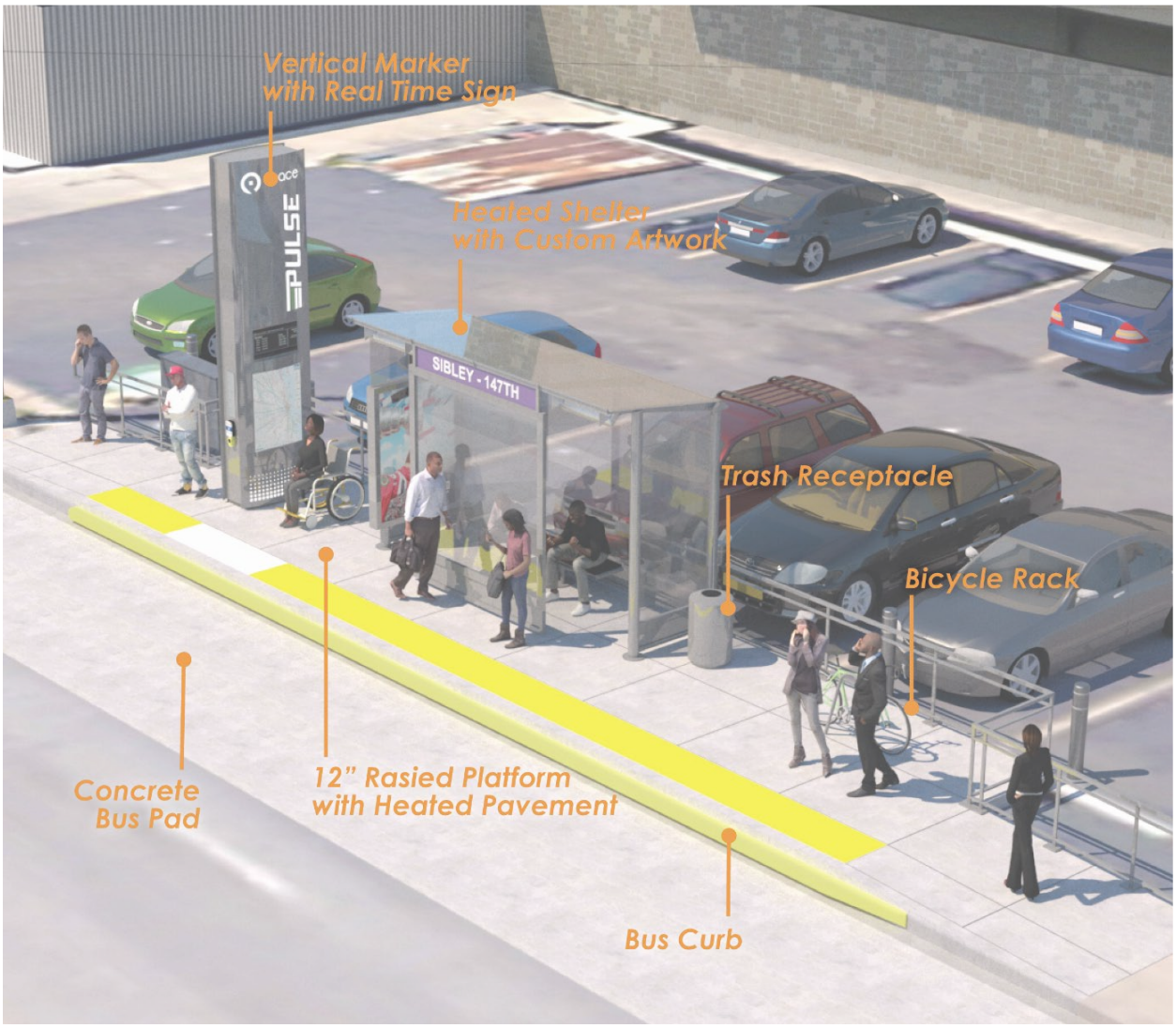
Source: Pace, PMO

Planned station amenities include the following features, as shown in Figure ES-4:

- Raised platform for near level and expedited boarding and alighting;
- Branded shelters with overhead heat and customizable panels;
- Benches, trash receptacles, and bicycle racks;

- Branded vertical marker featuring real-time, next-bus signage, Pulse route, and local wayfinding information;
- Electric pavement snow-melt system;
- Railings along the back of the platform and along the access ramps;
- Concrete bus pad in roadway to reinforce area where buses are frequently stopped.

FIGURE ES-4 STANDARD STATION LAYOUT RENDERING



Source: Pace, PMO and Google Maps

Conceptual station designs were adapted to accommodate unique station site characteristics and ROW limitations. Improvements to the adjacent pedestrian environment, such as the addition of curb extensions and pedestrian crossing enhancements, were also considered to improve passenger safety and station access.

Bus Priority Features

The existing service in the corridor experiences significant delays throughout the day due to traffic congestion. This impacts reliability and public perception of transit across the entire corridor. Improvements to service reliability through bus priority treatments is critical for enhancing transit in the corridor and making the future Pulse Cermak Line faster and more reliable.

In consultation with the Illinois Department of Transportation (IDOT), corridor stakeholders, and local municipalities, the project team preliminarily identified and considered opportunities for bus priority treatments, mostly within existing ROW, to improve travel times and reliability. The following priority treatments were considered:

- **Transit Signal Priority (TSP)** enables the bus's on-board computer to communicate with the traffic signal system without any action taken by the bus driver. When a bus is running behind schedule TSP technology requests to shorten red lights or extend green lights giving buses an advantage to stay on a reliable schedule. The treatment is planned to be implemented on the Cermak Road corridor as a part of the Regional Transit Signal Priority Implementation Program (RTSPIP) led by the Regional Transportation Authority (RTA), in advance of Pulse Cermak Line construction and operation. TSP is utilized by local bus services (Pace and CTA) in addition to Pulse. It is anticipated to be active at most intersections throughout the corridor.

- **Bus priority lanes** allow buses to travel through and between intersections with less interference from congestion or needing to merge in and out of traffic. They may be exclusive or semi-exclusive (such as when a bus lane is shared with right-turning vehicles accessing local businesses).

- **Queue jumps** allow buses to bypass most intersection-related congestion, usually with a short, dedicated bus lane and, if needed, a bus-specific signal phase.

The initial bus priority locations are documented in Section 3.4.5. These locations are preliminary, requiring additional analysis and coordination with local and regional stakeholders during future phases of the project to determine feasibility.

Financial Plan

A preliminary capital cost estimate based on the station and corridor improvements described in the Project Definition was developed. These capital cost consists primarily of station construction and associated corridor improvements. It is based on (i) the costs of Pulse stations from previous projects, (ii) the proposed station types (i.e., standard, depth-constrained, etc.), and (iii) accompanying ROW and infrastructure changes, such as expanded curb and pedestrian areas. Station designs also vary slightly between the eastern and western portions of the corridor to accommodate CTA

articulated (60-foot) buses. Stations that are served by both Pace and CTA are typically more expensive as they include longer platforms and also need additional pavement and modifications to connect to the surrounding environment. Additionally, several stations include custom designs on privately owned properties and carry higher costs than those in the public ROW. Including soft costs for professional services and an appropriate contingency given the conceptual level of design, the estimated total capital cost for stations and supporting roadway work is approximately $32.2 million[2].

The locations and designs of bus priority features along the corridor are still being evaluated but will ultimately require additional investment and close coordination with municipalities along the corridor and with IDOT. Additional costs for features, such as bus priority lanes and queue jumps, will be estimated in future phases as feasibility is assessed. With minimal roadway and traffic signal changes, queue jumps and business access and transit (BAT) lanes within the existing ROW could be added to the project for less than $10M. There is also a larger opportunity for a more transformative project on the east end of the corridor, east of Home Avenue, but this project would be significantly more costly and require extensive coordination with IDOT and the municipalities to define and advance.

TSP costs are not included in the capital cost estimate for the Pulse Cermak Line as it will be implemented through a separate program (i.e., RTSPIP).

Pace intends to fund the Pulse Cermak Line with local, state, and federal sources. To date, Pace has secured more than $70 million in discretionary federal and local grants to develop and implement the Pulse Milwaukee, Dempster, Halsted, and 95th Street Lines. The Pulse Cermak Line has also received a $500,000 Invest in Cook (IIC)grant from Cook County for the upcoming Environmental Review phase. As Pace has not yet sought funding for design and construction, additional sources will be required to complete the project. Potential preliminary funding sources under consideration at the local, state, and federal levels are described in Section 5.

Operating Plan

A preliminary operating plan, based on running time and ridership analyses, reflects implementation of the new Pulse service and corresponding changes to local Route 322 service. The preliminary operating plan requires 17 Pulse vehicles (14 for peak service plus three spares). Reducing the number of intermediate stops and adding TSP technology enables time savings compared to the existing Route 322 while providing improved reliability and frequencies to nearly all existing riders and improved traffic flow. The potential addition of bus priority lanes and queue jumps will also support faster travel times and ensure reliability of transit service in the corridor. More than 90% of all

[2] 2024 dollars

Route 322 ridership[3] is captured within approximately a quarter mile (i.e., walking distance) of a Pulse station. The operating plan is summarized in Table ES-1.

TABLE ES-1 PRELIMINARY OPERATING PLAN

	Pace Route 322 (Existing)	CTA Route 21 (Existing)*	Pulse Cermak Line (Proposed)	Pace Route 322 (Proposed)
Span of Service				
Weekday	4:30am – 1am	4am – 12:30am	4:30am - 1am	5:30am – 10pm
Saturday	5am – 1am	4am – 12am	5am – 1am	6am – 10pm
Sunday	6am – 10:30pm	6am – 12am	5:30am – 1am	6am – 10pm
Frequency (weekdays only)				
Peak	20 min	12-15 min	15 min	60 min
Off-Peak	30-60 min	20 min	15 - 20 min	60 min

**No changes are proposed for CTA Route 21.*
Source: Pace, PMO

For the purposes of this analysis, it was assumed the Pulse Cermak Line and Route 322 will operate along identical alignments, although future routing changes are possible. Operations and maintenance (O&M) costs are estimated based on annual vehicle hours of service. The collective service changes will require approximately 86,400 annual vehicle hours, or an increase in almost 44,000 annual vehicle hours (104% increase over existing Route 322) of transit service to the corridor. The O&M costs for the Pulse Cermak Line and proposed Route 322 will add approximately $4.01 million. [4]

Stakeholder Engagement

Pace is committed to a collaborative process where a diverse group of stakeholders are actively involved and providing input that will directly shape the project from planning to implementation. Involvement activities during the Project Definition phase are focused on coordination with government agencies at the local, state, and federal levels, as well as other local organizations, property owners, and schools.

The CAG includes representatives from municipalities, agencies, schools, property owners, and community groups. Two CAG meetings were held during the Project Definition phase. The first meeting in December 2023 was attended by 39 CAG members. During the meeting, the project team introduced the study and presented an overview of the Pulse Program, existing conditions and transit needs within the

[3] Source: Pace APC Ridership, Fall 2022
[4] 2024 dollars

project corridor, preliminary station concepts, and proposed station locations and bus priority features. They also held a breakout session and hosted an online comment period for feedback on the project features, as well as initial station locations.

At the second CAG meeting in April 2024, 40 CAG members attended. The project team presented project updates related to the proposed alignment, station locations, and bus priority treatments. They also introduced the proposed operating plan and draft conceptual station designs. An additional breakout session and online comment period for feedback on the project updates and conceptual station designs was held to assist the project team with future refinements. Throughout the Project Definition phase, the project team also met with many CAG members and other key stakeholders individually and in small groups to solicit feedback on community needs and proposed project elements.

As the Project Definition phase concludes and the project advances into the Environmental Review phase, stakeholder involvement and outreach efforts will be a priority as the NEPA documentation is prepared. Coordination with communities, government officials, public agencies, and individual interest groups will continue. The project team also will continue to emphasize public involvement and broad community outreach. Guided by established plans, Pace will connect with its customers, the public, affected property owners, and business groups through outreach. Those outreach efforts include a project website, project newsletters, public meetings, and one-on-one stakeholder meetings.

Next Steps

Pace anticipates pursuing federal funding for the Pulse Cermak Line; therefore, the next phase of the project will be the Environmental Review as required by NEPA. In preparation for this process, the project team has surveyed historic resources near the corridor and station locations and found 22 resources within a quarter mile. These properties and historic districts will be further evaluated in the Environmental Review phase, which is anticipated to begin in late 2024.

1 Introduction

1.1 Pulse Program Overview

Pace's arterial bus rapid transit program, later branded as "Pulse," was initially defined in a 2009 study[5] that proposed a network of high-frequency, limited-stop services on heavily traveled corridors in Pace's service area. Since then, Pace has implemented two Pulse lines, on Milwaukee Avenue in 2019 and on Dempster Street in 2023. Two more lines on Halsted Street and 95th Street are being designed and are expected to enter service in 2028-2029. The Pulse Cermak Line will be Pace's fifth Pulse line. Future corridors have also been identified for further study, as shown in Figure 1-1. Pulse enhances the transit experience by offering high quality service and amenities, and includes the following features:

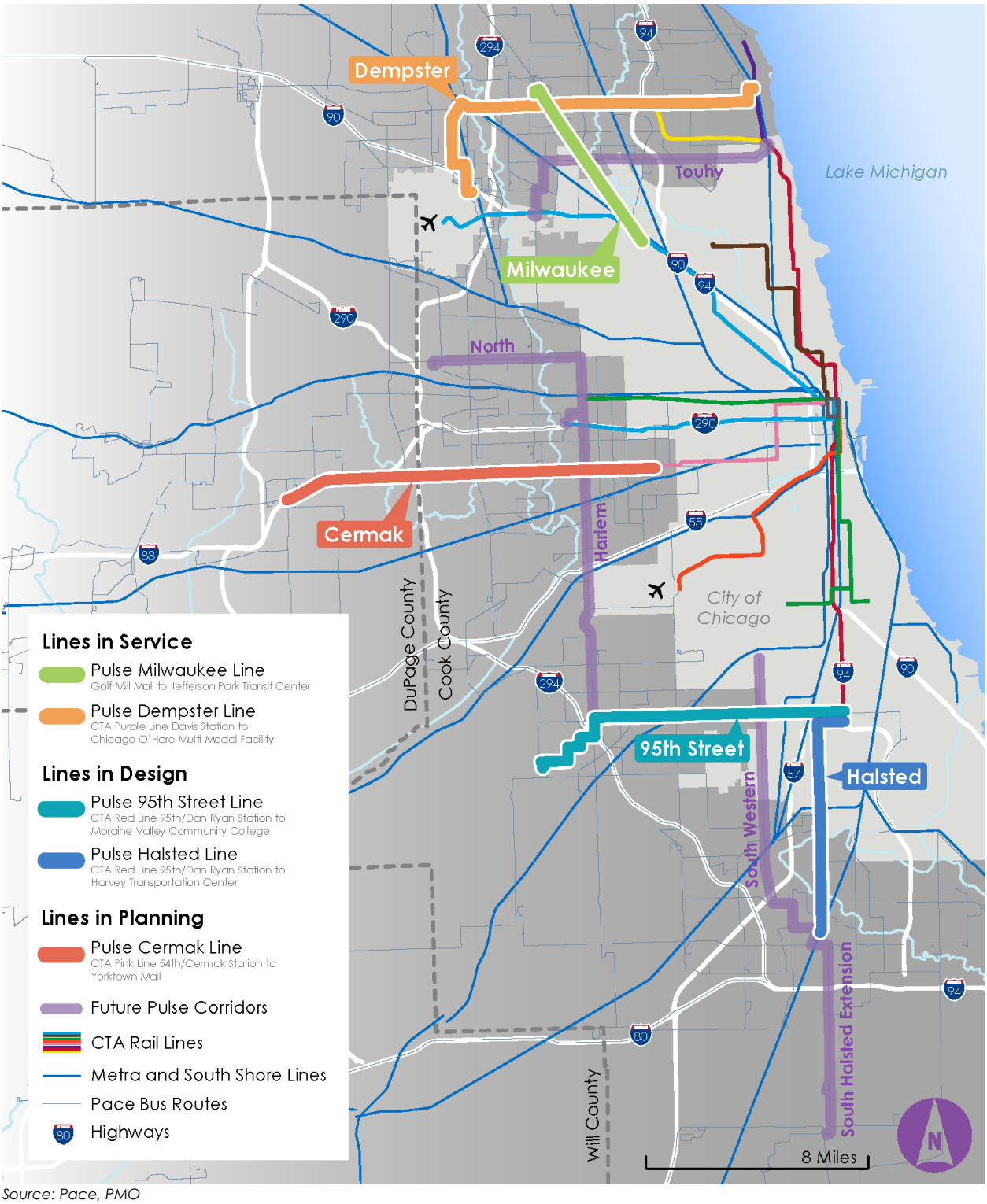
- Frequency of every 15 minutes or better at most hours, seven days per week;
- Limited stops and bus priority features through innovations such as transit signal priority (TSP) that make service more reliable and direct;
- Pulse-branded buses with Wi-Fi and interior digital information screens; and
- Modern, easy-to-identify stations with improved ADA accessibility, heated shelters designed with community expression, pavement snowmelt systems, benches, bike racks, trash receptacles, real-time bus tracker information, and near-level boarding platforms to make it easier to get on and off the bus.

1.2 Pulse Cermak Line

The Cermak Road / 22nd Street corridor was identified in 2001 as a potential location for rapid transit service in Pace's previous strategic plan, *Vision 2020*. Since then, Pace, along with regional and local entities, has studied the corridor for rapid transit service through various efforts. These include the Pace Bus Rapid Transit Initiative (2002), Regional Transportation Authority (RTA) BRT Market Research Report (2010), and Pace Cook DuPage Area Rapid Transit Investment Plan (2014), among others. The Pulse Cermak Line was reaffirmed in the 2021 strategic vision plan, *Driving Innovation*, as one of the Pulse program's near-term priority corridors.

[5] Pace Suburban Bus (2009). Arterial Rapid Transit Study. https://www.pacebus.com/sites/default/files/2020-06/STV-2009_1_PaceART-FinalReport.pdf

FIGURE 1-1 PACE PULSE PROGRAM, CURRENT AND FUTURE LINES



Source: Pace, PMO

An integral east-west mobility option for Chicago's western suburbs, the corridor traverses ten communities and connects to the regional rail network via the terminus of the CTA Pink Line in the Town of Cicero. It remains a vital daily pathway for thousands of residents and workers to access employment, education, shopping, health care, regional trails, hotels, and restaurants. By investing in this corridor, Pace is committed to advancing equity and opportunity for its riders.

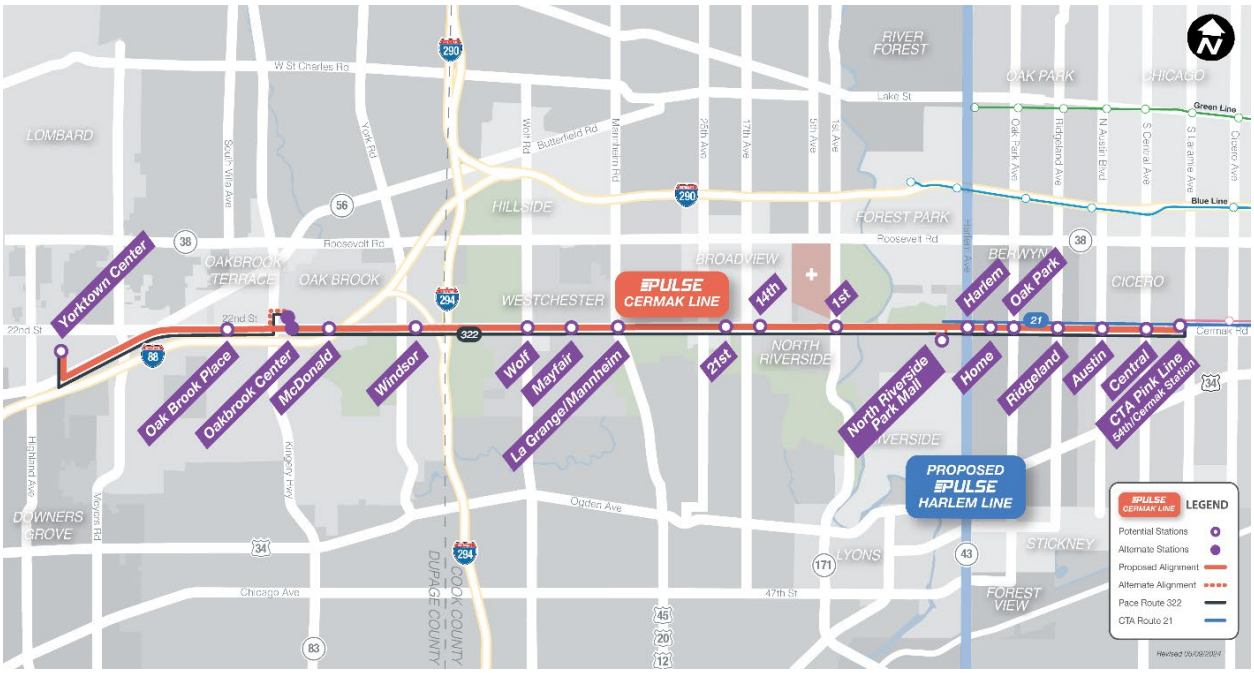
As refined through this study and documented in this report, the Pulse Cermak Line is defined by the following characteristics:

- Approximately 14 miles in length and matches the extent of Pace Route 322.
- Consists of 19 station locations recommended to be evaluated during the National Environmental Policy Act (NEPA) Environmental Review phase. These locations include two off-street termini; two intermediate, off-street single platform stations that serve both east- and westbound directions; and 15 intermediate on-street station pairs, where stations are on opposite sides of the street. One of the off-street intermediate stations is in the Village of Oak Brook at Oakbrook Center, where two alternate locations will continue to be studied into the Environmental Review phase.
- Operates east-west along Cermak Road, 22nd Street, and Butterfield Road between the CTA Pink Line 54th/Cermak station in the Town of Cicero and the Yorktown Center area in the Village of Lombard. The route will briefly divert off Cermak Road in the Village of North Riverside to serve a station on the property of the North Riverside Park Mall. An alternate routing to serve an on-property station at Oakbrook Center will also be evaluated during the Environmental Review phase and has been documented in this report as part of service planning and cost estimate efforts.
- Connects the CTA Pink Line 54th/Cermak station to current and planned Pace and CTA bus services in Cook and DuPage Counties. The line as currently defined will traverse ten municipalities including Cicero, Berwyn, Forest Park, North Riverside, Broadview, Westchester, Hillside, Oak Brook, Oakbrook Terrace, and Lombard.
- Serves major destinations near the Cermak / 22nd Street corridor. These include the CTA Pink Line 54th/Cermak station, Unity Junior High School, commercial and retail centers in Cicero and Berwyn, Morton East and West High Schools, North Riverside Park Mall, Loyola University Medical Center, Hines Veterans Affairs (VA) Hospital, numerous Cook County Forest Preserve sites (including the Salt Creek Trail, Miller Meadow, and Westchester Woods), Broadview Village Square, Oakbrook Center, and Yorktown Center.

- Improves transfers to connecting services and provides better access to additional areas in Cook and DuPage Counties including portions of Chicago, Cicero, Berwyn, Oak Park, Forest Park, Brookfield, La Grange, Elmhurst, Downers Grove, Glen Ellyn, Wheaton, and Naperville. The Oakbrook Center and Yorktown Center stations are anticipated to be major connection points for riders in the western portion of the corridor including transfer opportunities to key destinations in DuPage and Will Counties.

The Pulse Cermak Line will connect to the future Pulse Harlem Line and will also be complemented by two additional routes that operate in the corridor: Pace Route 322 and CTA Route 21. The full corridor with potential and alternate stations is mapped in Figure 1-2.

FIGURE 1-2 PULSE CERMAK LINE POTENTIAL ALIGNMENT AND STATIONS



Source: Pace, PMO

1.2.1 Project Definition Purpose

Project Definition is the first step to establish a new Pulse Line. Its details and description set the stage to begin NEPA documentation, which is required for federal funding eligibility. The NEPA process identifies the purpose and need for a project (refer to Section 6) and plans for mitigation of environmental impacts. Pace aims to apply for federal grants for design and construction with service planned to begin by 2030.

Through Project Definition, Pace is applying the Pulse program features to the corridor, analyzing and incorporating input from key stakeholders to reach conclusions on the following:

- Recommended stations and amenities at various locations, with conceptual design drawings;
- Desired service and operating plan;
- Potential locations for bus priority treatments; and
- Capital cost estimates.

The Project Definition study will serve as a reference and resource for Pace, project stakeholders, and the public through the remaining project phases.

1.2.2 Process and Schedule

The Project Definition phase began in spring 2023 with observing existing conditions and considering options for the project extent.

The Corridor Advisory Group (CAG), which is described in Section 4, met twice, with follow-up comment periods for all invitees. In addition, smaller coordination meetings were held with municipalities, agencies, organizations, and property owners. The feedback received from the CAG and coordination meetings was used to make decisions about recommended service, station locations, and design concepts.

After the Project Definition phase, the project will move to the Environmental Review phase and follow procedures outlined in NEPA. The Environmental Review is planned to be completed in 2025. An overview of the project timeline is shown in Figure 1-3.

FIGURE 1-3 PULSE CERMAK LINE PROJECT TIMELINE.

Source: Pace, PMO

1.2.3 Project Corridor Needs

The initial Pulse Cermak Line study area included more than 20 miles of roadway across Cook and DuPage counties along Cermak Road/22nd Street/Butterfield Road between the City of Chicago and the City of Wheaton. While other potential routes were studied, an alignment from Laramie Avenue (CTA Pink Line 54th/Cermak station) to Yorktown Center was ultimately selected as the preferred route based on the needs of

the project corridor identified through an existing conditions analysis and stakeholder engagement (refer to Section 4). Those needs are summarized as follows:

- On-time performance and reliability of transit service lags on the corridor.
- Current frequency impedes transit's convenience and competitiveness.
- Projected growth in the corridor will lead to greater congestion if bus transit service is not improved.
- The corridor's transit functionality and profile need to be elevated to be recognized as a connection to the regional transit network.
- Expanding mobility options is crucial for low-income and zero-vehicle households.

These needs are substantiated in Section 2 and enumerated in Section 6.1.

1.3 Report Organization

The following sections of this report address the corridor context and existing service, Pulse Cermak Line features (stations, preliminary capital cost, bus priority features, and service and operating requirements), stakeholder engagement, preliminary grant review, NEPA documentation, project delivery, and the next steps needed to advance the project. This Project Definition report results from technical interim deliverables that analyzed these topics in detail. The relevant conclusions are published in this report and will inform design and engineering in the next phase of the project. These sections document preferences as well as options to consider in later phases:

- **Corridor Context:** Existing conditions in the corridor are presented and evaluated further through identified segments. The section covers land uses and transit market analysis, roadway characteristics and previous plans and studies. Existing transit service is also analyzed.
- **Pulse Cermak Line Components:** Project elements are reviewed to set the stage for future planning, funding, and implementation:
    - **Stations**: Conceptual station designs with general right-of-way (ROW) requirements, opportunities for curb modifications, and crosswalk and sidewalk improvements are shown and described. Station designs inform the cost estimates and serve as the basis of design for future phases.
    - **Preliminary Capital Cost**: Corridor improvements and station construction, as well as professional services and contingency, are listed to generate a preliminary cost estimate.

  - **Bus Priority Features**: The section discusses how bus priority treatments, such as transit signal priority (TSP), queue jumps, and bus priority lanes, are being explored. Potential locations will continue to be developed in coordination with local and regional stakeholders in future project phases.
  - **Service Plan and Operating Requirements**: Includes service plan recommendations and operating requirements for the Pulse Cermak Line and local Pace Route 322. The operating requirements are supported by running time estimates and proposed service plans for Pulse Cermak Line and Route 322 operations. The resulting operations and maintenance (O&M) costs for operating both the Pulse Cermak Line and Route 322 are reflected.

- **Stakeholder Engagement**: Outreach methods and comment themes from federal, state, and local agencies; municipalities; community organizations; mobility-focused advocacy groups; and the public are summarized.
- **Preliminary Grant Review:** Federal, state, and local funding programs that have been used to fund other Pulse lines are summarized, as well as programs that could be explored for the Pulse Cermak Line, such as the Federal Transit Administration's (FTA) Capital Investment Grant (Small Starts) program.
- **NEPA Documentation:** The Historic Resources Survey and Purpose and Need Statement, preliminary memoranda to begin the required NEPA process, are summarized.
- **Project Delivery:** A project schedule provides a timeline and options for methods to design and build the Pulse Cermak Line. Additionally, the section explains the process for intergovernmental agreements and other necessary coordination and permitting.
- **Next Steps:** An overview of the required next steps and a summary of upcoming project activities are provided.

2 Corridor Context

2.1 Corridor Overview

The 14-mile Pulse Cermak Line corridor, which includes the ROW for the proposed service as well as adjacent area within approximately one half mile, includes Cermak Road, 22nd Street, and Butterfield Road between the Town of Cicero and the Village of Lombard. It passes through ten municipalities in Cook and DuPage counties including Cicero, Berwyn, Forest Park, North Riverside, Broadview, Westchester, Hillside, Oak Brook, Oakbrook Terrace, and Lombard. The Illinois Department of Transportation (IDOT) has jurisdiction over nearly all of the roadway in the corridor where Pulse would operate.

The corridor's character is shaped by an adjacent development pattern mainly composed of mixed-use buildings, medium-density residential, and medium-to-large-lot commercial (i.e., shopping centers and malls). The corridor also has educational institutions, parks and recreational facilities, and medical facilities. Existing public transit includes buses along and intersecting the corridor, as well as the CTA Pink Line rail connection to Chicago neighborhoods and the Loop. The roadway is known as Cermak Road from Chicago to I-294 (the Cook-DuPage County line), 22nd Street through the Village of Oak Brook, and Butterfield Road westward. Major destinations include the CTA Pink Line 54th/Cermak station, Unity Junior High School, commercial and retail centers in Cicero and Berwyn, Morton West High School, North Riverside Park Mall, Loyola University Medical Center, Hines VA Hospital, numerous Cook County Forest Preserve sites (including the Salt Creek Trail, Miller Meadow, and Westchester Woods), Broadview Village Square, Oakbrook Center, and Yorktown Center.

Although the corridor varies widely in land uses and roadway profile, it can be divided into three segments (East, Central, and West), within which characteristics are generally similar. These segments are shown in Figure 2-1:

- East: Cermak Road from Laramie Avenue (CTA Pink Line 54th/Cermak station) to Harlem Avenue.
- Central: Cermak Road from Harlem Avenue (North Riverside Park Mall) to I-294 (Cook/DuPage County line).
- West: 22nd Street/Butterfield Road from I-294 to Yorktown Center.

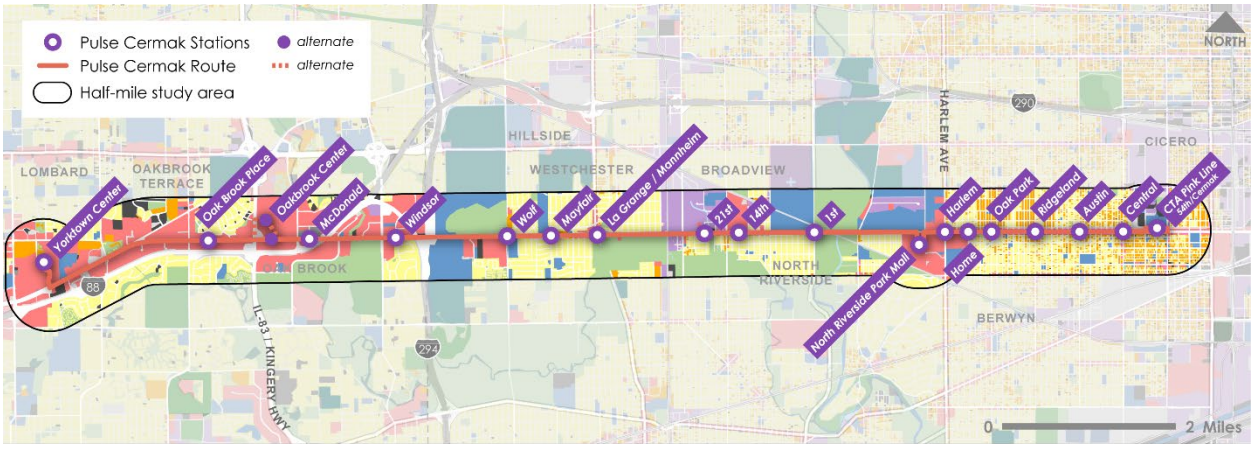
FIGURE 2-1 CORRIDOR SEGMENTS

Source: Pace, PMO

2.1.1 Land Use and Built Environment

From east to west, the character of the built environment and adjoining land uses transitions from mixed-use dense, urban areas with consistent pedestrian facilities and transit service access to more commercial lower density, auto-oriented development that becomes more challenging for serving transit riders. This is shown in Figure 2-2 and detailed in the following sections.

FIGURE 2-2 CORRIDOR LAND USE



LAND USE

Single-Family Residential	Mixed Commercial/Residential	Open Space	Under Construction
Multi-Family Residential	Industrial	Water	Vacant
Commercial	Institutional	Transportation/Utilities/ Communication	

Source: Pace, PMO

2.1.1.1 East Segment: Cermak Road from Laramie Avenue (CTA Pink Line 54th/Cermak station) to Harlem Avenue

FIGURE 2-3 EAST SEGMENT DENSITY EXAMPLE, RIDGELAND AVE TO 61ST COURT

Source: Google Maps

FIGURE 2-4 EAST SEGMENT DENSITY EXAMPLE, OAK PARK AVENUE TO HARLEM AVE

Source: Google Maps

Immediately west of Laramie Avenue is the CTA Pink Line 54th/Cermak station, the western terminus of the CTA Pink Line and the eastern terminus of Pace Route 322 and the future Pulse Cermak Line. West of this station, the roadway is paralleled one block to the north by 21st Place/ Vacin Fairway between Central Avenue and Ridgeland Avenue, which was previously ROW reserved for the Douglas Branch CTA rail service and is now used exclusively for residential and commercial parking.

A majority of the roadway is 150 feet wide and has two through travel lanes in each direction, a median/turning lane, and angled parking with a backing-out "swing" lane. The block faces are relatively short, with cross streets approximately every 300 feet. Commercial businesses and mixed-use buildings are dense along the segment, with a mix of moderate setbacks and built-to-lot-line buildings and orientation toward the roadway. Dense, single-family residential uses are in the areas north and south of the uses that front on Cermak Road. Approaching the west end of this segment, at Wesley Avenue, the roadway narrows to 80 feet and no longer includes the angled parking and additional backing-out lane. Two through travel lanes remain in each direction with no median and a narrower lane for on-street parallel parking before widening again near Harlem Avenue. At the Cermak Plaza in Berwyn (roughly the intersection with Wenonah Avenue), a transition occurs to large-setback commercial uses

surrounded by vast parking lots on the south side of the street (eastbound). The north side of the street (westbound) is generally built to the lot line or with a small setback.

2.1.1.2 *Central Segment: Cermak Road from Harlem Avenue (North Riverside Park Mall) to I-294*

FIGURE 2-5 CENTRAL SEGMENT DENSITY, 6TH AVE TO 15TH AVE

Source: Google Maps

FIGURE 2-6 CENTRAL SEGMENT DENSITY, WESTWOOD DR TO WEST OF WOLF RD

Source: Google Maps

Cermak Road between Harlem Avenue and I-294 has a greater variety of land uses and parcel sizes that include moderate single-family residential, large green spaces (e.g., cemeteries, golf courses, and open spaces or forest preserves) and commercial plazas with surface parking. A typical cross section ranges from 65 feet to 120 feet wide (including all ROW elements), but the roadway maintains two through travel lanes in each direction throughout. Dedicated left and right turning lanes are common at intersections, and there is no on-street parking throughout the segment. This segment also features gaps in the sidewalk network along both sides of the roadway. The North Riverside Park Mall is on the eastern end of the segment with the mall and other big-box retail development on the outparcels of the property and adjacent to it. To the west, a mix of residential (multi-family and single-family homes), commercial centers, industrial uses, and open space line the roadway for several miles. In residential areas, the block faces are typically 300 feet wide, but are much wider in most other locations. West of Wolf Road, a major office park with three large towers is set back far from the roadway and served with hundreds of parking spaces. The roadway transitions to a highway-like environment as it approaches I-294 and the Cook-DuPage County line.

2.1.1.3 *West Segment: 22nd Street/Butterfield Road from I-294 to Yorktown Center*

FIGURE 2-7 WEST SEGMENT DENSITY EXAMPLE, MIDWEST RD

Source: Google Maps

West of I-294, the roadway enters DuPage County and becomes 22nd Street and eventually Butterfield Road. Traveling west to Yorktown Center, the development style is large-lot, large-setback, and auto-oriented, with long distances between intersections (up to 1,000 feet). Destinations are typically large office buildings and commercial properties reachable by a network of supporting roads and large parking lots that surround the buildings. Oakbrook Center is a major destination and trip generator in the heart of this segment. The roadway is up to 200 feet wide with three or more through travel lanes and dedicated left and right turning lanes in each direction. Sidewalk gaps exist throughout, and many intersections lack crosswalks and protected crossing phases. Moving west, 22nd Street merges with Butterfield Road and continues west as Butterfield Road. This segment is challenging for transit users to safely access and reach stations within a reasonable walk of their destinations. There are large pockets of low-density single-family residential throughout and behind the office and commercial uses closest to the roadway; however, they often lack direct access to the roadway and may require additional walking to access. At the western end of the segment, Yorktown

Center lacks pedestrian connectivity from the roadway but includes higher density commercial and residential development.

2.1.2 Transit Markets

The corridor study area (U.S. Census block groups within approximately one half mile of the Cermak Road / 22nd Street / Butterfield Road ROW) has more than 93,000 residents and 108,000 jobs. Demographic and socioeconomic data varies significantly across the corridor with a disconnect between residential and employment areas. The East segment contains 54% of the total population of the corridor while making up only 12% of the land area. The population density drops significantly west of the East segment (Harlem Avenue) from over 29 people per acre to about four people per acre or less. Approximately 61% of jobs are in the West segment which includes major destinations like Oakbrook Center and Yorktown Center, as well as large office buildings and commercial strip centers. The East Segment has the smallest jobs and business footprint. Most jobs in these areas are concentrated in smaller commercial, industrial, or institutional locations or at major activity centers, such as the greater North Riverside Park Mall area and Hines VA / Loyola Medical Center.

There are significant concentrations of people of color, low-income households, and zero- and one-vehicle households in the East segment compared to the rest of the corridor. Twenty-nine percent of residents are low income and 49% of households have one or fewer vehicles. Eighty-nine percent are people of color. These factors indicate a concentration of residents who are transportation cost-burdened and transit-dependent. The Central and West segments are less dense, so transit demand begins to be isolated west of Harlem Avenue and is more concentrated to key locations, such as major intersecting roadways or major destinations like Oakbrook Center. Table 2-1 provides a summary of the study area demographics.

TABLE 2-1 STUDY AREA DEMOGRAPHICS

	Study Area	East	Central	West
Area (Acres)	**14,796**	1,711	6,665	6,420
Total Population	**93,532**	50,898	28,610	14,024
Population per Acre	***6.32***	*29.74*	*4.29*	*2.18*
Total Population %	**100%**	*54%*	*31%*	*15%*
People of Color (POC)	**63,673**	45,123	13,222	5,328
POC per Acre	***4.30***	*26.37*	*1.98*	*0.83*
POC Population %	***68%***	*89%*	*46%*	*38%*
Low-Income Population (150%)	**19,804**	14,835	3,449	1,520
Low -Income Population per Acre	***1.34***	*8.67*	*0.52*	*0.24*
Low-Income Population %	***21%***	*29%*	*12%*	*11%*
Total Households	***32,561***	*14,590*	*11,717*	*6,254*
People per Household	**2.20**	3.49	2.44	2.24
Household per Acre	**2.87**	8.53	1.76	0.97
Total Household %	**100%**	*45%*	*36%*	*19%*
0- to 1-Vehicle Households	**15,642**	7,147	5,660	2,835
0- to 1-Vehicle Households per Acre	***1.06***	*4.18*	*0.85*	*0.44*
0- to 1-Vehicle Household %	***48%***	*49%*	*48%*	*45%*
Total Jobs	**108,669**	9,301	33,421	65,947
Jobs per Acre	***7.34***	*5.44*	*5.01*	*10.27*
Total Jobs %	**100%**	*9%*	*31%*	*61%*

Source: 2017-2021 American Community Survey, 2020 Longitudinal Employer-Household Dynamics

2.1.3 Roadway Characteristics

Lane configurations, parking, and speed limits vary significantly across the corridor. Eastern areas of the corridor tend to have fewer travel lanes, slower speeds, and on-street parking, while western portions include more travel lanes, higher speeds, and do not include on-street parking. Speed limits in the East segment are typically 25 or 30 miles per hour (mph) and gradually increase in the Central segment and areas to the west with speed limits ranging from 35 to 45 mph. Table 2-2 displays a detailed breakdown of the roadway throughout the corridor.

TABLE 2-2 CORRIDOR ROADWAY CHARACTERISTICS

Road	Road Section	Road/Lane Configuration	Average Annual Daily Traffic	Speed Limit	On-Street Parking	Sidewalks
East Segment*						
Cermak	Laramie Ave to Wesley Ave/Riverside Dr	Four through lanes; medium-size landscaped median. Diagonal parking arrangement.	28,400 – 33,900	25 mph	Diagonal parking on both sides	Both sides
Cermak	Wesley Ave to Home Ave	Four through lanes; left turn lanes with no median.	33,900 – 32,900	25 mph	Parallel parking on both sides	Both sides
Cermak	Home Ave to North Riverside Mall	Five through lanes (2 WB, 3 EB); medium-size median with left turn lanes.	32,900 – 29,400	25 or 30 mph	Parallel parking on north side only	Both sides
Central Segment						
Cermak	North Riverside Mall to Lathrop Ave	Five through lanes (2 WB, 3 EB); medium-size median with left turn lanes.	29,400	30 mph	No parking	South side only, partial north side
Cermak	Lathrop Ave to Des Plaines Ave	Four through lanes; no median.	29,400	35 mph	No parking	South side only, partial north side
Cermak	Des Plaines Ave to S 1st Ave	Six through lanes; medium-size median.	31,300	35 mph	No parking	No sidewalks
Cermak	S 1st Ave to La Grange/Hwy 45	Four through lanes; center-running turn lane (no median).	32,400 – 23,500	35 or 40 mph	No parking	South side; north side has small gap
Cermak	La Grange Rd/Hwy 45 to Windsor Dr	Four through lanes; center-running turn lane. Median with on/off ramps present at I-294.	22,700 – 9,600	35 to 45 mph	No parking	Both sides
West Segment						
22nd	Windsor Dr to Spring Rd	Six through lanes; concrete median with turn lanes at intersections.	9,600 – 56,000	40 mph	No parking	Both sides
22nd	Spring Road to Butterfield Rd	Six through lanes; concrete median with turn lanes at intersections.	56,000 – 25,400	40 mph	No parking	No sidewalks between Spring and Parkview Dr. Both sides between Parkview Dr and Butterfield.
Butterfield	Butterfield Rd to Fairfield Ave	Six through lanes; concrete median with turn lanes at intersections.	41,000	45 mph	No parking	Very few sidewalks

**Note: Row breaks are based on changes in road geometry; segment divisions are approximate; Source: IDOT, Google Maps*

2.1.4 Local and Regional Plans

A review of 27 planning studies was conducted to understand how the Pulse Cermak Line can align with communities' visions and goals for transportation and land use. Special attention was paid to goals related to transit, pedestrian access, land use, and redevelopments. The corridor has been studied for more than 20 years with many recommendations for improved transit service and supportive infrastructure. Most recommendations have not been implemented but are still relevant today. Among the planning studies, nine were identified as "key" because their goals and recommendations have a direct link to the safety and convenience of transit users accessing Pulse stations.

Overall themes from the review of key plans include:

- Stakeholders have in the past stated a need for improved corridor transit service, including alignment, station, and frequency for rapid transit (Connecting Cook County 2040 Long Range Transportation Plan and DuPage County Mobility Framework Plan).
- Investments in infrastructure and operations that enhance transit performance were perceived as very important and highly valued. Exploring signal enhancements, bus priority lanes, shoulder widening, and enhanced stations and vehicles were specifically recommended (RTA Bus Rapid Transit Market Research Project and Cook County Transit Plan).
- Partnership and coordination between Pace and IDOT, which has jurisdiction over most of the ROW in the corridor, is critical for enhancing transit. IDOT's Cermak Road-related Smart Corridor Projects (contract number 62N32 and 62N39) included an initial set of road and crosswalk improvements but does not include Pulse-related recommendations. Continued coordination and partnership with IDOT on ongoing corridor work will be essential for furthering development of the Pulse Cermak Line.
- Partnership with municipalities and private property owners/developers is necessary for consistent sidewalks, pedestrian crossings, and improved access to transit. Land use and development standards should place greater emphasis on smaller setbacks, mixes of uses, and restrained off-street parking, particularly in the west segment, to support the use of transit (Butterfield Road Corridor Plan, DuPage County Mobility Framework, and Village of Oakbrook Commercial Areas Revitalization Plan Update).

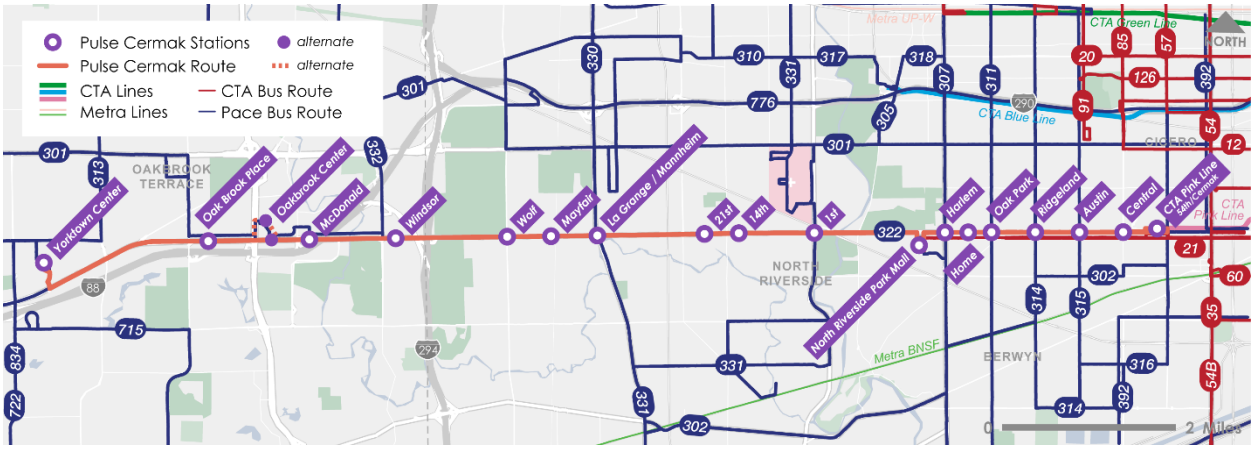
A table summarizing the 27 planning studies reviewed and identification of key plans are included in Appendix A.

2.2 Existing Transit Service

2.2.1 Service Overview

Pace Route 322 and CTA Route 21 are the primary transit services operating on the corridor and overlap for more than three miles on the corridor's east end between the CTA Pink Line 54th/Cermak station and the North Riverside Park Mall. The corridor links rail rapid transit (CTA Pink Line) with Pace transfer hubs at the North Riverside Park Mall, Oakbrook Center, and Yorktown Center, as well as connections with 14 other Pace routes including routes 301, 302, 307, 311, 313, 314, 315, 316, 330, 331, 332, 715, 722, and 834. An overview map of existing service in the corridor is shown in Figure 2-8.

FIGURE 2-8 TRANSIT SERVICE OVERVIEW



Source: Pace, PMO

Pace Route 322 operates between the Yorktown Center in Lombard to the CTA Pink Line 54th/Cermak station in Cicero from approximately 4:30 a.m. to 1 a.m. on weekdays, 5 a.m. to 1 a.m. on Saturdays, and 6 a.m. to 10:30 p.m. on Sundays. It operates every 20 minutes during most of the day on weekdays (30- to 60-minute frequencies during evenings/nights) and every 20 to 60 minutes on weekends.

CTA Route 21 operates from North Riverside Park Mall in North Riverside to McCormick Place in Chicago from approximately 4 a.m. to 12:30 a.m. on weekdays, 4 a.m. to 12 a.m. on Saturdays, and 6 a.m. to 12 a.m. on Sundays. It operates every 12 to 15 minutes during most of the day on weekdays (20-minute frequencies during early mornings, evenings, and nights) and every 15 to 20 minutes on weekends. These headways and service span are depicted in Table 2-3.

TABLE 2-3 PRIMARY CORRIDOR LOCAL BUS SERVICE

Operator	Route	Termini	Approx. Span	Weekday Peak Headway	Weekday Off Peak Headway	Weekend Headway
Pace	322	East: CTA Pink Line 54th/Cermak Station West: Yorktown Center	Weekday: 4:30 a.m.-1 a.m. Saturday: 5 a.m.-1a.m. Sunday: 6 a.m.-10:30 a.m.	20 min	30-60 min	20-60 min
CTA	21	East: 25th/Michigan (McCormick Place) West: North Riverside Park Mall	Weekday: 4 a.m.-12:30 a.m. Saturday: 4 a.m.-12 a.m. Sunday: 6 a.m.-12 a.m.	12-15 min	20 min	15-20 min

Source: Pace, CTA Schedules Fall 2023

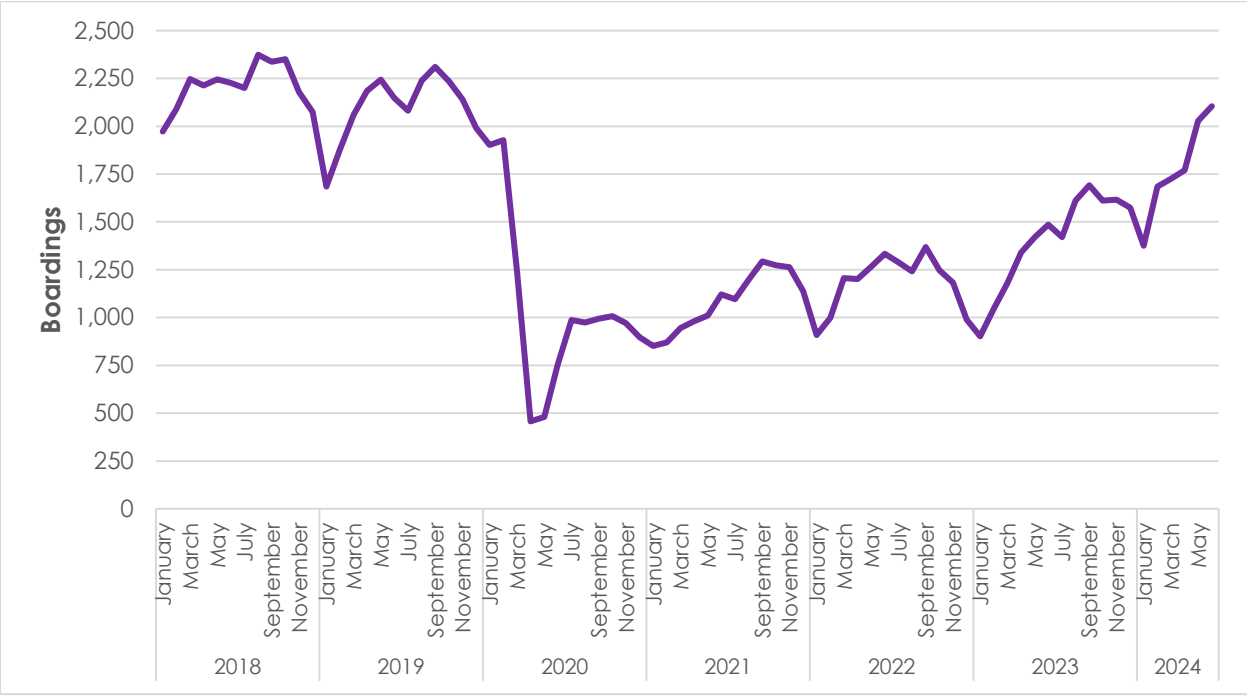
2.2.2 Route 322 Analysis

As part of the existing conditions assessment, Route 322 ridership and performance was analyzed in spring 2023 to inform preliminary station locations/routing and to ensure current Route 322 riders would be served. Analysis of CTA Route 21 performance was conducted throughout the study and is informing Pace's coordination with CTA. Additional details on anticipated CTA Route 21 service are provided in Section 3.5.1.

2.2.2.1 Ridership Analysis

Average daily ridership on Route 322 fluctuated over the past several years due to impacts from the COVID-19 pandemic and has been recovering since as shown in Figure 2-9. Ridership was at its highest in fall 2018 with more than 2,300 average weekday boardings. After several years of ridership recovery, Route 322 is approaching pre-pandemic levels with approximately 2,100 average weekday boardings in summer 2024.

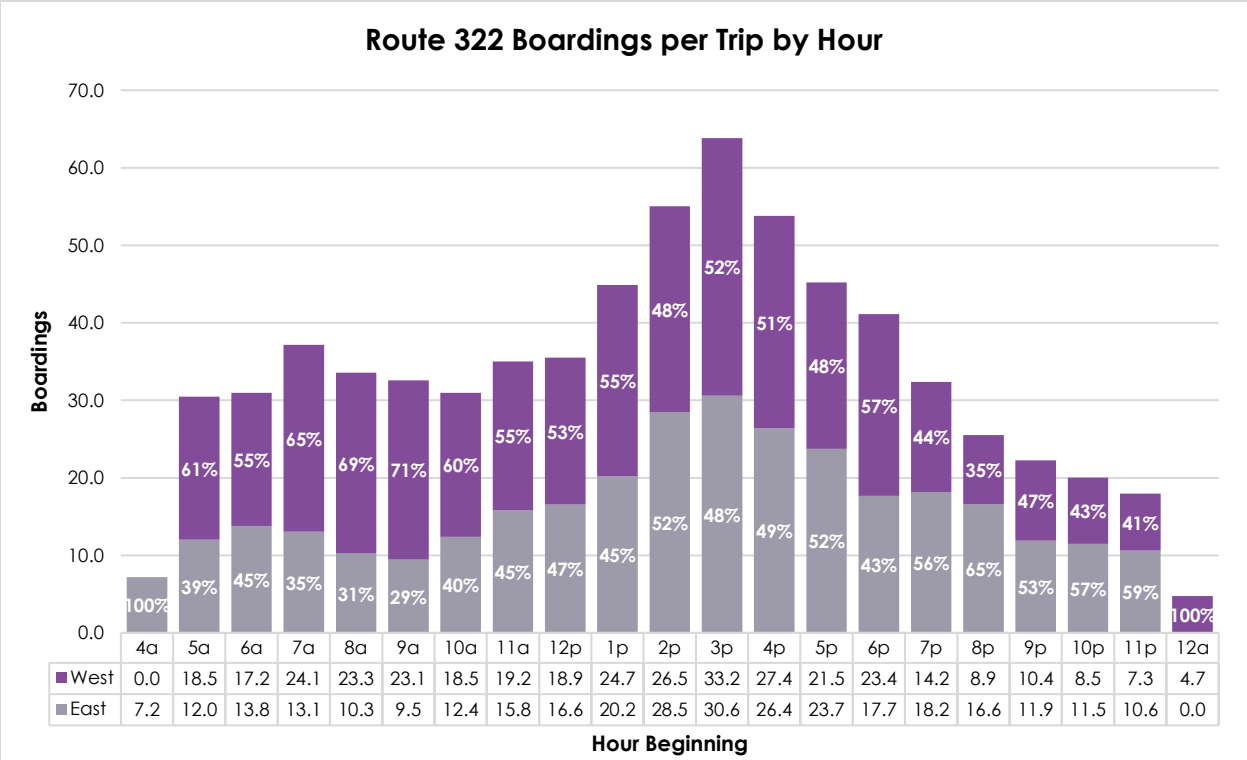
FIGURE 2-9 ROUTE 322 AVERAGE DAILY WEEKDAY RIDERSHIP TRENDS BY MONTH



Source: Regional Transportation Authority Mapping and Statistics (RTAMS)

Ridership performance analyses by trip, time of day, and direction were conducted to understand when riders are taking the service. Figure 2-10 displays Route 322 weekday trip-level ridership by hour and direction. Westbound travel is the strongest during the AM Peak (6 – 9 a.m.), followed by an even, directional split in the Midday (9 a.m. – 3 p.m.), and eastbound travel predominantly during the PM Peak (3 – 6 p.m.). Productivity in each direction is the highest between 1p.m. and 6 p.m. with approximately 20 – 30 riders per trip.

FIGURE 2-10 ROUTE 322 WEEKDAY BOARDINGS PER TRIP BY HOUR



	4a	5a	6a	7a	8a	9a	10a	11a	12p	1p	2p	3p	4p	5p	6p	7p	8p	9p	10p	11p	12a
West	0.0	18.5	17.2	24.1	23.3	23.1	18.5	19.2	18.9	24.7	26.5	33.2	27.4	21.5	23.4	14.2	8.9	10.4	8.5	7.3	4.7
East	7.2	12.0	13.8	13.1	10.3	9.5	12.4	15.8	16.6	20.2	28.5	30.6	26.4	23.7	17.7	18.2	16.6	11.9	11.5	10.6	0.0

Source: Pace Fall 2022 APC

Ridership performance, summarized by segment (i.e., East, Central, and West) in Table 2-4, shows that Route 322 produced approximately 1,370 average daily weekday boardings.[6] The East segment has a significant concentration of the overall ridership (61% of Route 322 boardings). Route 322 averages 102.3 boardings per mile and 12.7 boardings per trip, with the East segment garnering the highest boardings per mile and trip. The Central and West segments are similar to one another with substantially lower per mile and trip productivity compared with the East segment.

TABLE 2-4 ROUTE 322 WEEKDAY KEY PERFORMANCE INDICATORS

	East	Central	West	Route 322
Average Weekday Boardings	895	243	233	1,371
Boarding Percentage	*61%*	*22%*	*17%*	*100%*
Boardings per Mile	*322.8*	*50.0*	*47.6*	*102.3*
Boardings per Trip	*7.8*	*2.8*	*2.2*	*12.7*

Source: Pace Fall 2022 APC

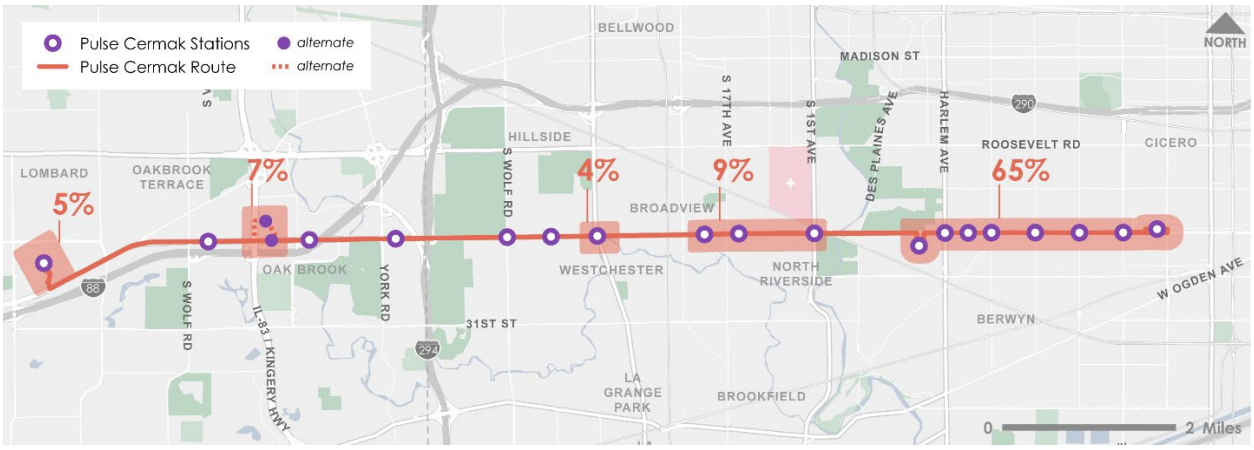
[6] Refers to fall 2022 ridership, conducted during the existing conditions analysis

Overall, approximately 90% of weekday ridership occurs within five key areas including the following and shown in Figure 2-11:

- 65% - Between the CTA Pink Line 54th/Cermak station and North Riverside Park Mall
- 9% - Greater Broadview / North Riverside Area (1st Avenue to/from 21st Avenue)
- 4% - Mannheim/La Grange Road Intersection (Westchester)
- 7% - Oakbrook Center
- 5% - Yorktown Center

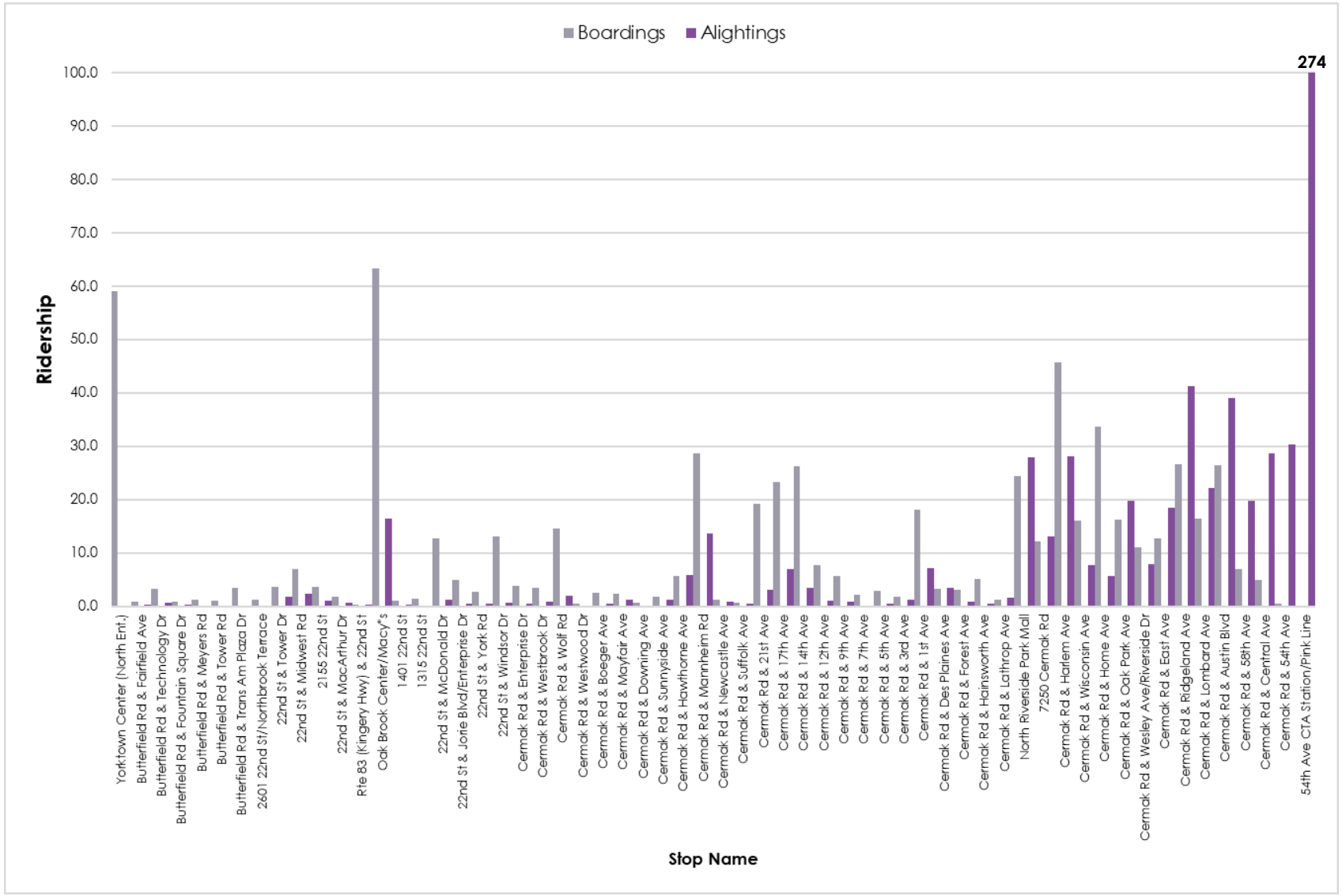
These concentrations of ridership also can be seen at the stop level. Figure 2-12 and Figure 2-13 display more specific ridership distribution by stop and by direction.

FIGURE 2-11 ROUTE 322 KEY RIDERSHIP AREAS



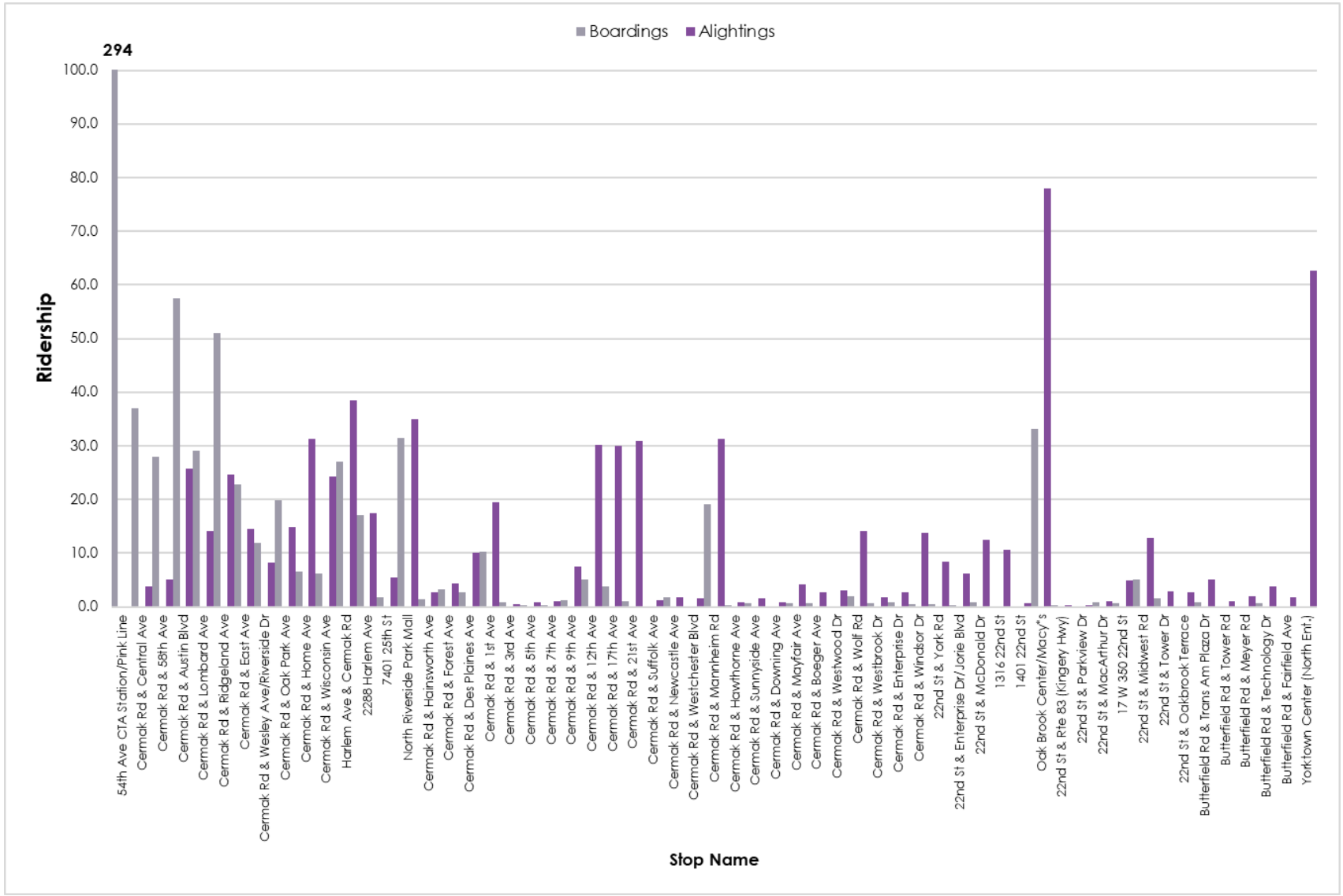
Source: Pace Fall 2022 APC

FIGURE 2-12 PACE 322 WEEKDAY EASTBOUND RIDERSHIP ACTIVITY



Source: Pace Fall 2022 APC

FIGURE 2-13 PACE 322 WEEKDAY WESTBOUND RIDERSHIP ACTIVITY



Source: Pace Fall 2022 APC

Route 322 transfer data was also evaluated to identify key existing transit connections. In fall 2022, more than 40% of Route 322 riders transferred to or from another transit service as a part of their trip, and five routes accounted for more than 70% of all transfer connections to the route, as shown in Table 2-5. The CTA Pink Line 54th/Cermak station has more than double the transfers compared to the next highest connection.

TABLE 2-5 ROUTE 322 MAJOR TRANSFER CONNECTIONS

Major Route Transfer Connection	% of Transfers	Potential Transfer Locations*
CTA Pink Line	*32%*	*54th/Cermak station*
Route 307 – Harlem	*13%*	*Cermak Rd & Harlem Ave*
CTA Route 21- Cermak	9%	*Multiple locations between CTA Pink Line 54th/Cermak & North Riverside Park Mall*
Route 322 – Cermak	9%	*Multiple locations across route, majority is likely to occur on eastern segments*
Route 330 – Mannheim/La Grange	6%	*Cermak Rd & Mannheim/La Grange Rd*

**Transfer locations are not exact for Route 322 and 21as these routes overlap, and Ventra data do not include specific stop locations.*
Source: Ventra Fall 2022

The following are additional considerations for transfers:

- Route 307 is a major north-south service that operates on Harlem Avenue. It is also planned to be a future Pulse corridor.
- CTA Route 21 overlaps with Pace Route 322 (east of the North Riverside Park Mall). The transfer patterns indicate that riders making this connection may be using the services interchangeably (i.e., taking whichever bus comes first) or traveling farther east (beyond the CTA Pink Line 54th/Cermak station). The North Riverside Park Mall stop is necessary for a CTA Route 21 rider who needs to transfer to Pace Route 322 to continue west, as CTA terminates there.
- A considerable number of transfers occur between Route 322 and itself, indicating riders may be taking brief bidirectional trips on the corridor within the two-hour Ventra transfer window.
- Route 330 is an important north-south service that operates along Mannheim/La Grange Road.
- Route 331 (not shown above, approximately 3% of transfers) is an important north-south service that operates along 1st Avenue and serves key destinations such as the Hines VA and Loyola Medical Center.
- The off-street stop at Oakbrook Center, adjacent to the Macy's, allows transfers to Route 301, which serves Roosevelt Road from the CTA Blue Line Forest Park

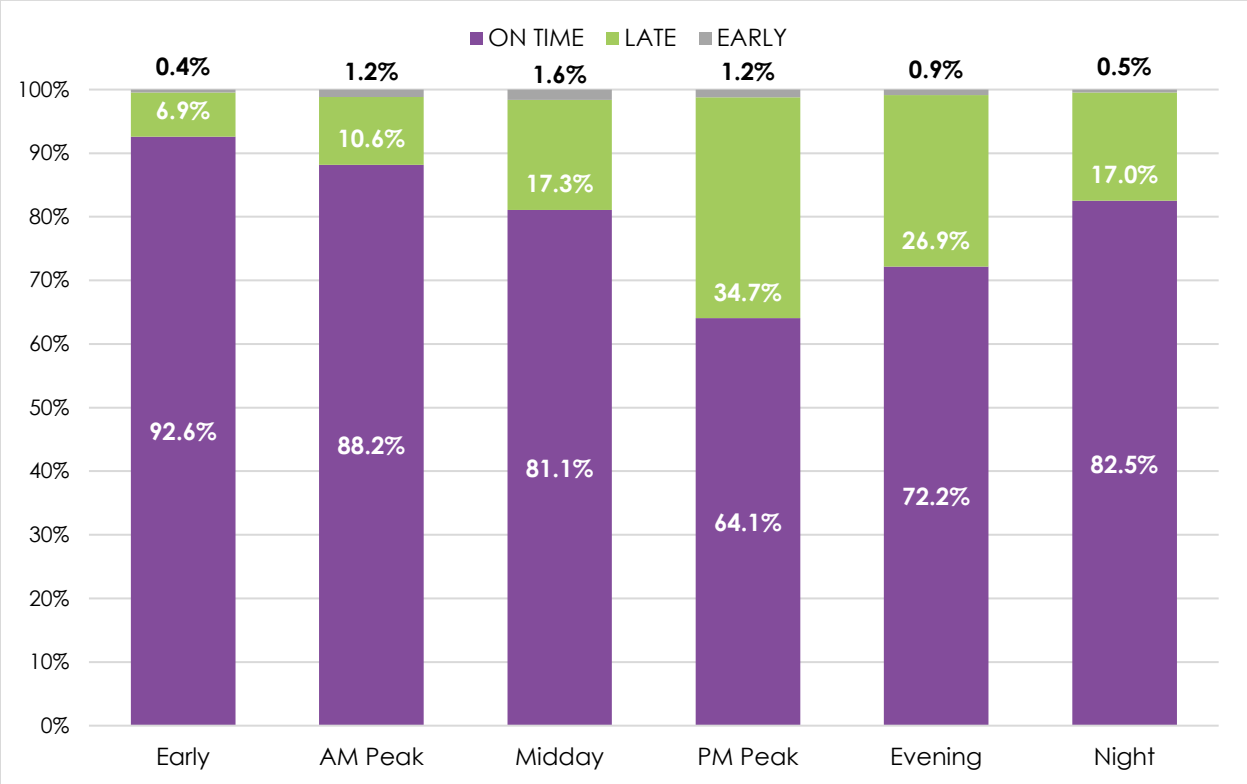
station into DuPage County, and Route 332, which reaches the CTA Blue Line Rosemont station via downtown Elmhurst.

- The off-street stop and shelter at Yorktown Center, as the current western terminus of Route 322, allows transfers to fixed routes that serve other corridors farther west and south in DuPage County, such as routes 715 (Wheaton, College of DuPage in Glen Ellyn), 722 (Naperville), and 834 (Joliet).

2.2.2.2 On-Time Performance and Running Time Analysis

Route 322 on-time performance (OTP) was analyzed to assess schedule adherence and reliability. Pace considers service to be on time if it arrives at a scheduled timepoint up to one minute early or five minutes late. Route 322 had an overall average weekday OTP of almost 80%. Approximately 19% of trips were considered late and only 1% were early. OTP during the PM Peak is worse than the average with only 64% of trips on time. Traffic congestion in the corridor is the primary source for service delays, even with additional time included in the schedule throughout the day around major activity centers. OTP still tends to worsen as the day progresses into the PM Peak and evenings as shown in Figure 2-14.

FIGURE 2-14 ROUTE 322 WEEKDAY ON-TIME PERFORMANCE BY TIME PERIOD



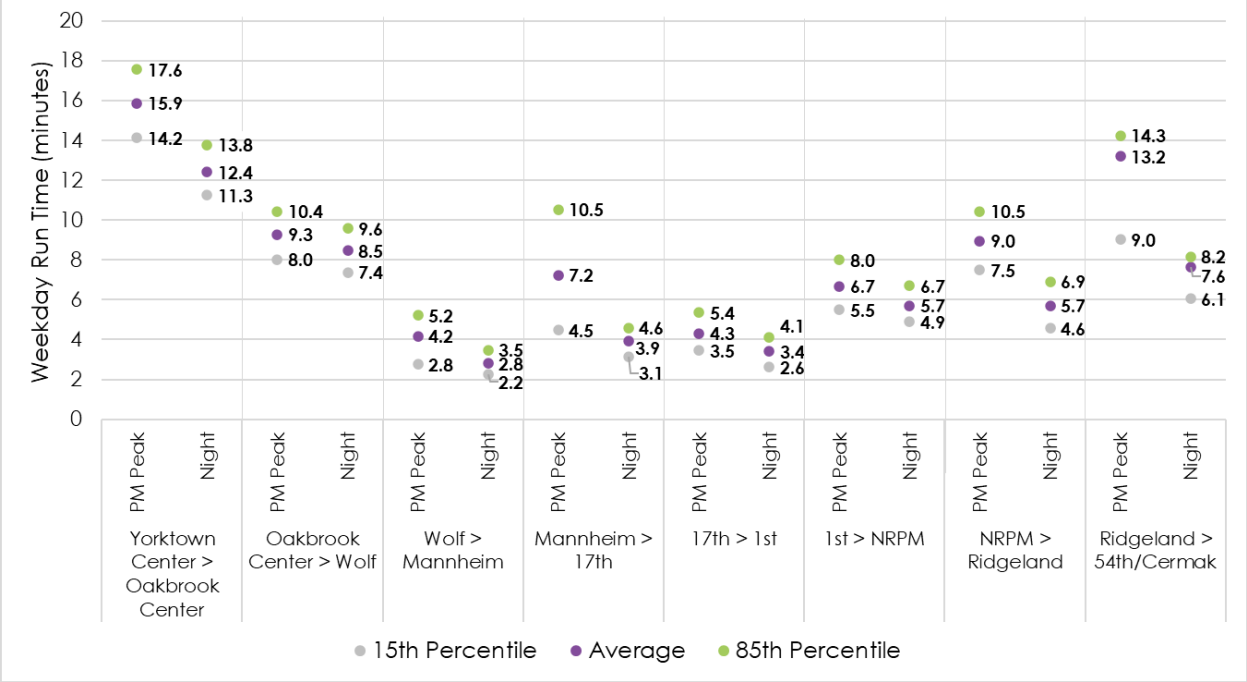
Source: Pace Fall 2022 AVL

Pace's automatic vehicle location (AVL) data from fall 2022 was used to calculate observed running times at the trip and timepoint levels. The PM Peak (3-6 p.m.) and

Night (9 p.m. and after) periods were selected to compare running times when congestion is greatest with when traffic is consistently free flowing.

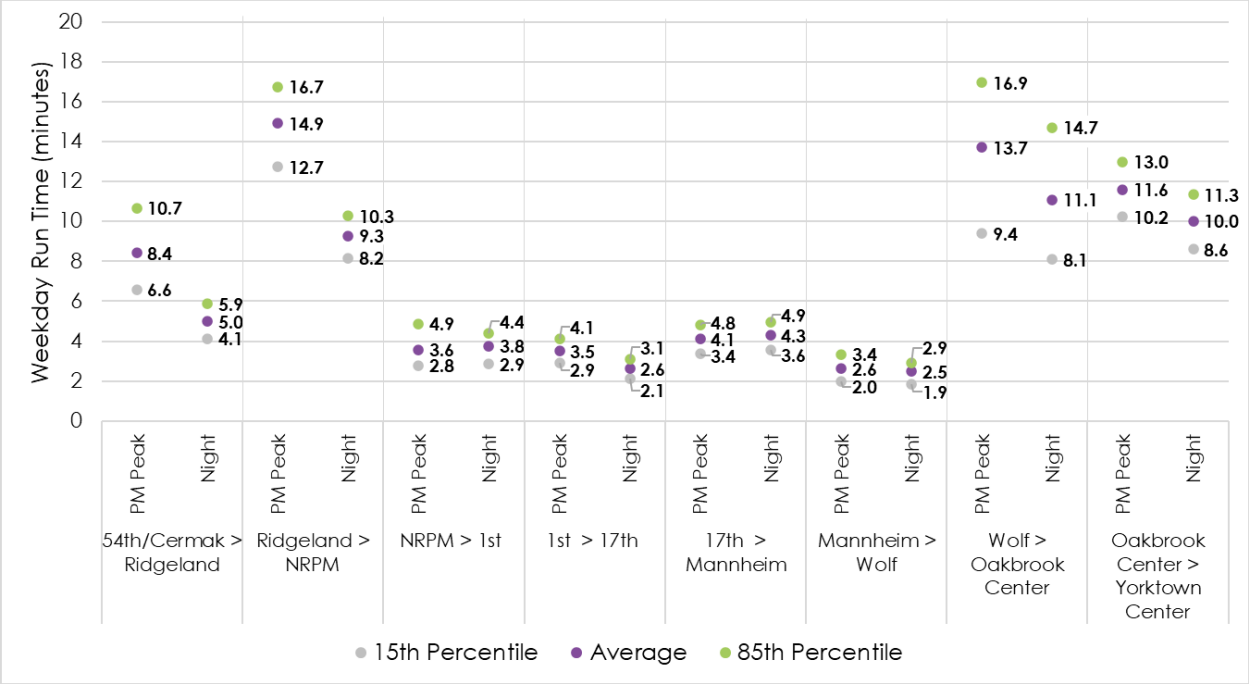
On an average weekday, Route 322 requires more than 20% additional running time during the PM Peak than during the Night. For eastbound trips, more than 19 minutes (+28%) of additional running time per trip is needed during the PM Peak with the most affected timepoint segments occurring between Yorktown Center and Oakbrook Center; Mannheim Road and 17th Avenue; and North Riverside Park Mall and CTA Pink Line 54th/Cermak station. For westbound trips, more than 14 minutes (+22%) of additional running time per trip is needed, with the most impacted timepoint segments occurring between the CTA Pink Line 54th/Cermak station and North Riverside Park Mall; and Wolf Road and Yorktown Center. Figure 2-15 and Figure 2-16 display more detailed directional running time comparisons by timepoint segment for the average, 85th percentile, and 15th percentile of the AVL data set.

FIGURE 2-15 ROUTE 322 WEEKDAY EASTBOUND RUNNING TIME COMPARISON



Source: Pace Fall 2022 AVL

FIGURE 2-16 ROUTE 322 WEEKDAY WESTBOUND RUNNING TIME COMPARISON

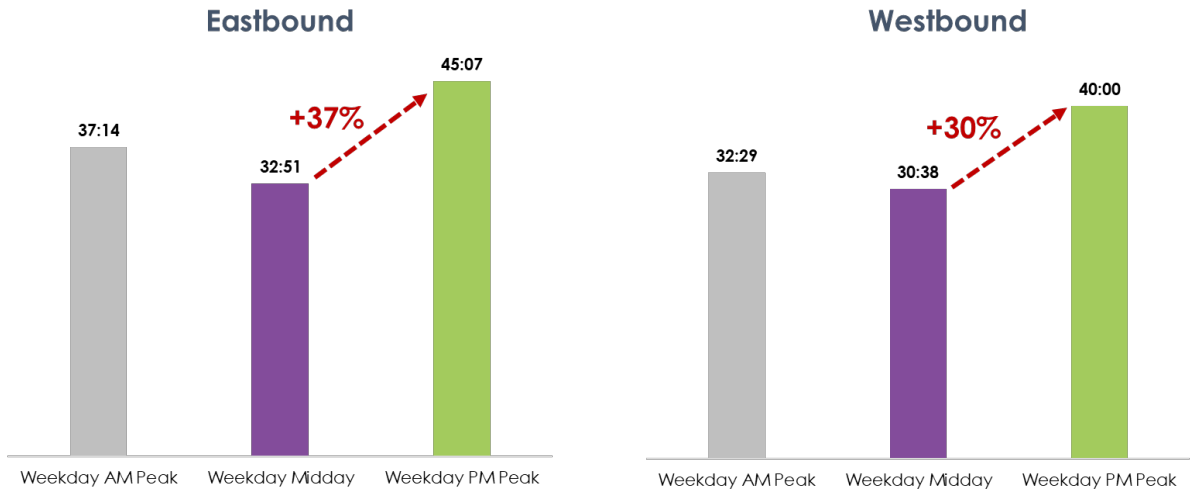


Source: Pace Fall 2022 AVL

2.2.3 Delay and Bus Priority Need

Route 322 currently operates without any bus priority features. Consequently, the service experiences significant delays throughout the day, as demonstrated in Section 2.2.2, as buses must navigate congestion alongside other traffic, waiting in queues and merging in and out of through travel lanes to reach bus stops. To further understand corridor congestion, the project team conducted a "floating car"[7] analysis to measure automobile travel times during specific times of day. This analysis included measuring auto travel times by direction across the corridor between the Cermak Road / Laramie Avenue (i.e., CTA Pink Line 54th/Cermak station) and Butterfield Road / Fairfield Avenue (i.e., Yorktown Center) in fall 2023. Compared to travel during the Midday (9 a.m. to 3 p.m.), average automobile travel times in the corridor were more than 12 minutes longer eastbound (+37%) and more than 9 minutes longer westbound (+30%) during the PM Peak on weekdays, as shown in Figure 2-17. The heaviest peak-period congestion was on the eastern (between Laramie Avenue & Harlem Avenue) and western (between York Road and Fairfield Avenue) portions of the corridor, a pattern that is also often observed on Saturdays.

FIGURE 2-17 AVERAGE WEEKDAY CORRIDOR AUTO TRAVEL TIMES BY DIRECTION



Source: Pace, PMO Fall 2023 Floating Car Analysis

Reliability issues and delays caused by corridor congestion have a significant impact on Route 322 service. Average weekday OTP during the afternoon peak was only 64%[8], which is less than the Pace network average of approximately 71%.[9] Additional running

[7] A floating car run is a data collection process that includes measuring segment-level travel times across an area to help understand travel time variability and congestion. This process is conducted by driving a designated corridor and documenting curb-side travel times.
[8] Pace, Fall 2022 AVL
[9] Pace, Suburban Service and Regional ADA Paratransit Budget, November 2023. https://www.pacebus.com/sites/default/files/2023-10/2024%20Final%20Budget%20Book%20for%20BOD%20%26%20Internet_compressed.pdf

time analysis of Route 322 service indicated that, on average, PM Peak trips in either direction require more than 20% additional running time (approximately 14 to 19 minutes) compared to off-peak times with less congestion. This demonstrates a clear need to improve transit trip consistency and reliability, and improvements through bus priority treatments would make transit service in the corridor and the future Pulse Cermak Line faster and more reliable.

3 Pulse Cermak Line Components

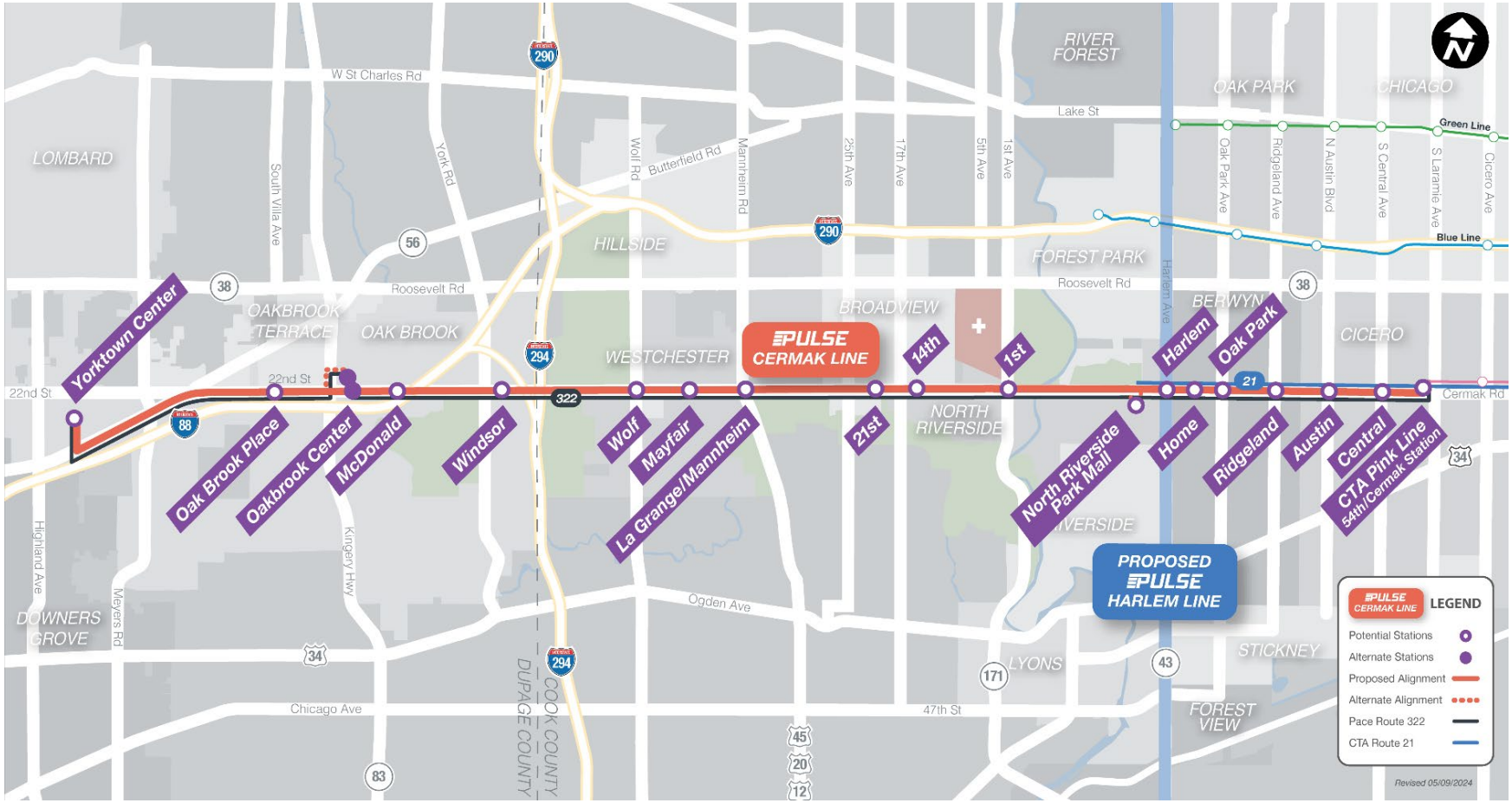
3.1 Overview

The Pulse Cermak Line will be fast, frequent, and reliable, limiting stops to the station locations at approximately every half mile to mile along the line. Pace Route 322 will continue to serve all local stops across the corridor, and CTA Route 21 is anticipated to serve all of its local stops between the CTA Pink Line station at 54th/Cermak and the North Riverside Park Mall. Pulse will primarily operate in public ROW under IDOT jurisdiction, and up to four short portions of the route will operate on private property. The eastern terminus will utilize the existing bus facility at the CTA Pink Line 54th/Cermak station, and the western terminus is planned to be integrated into private property adjacent to Yorktown Center. Due to constraints on the adjacent arterials, the route will divert off Cermak Road to serve a station on the property of the North Riverside Park Mall, which is currently served by Pace Route 322 and serves as a terminus for CTA Route 21. An alternate routing to serve an off-street station at Oakbrook Center will also be evaluated during the Environmental Review phase.

Figure 3-1 displays the Pulse Cermak Line's potential alignment and station locations. The sections that follow describe:

- Station designs, features, and locations
- Preliminary capital cost
- Potential bus priority features and opportunities
- Recommended service plan
- Running time estimates
- Operating statistics
- Operating requirements and costs

FIGURE 3-1 PULSE CERMAK LINE POTENTIAL ALIGNMENT AND STATIONS



Source: Pace, PMO

3.2 Stations

Potential stations were explored at 24 locations at the outset of the Project Definition phase. The project team identified 19 preferred stations through collaboration with the CAG and other key stakeholders, analyzing existing conditions, and considerations of future development and roadway projects. The following sections describe the Pulse station designs, features, and detail specific site elements of the preferred station locations.

3.2.1 Station Designs and Types

Pace established standards for station types when defining the Pulse Milwaukee Line, the first in the network, in 2013 and 2014. Since then, the implementation of the Pulse Dempster Line as well as the preliminary design of the Pulse Halsted Line and Pulse 95th Street Line have factored into the recommended designs for the Pulse Cermak Line. In addition, Pace is considering maintenance and operational needs based on observation of the Pulse lines in service, as well as compatibility with CTA Route 21 buses.

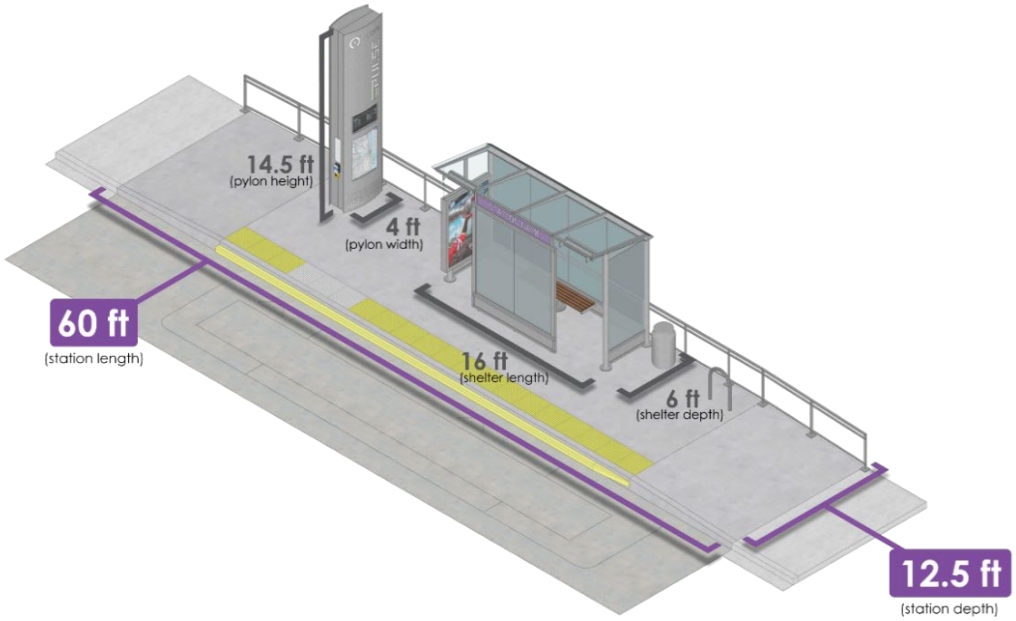
Eight station layouts were developed based on the program's four basic station types: standard, length constrained, depth constrained, and length and depth constrained.[10] Each station type has a layout variant to be served only be 40-foot buses, and a variant to be shared with 60-foot articulated CTA buses. The layouts serve as templates for the design of each individual station site, which must fit within a variety of roadway contexts.

3.2.1.1 Standard Station Layout

The standard layout is the preferred station configuration and feature set and is used where the available ROW is not constrained. The standard layout is 60 feet long by 12.5 feet deep, including the ADA-compliant ramps and shelter. The station platform is extended to at least 71 feet at stations that must accommodate articulated buses and can be longer at stations that need to accommodate multiple buses, such as transfer stations, layover stations, and off-street stations that serve buses in both directions. Figure 3-2 and Figure 3-3 display details of the standard station layouts.

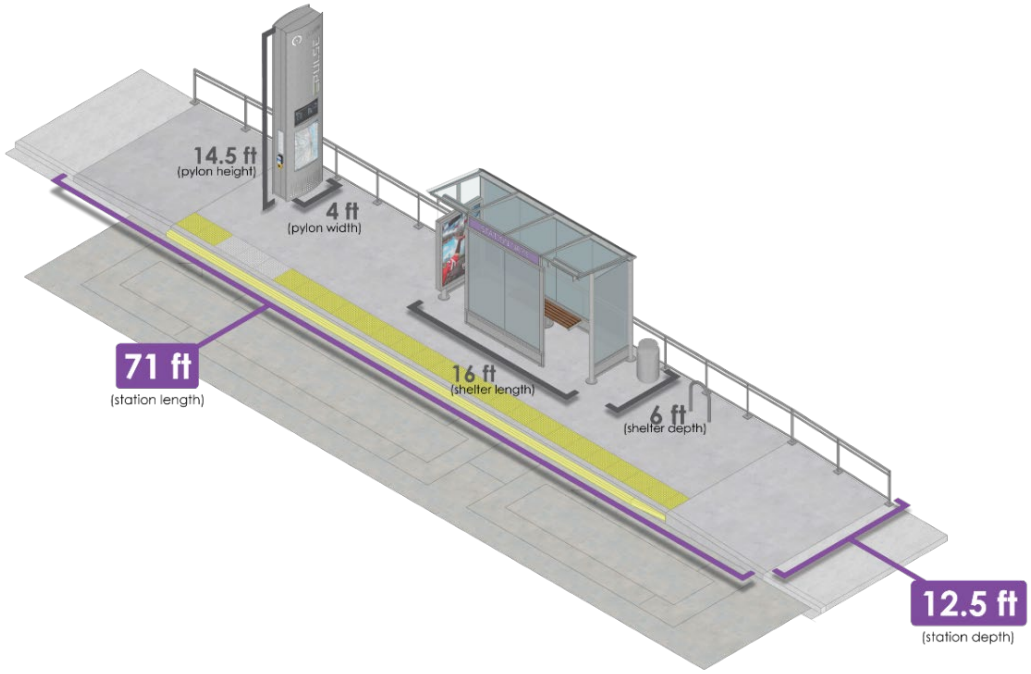
[10] For previous lines, these were labeled "typical," "compact," and "ultra compact."

FIGURE 3-2 STANDARD STATION LAYOUT



Source: Pace, PMO

FIGURE 3-3 STANDARD STATION LAYOUT (ARTICULATED BUS)



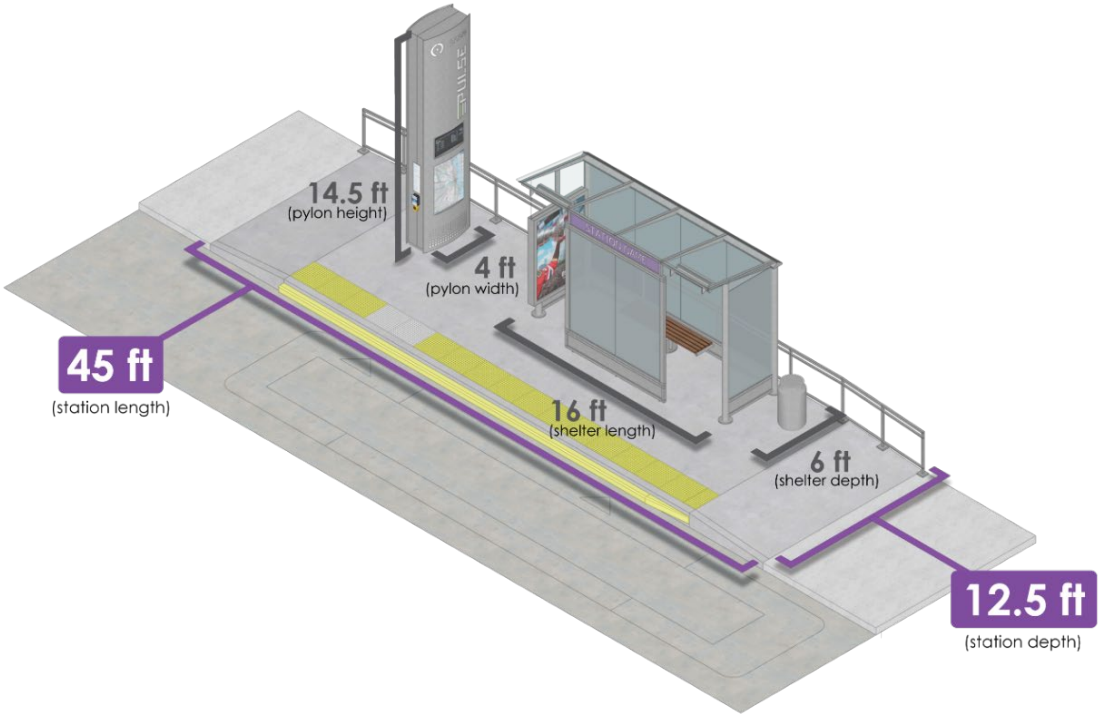
Source: Pace, PMO

3.2.1.2 Length Constrained Station Layout

Length constrained stations will be built where the 60-foot length required for a standard station is unavailable due to factors such as driveways, utilities, or sight line obstructions. The length is shortened to 45 feet (or to at least 57 feet at stations that need to accommodate articulated buses). This is achieved in part by using a steeper slope for platform ramps[11] and removing the bicycle rack. Figure 3-4 and Figure 3-5 display details of the length constrained station layouts.

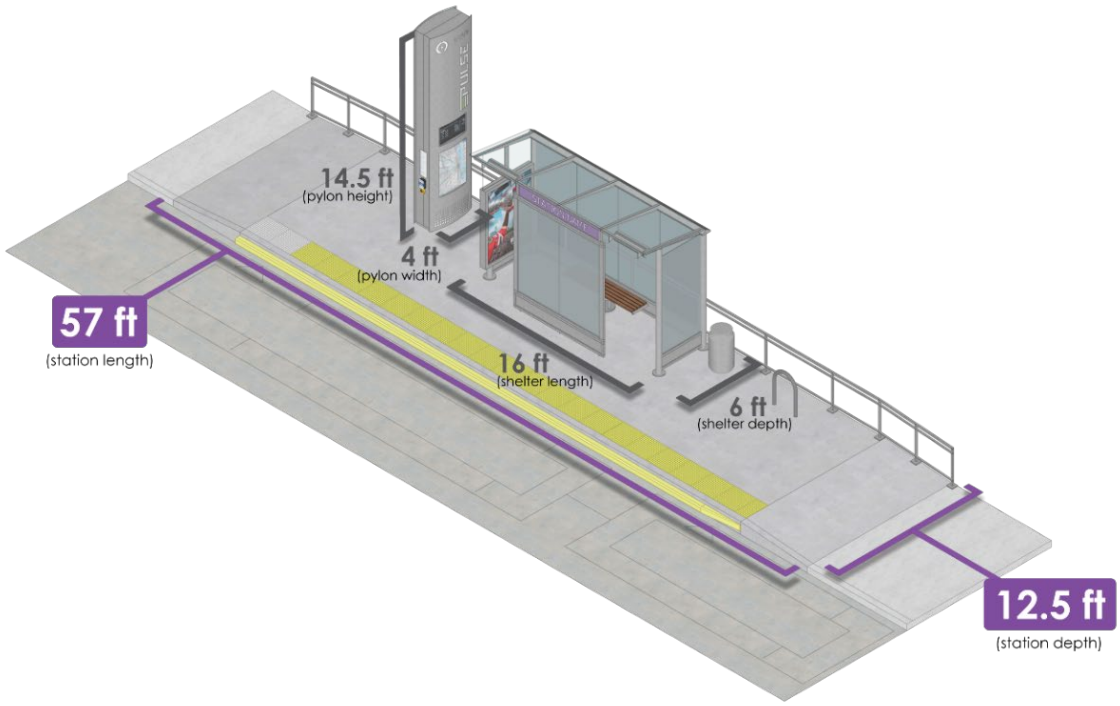
[11] All ramps are compliant with the Americans with Disabilities Act (ADA).

FIGURE 3-4 LENGTH CONSTRAINED STATION LAYOUT



Source: Pace, PMO

FIGURE 3-5 LENGTH CONSTRAINED STATION LAYOUT (ARTICULATED)



Source: Pace, PMO

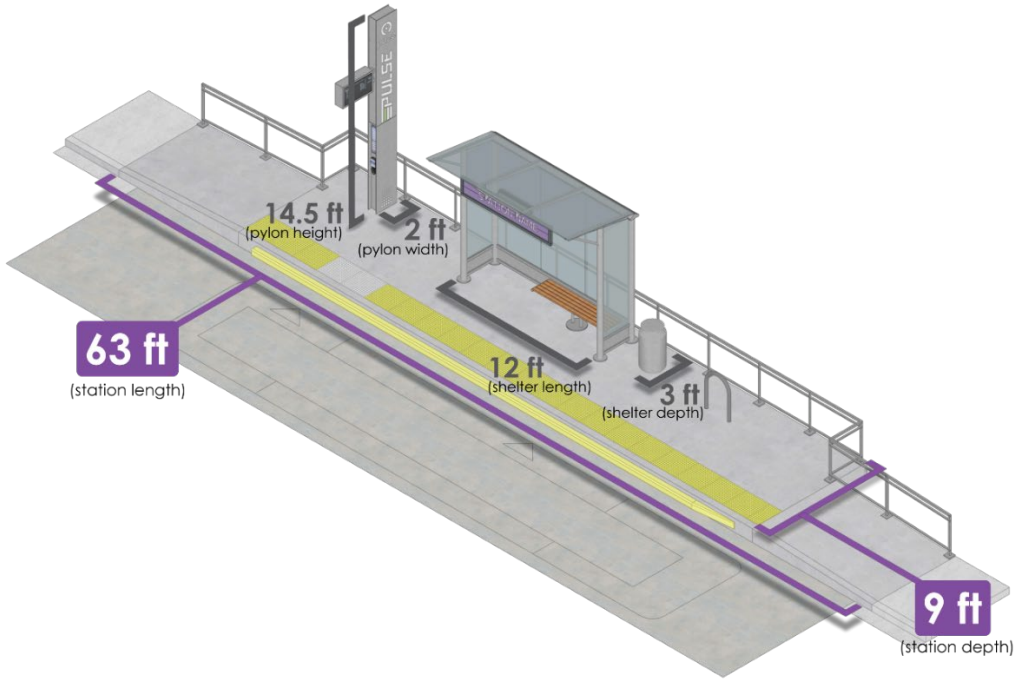
3.2.1.3 Depth Constrained Station Layout

Depth constrained stations will be built where factors such as building setbacks, private property lines, or utilities, preclude a standard layout. The station depth is reduced to nine feet. The length is similar to the standard layout but may be expanded slightly to 63 feet (or at least 72 feet at stations that accommodate articulated buses) to maintain adequate pedestrian circulation with the constrained depth. It also requires several changes to station features compared to the standard layout and differs in the following ways:

- The shelter structure is shorter in length (12 feet instead of 16 feet) and less deep (three feet instead of six feet) than the standard station shelter and lacks a front panel to allow adequate space for a bench and wheelchair waiting area. This configuration allows for a minimum 60-inch clear width between the platform edge and the shelter, adhering to ADA minimum requirements.
- The vertical marker pylon is narrower: two feet wide instead of four feet, with the real time arrival screen suspended on the side.

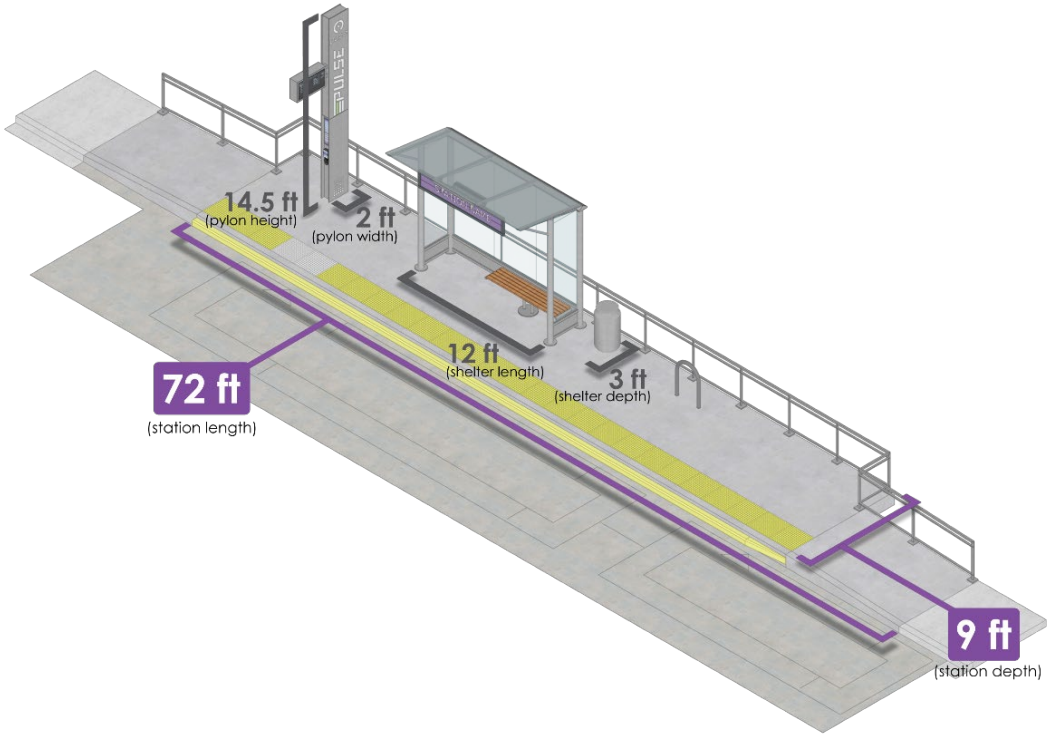
Figure 3-6 and Figure 3-7 display details of the depth constrained station layouts.

FIGURE 3-6 DEPTH CONSTRAINED STATION LAYOUT



Source: Pace, PMO

FIGURE 3-7 DEPTH CONSTRAINED STATION LAYOUT (ARTICULATED)

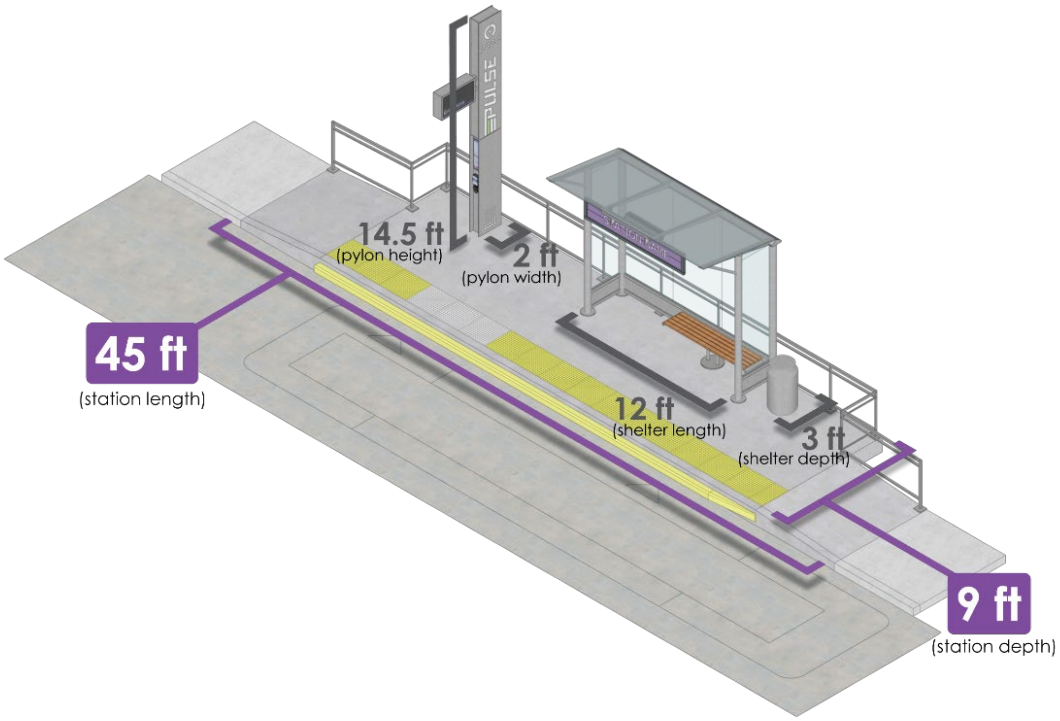


Source: Pace, PMO

3.2.1.4 Length and Depth Constrained Station Layout

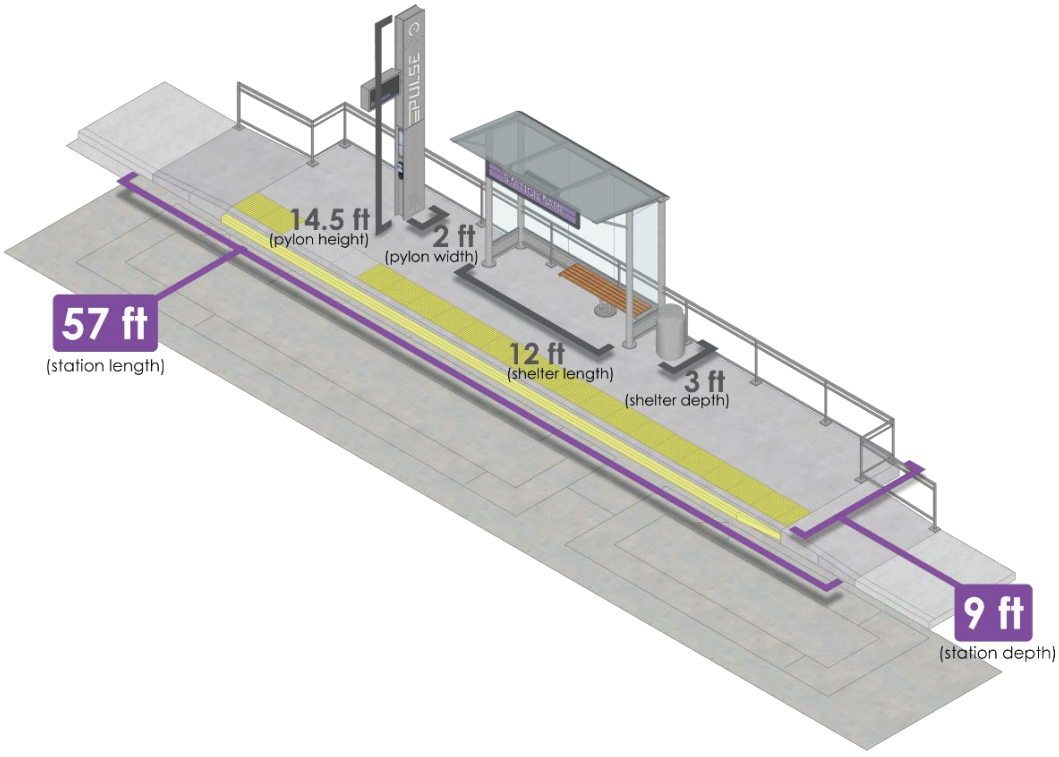
The characteristics of the length constrained station layout and the depth constrained station layout can be combined for a station that is both length and depth constrained. This station has the shelter and pylon of the depth constrained station with the steeper ramp from the length constrained station, as well as the bicycle rack removed. The resulting station is nine feet deep and 45 feet long (57 feet long for articulated buses) and is shown in Figure 3-8 and Figure 3-9.

FIGURE 3-8 LENGTH AND DEPTH CONSTRAINED STATION LAYOUT



Source: Pace, PMO

FIGURE 3-9 LENGTH AND DEPTH CONSTRAINED STATION LAYOUT (ARTICULATED)

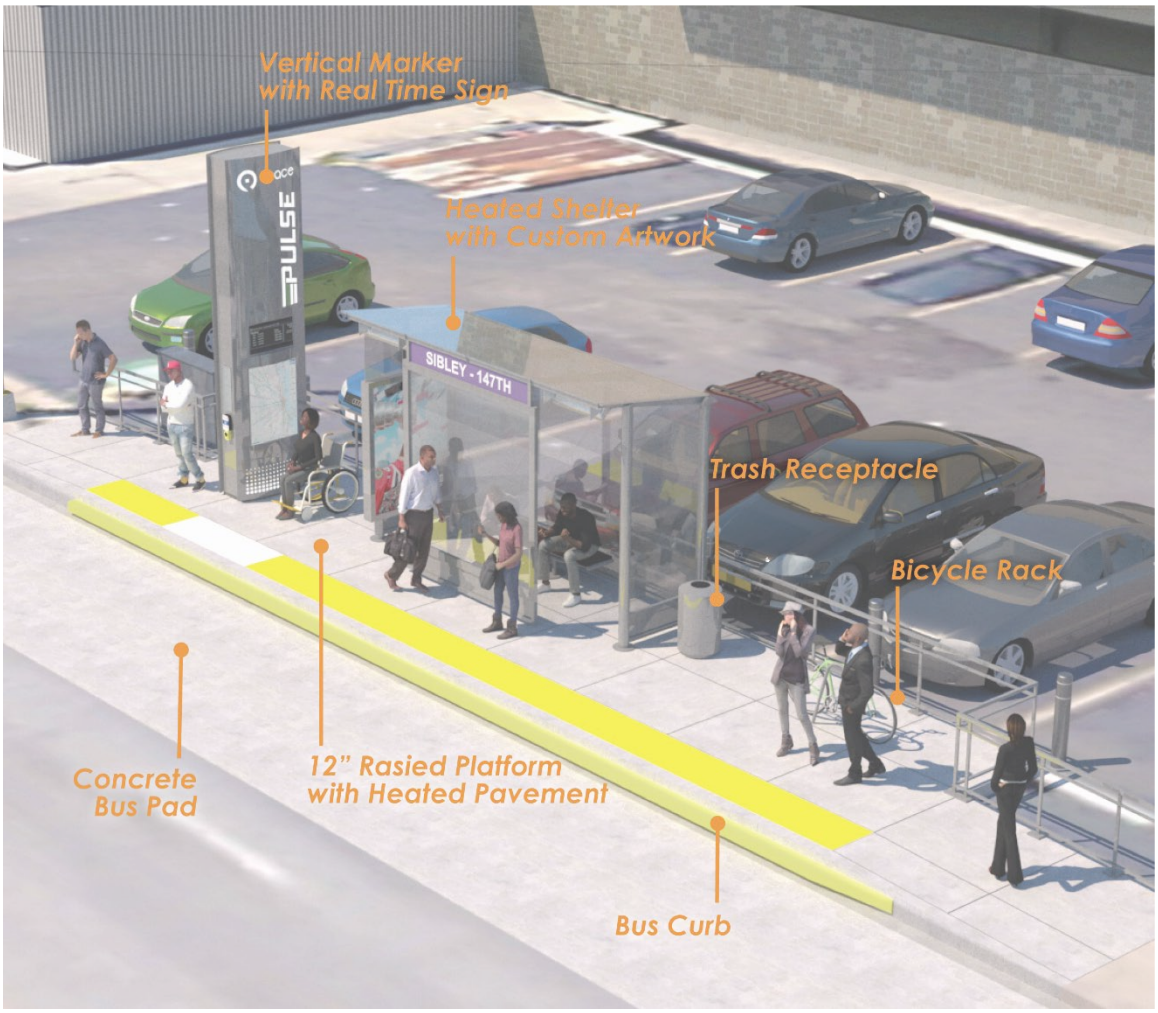


Source: Pace, PMO

3.2.2 Station Features

Stations are among the most visible physical elements associated with Pulse. They are easily identified with Pulse branding, and provide amenities to enhance passenger comfort, and safety. This section describes the features that will be included at all standard stations, which are shown in Figure 3-10.

FIGURE 3-10 PULSE STATION FEATURES



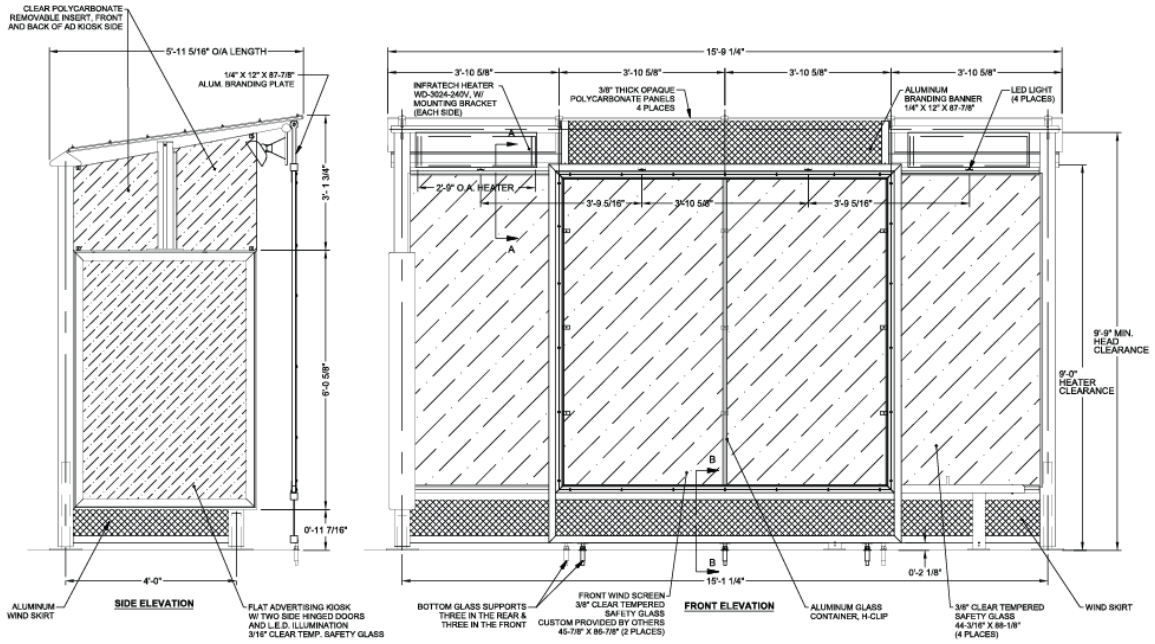
Source: Pace, PMO, and Google Maps

3.2.2.1 Shelters

Each station will include a partially enclosed, fully accessible shelter structure to include rear, side, and, when space allows, front panels for weather protection. The standard shelter will be approximately 16 feet long and six feet deep, based on the customized shelter used for the Pulse Milwaukee Line and Pulse Dempster Line. The shelter will have a wheelchair waiting area, a bench, and additional standing area. The shelters in depth-constrained stations will have a smaller footprint (12 feet long and three feet deep) but will still contain the wheelchair waiting area and the bench; the front panel

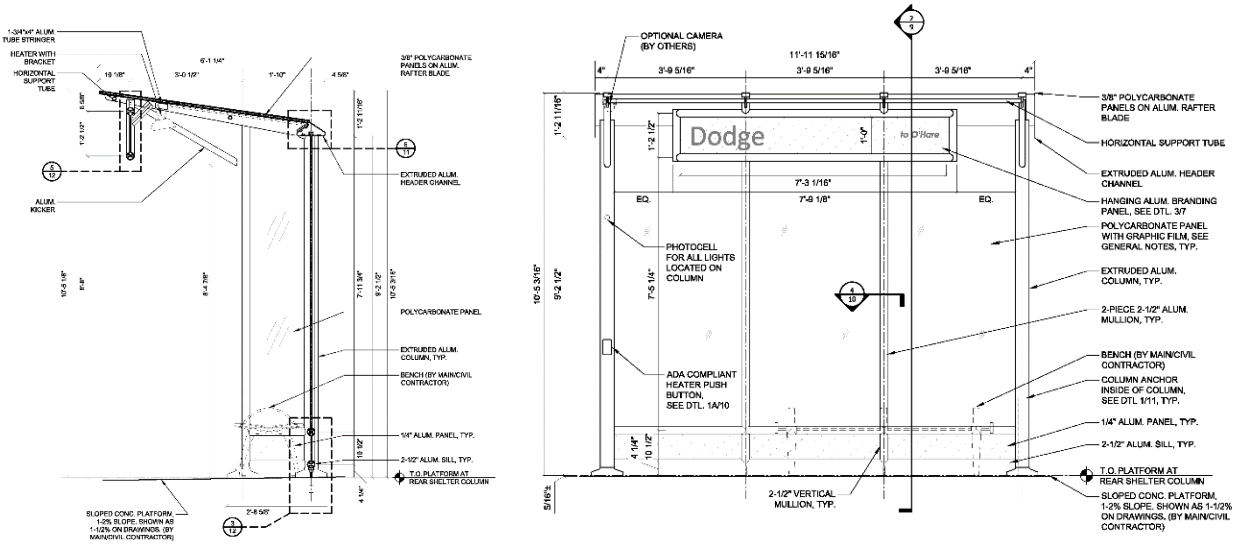
and additional standing area are removed. Figure 3-11 displays the side and front elevations for the standard shelter, and Figure 3-12 shows the elevations for the depth constrained shelter.

FIGURE 3-11 STANDARD SHELTER ELEVATION (FRONT AND SIDE)



Source: Pace, PMO

FIGURE 3-12 DEPTH CONSTRAINED SHELTER ELEVATION (FRONT AND SIDE)



Source: Pace, PMO

Shelters will have lighting integrated within the structure. The lighting will illuminate the shelter's interior and the station name on the front panel. Shelters will also provide

overhead infrared heating for passengers during the cold weather months. Heat is activated by a push button and runs on a timer. A speaker and audio activation button connected to the real-time information sign on the vertical marker will be included.

Communities may opt to include customized artwork on the rear shelter panel. On the standard shelter, the side panel toward the departing end of the platform will be a two-sided advertising/information panel (the compact shelter does not contain an advertising panel). Shelter panels will be vandal-resistant and have an anti-graffiti coating.

3.2.2.2 Platforms and Loading Area

The typical station platform will provide near-level boarding at a height of 12 inches above the roadway surface, which is six inches above a typical adjacent sidewalk, and is accessed via ADA-compliant pedestrian ramps. Alternative pedestrian access options will be considered on a case-by-case basis to accommodate site constraints. Where stations are shared with CTA bus routes, the near-level boarding height will be 11 inches above the roadway surface. Platforms will feature tactile warning strips along the open boarding edge and railing will surround the back of the platform.

Stations will feature a snow and ice melting system embedded in the concrete platform and ramps. This system will detect the presence of snow or ice and automatically activate, reducing the need for manual snow removal.

A plastic bumper rail or "rub rail" will be installed along the face of the curb to facilitate precision docking of the bus, minimizing curb-to-bus distance for boarding and alighting passengers while limiting damage to both the curb and buses. A concrete bus loading pad will be installed in the roadway adjacent to each station platform to provide for a consistent platform-to-roadway height tolerance at the loading edge of the platform and reduce damage to the road.

3.2.2.3 Station Furnishings and Amenities

Each station will include the following additional furnishings:

- An internally illuminated vertical marker pylon, incorporating real-time information screens that are visible from the platform and street, and show arrival and connection information for Pace and CTA routes, where applicable. The marker also contains a static route map and a station area map.
- A metal-body trash receptacle with a rain bonnet.
- A bicycle rack, where space allows.

3.2.3 Station Locations

3.2.3.1 Selection Process

Station location selection was based on several variables: a ridership analysis of Pace Route 322, CTA Route 21, and connecting transit services; multi-modal connection points; existing and future land use patterns; street cross-sections; field observations; stakeholder input; infrastructure constraints; and compatibility with adjacent ROW and properties, among others. Station locations generally follow the Pulse station spacing standard of one half mile to one mile apart, with exceptions where analysis justifies alternative spacing. There are a total of 19 preferred station locations. More than 90% of existing Route 322 ridership is captured within approximately one quarter mile of a Pulse station, as shown in Table 3-1.

TABLE 3-1 ROUTE 322 WEEKDAY RIDERSHIP CAPTURE NEAR PULSE STATION LOCATIONS

Station Location	Quarter Mile Buffer Ridership
CTA Pink Line 54th/Cermak station	599
Central Avenue	134
Austin Boulevard	231
Ridgeland Avenue	144
Oak Park Avenue	178
Home Avenue	77
Harlem Avenue	253
North Riverside Park Mall	126
1st Avenue	59
14th Avenue	138
21st Avenue	54
LaGrange/Mannheim Road	107
Mayfair Avenue	17
Wolf Road	36
Windsor Drive	40
McDonald Drive	28
Oakbrook Center [1]	206
Oak Brook Place	10
Yorktown Center	124
Total Ridership within quarter mile of station location [2]	**2,561**

Total Route 322 Ridership [3]	**Capture as % of Total Ridership**
2,740	**93.4%**

Source: Pace Fall 2022 APC
[1] Assumes capture from Oakbrook Center alternative on mall property
[2] Total does not reflect a sum of the counts above to prevent double counting due to overlapping buffers at some locations.
[3] Ridership includes boarding and alighting counts

3.2.3.2 Station Sites

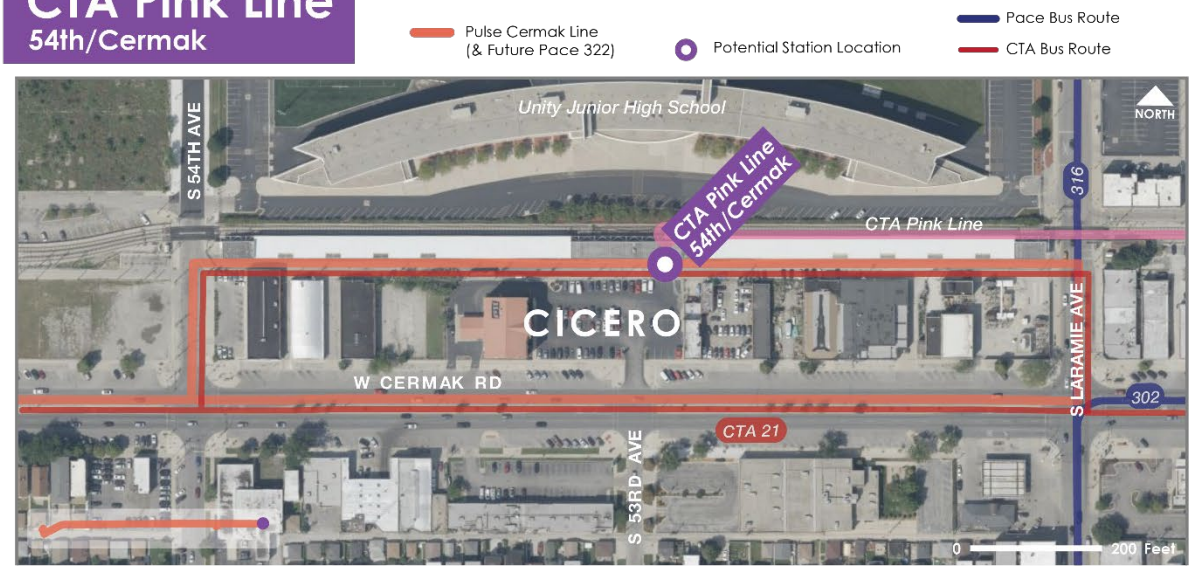
Preliminary station sites (defined as the specific placement of each platform) were also selected based on several factors including Pulse operations, constructability, available ROW, traffic movements, existing ridership, ridership generators, transfer connections, impacts to adjacent properties, pedestrian movement and access, ADA implications, and stakeholder input. These factors were considered when evaluating each station site for potential further development and advancement to the Environmental Review phase.

The Pulse Cermak Line will have stations at 19 locations. Because the eastern terminus will be at the CTA Pink Line 54th/Cermak Station and will use the existing bus loading

areas, minimal, if any, capital investments will be needed there. The western terminus station is proposed on private property near Yorktown Center. The remaining locations will be built as station pairs, curbside along the roadway, with one location proposed as an off-street, single bidirectional station on private property at North Riverside Park Mall. A similar off-street location is also being studied at Oakbrook Center, and if selected, the off-street station would be built instead of the on-street pair at the 22nd Street Oakbrook Center entrance.

Several locations include alternate sites, which are being carried forward for further study because of stakeholder feedback or ROW and infrastructure constraints. In addition to the alternate site at Oakbrook Center, the stations at Oak Park Avenue, Home Avenue, Ridgeland Avenue, and the North Riverside Park Mall each have more than one site option that will be evaluated during future phases. Each station location and potential sites are profiled on the following pages, with conceptual station designs located in Appendix B.

CTA Pink Line
54th/Cermak

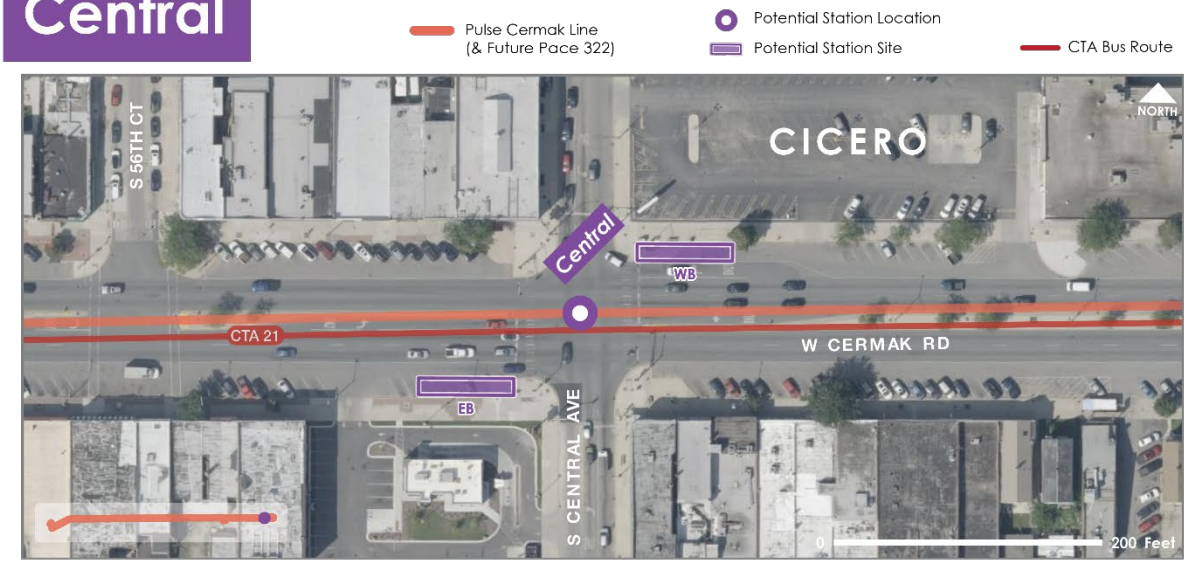


Cross streets	CTA driveway between Laramie Ave and 54th Ave
Municipality and County	Town of Cicero, Cook County
Roadway Jurisdiction	CTA
Adjacent Context and Destinations	Mixed use commercial and residential; near Unity Junior High School
Pedestrian access	Access to existing station from Laramie Ave or 54th Ave
Transit connections	CTA Pink Line; CTA routes 21 and 60; Pace routes 302, 316, and 322
Ridership Capture*	599
Signal Improvements for Buses	TSP

No stations will be constructed at CTA Pink Line 54th/Cermak.

**Route 322 ridership from Fall 2022 within approximately one quarter mile of proposed station*

Central

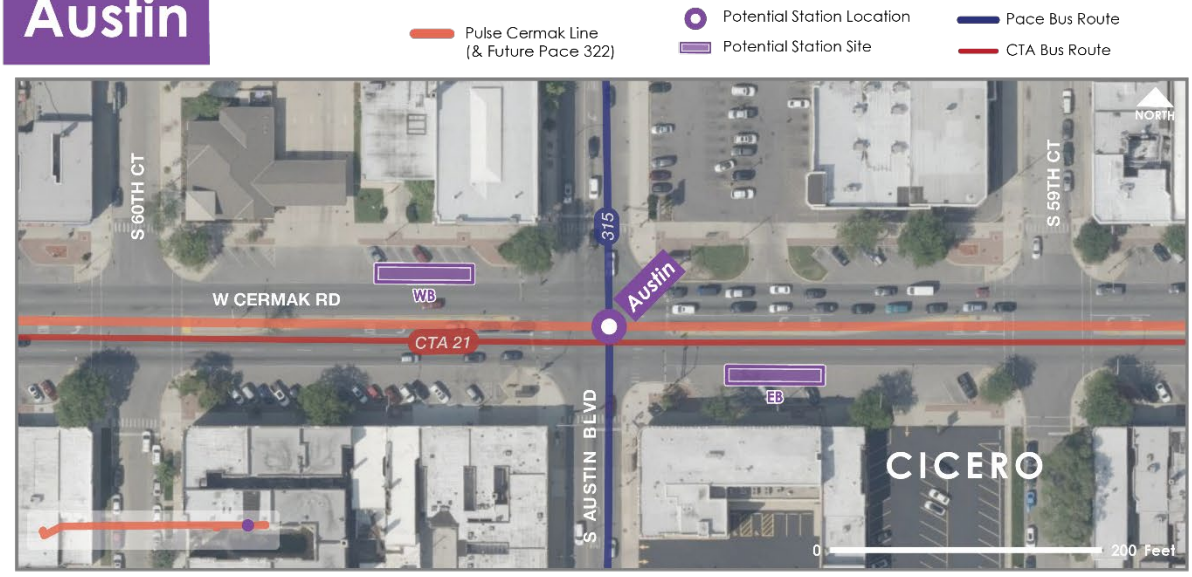


Cross streets	Central Ave / Cermak Rd
Municipality and County	Town of Cicero, Cook County
Roadway Jurisdiction	IDOT
Adjacent Context and Destinations	Mixed use commercial and residential
Pedestrian access	Signalized intersection with marked pedestrian crossings. Platforms will be connected to the existing pedestrian network.
Transit connections	Pace Route 322; CTA Route 21
Ridership Capture*	134
Signal Improvements for Buses	TSP; Potential queue jumps (both directions)

Station Site	***Westbound***	***Eastbound***
Location	Nearside, Northeast corner	Nearside, Southwest corner
Station Template	Standard (articulated)	Standard (articulated)
Potential Easement	No	No
Parking Impacts	none	6 spaces removed
Site Considerations	Nearside chosen to minimize parking impacts	Nearside chosen to minimize parking impacts; Taco Bell has existing private parking lot

**Route 322 ridership from Fall 2022 within approximately one quarter mile of proposed station*

Austin

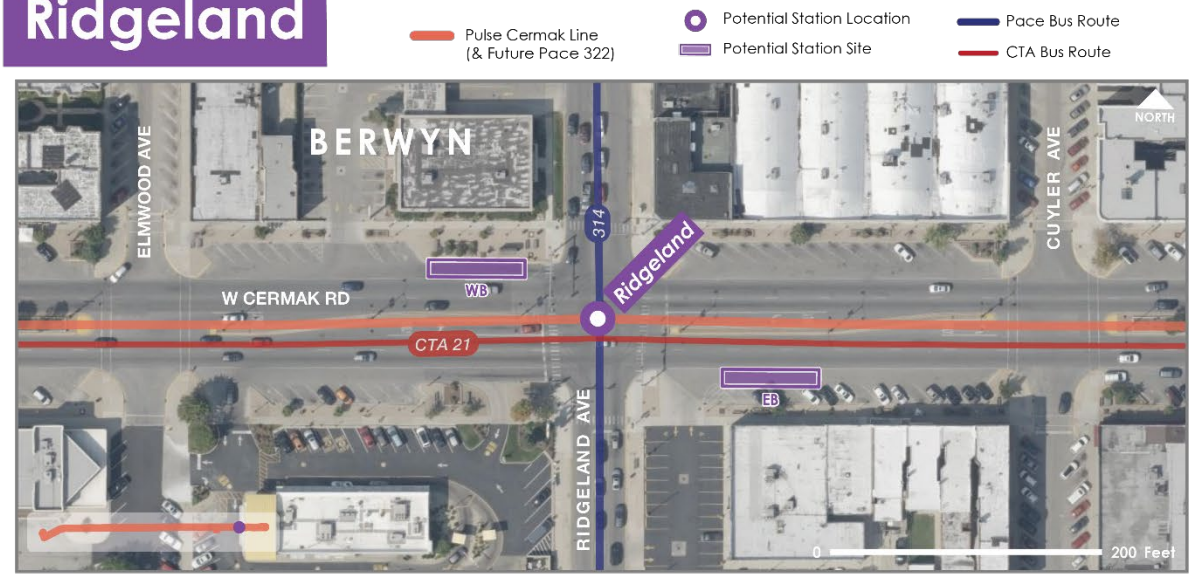


Cross streets	Austin Blvd / Cermak Rd
Municipality and County	Town of Cicero, Cook County
Roadway Jurisdiction	IDOT
Adjacent Context and Destinations	Mixed use commercial and residential
Pedestrian access	Signalized intersection with marked pedestrian crossings. Platforms will be connected to the existing pedestrian network.
Transit connections	Pace routes 315 and 322; CTA Route 21
Ridership Capture*	231
Signal Improvements for Buses	TSP

Station Site	*Westbound*	*Eastbound*
Location	Farside, Northwest corner	Farside, Southeast corner
Station Template	Standard (articulated)	Standard (articulated)
Potential Easement	No	No
Parking Impacts	7 spaces removed	8 spaces removed
Site Considerations	Conforms to Pulse Standard preference for farside station	Conforms to Pulse Standard preference for farside station

**Route 322 ridership from Fall 2022 within approximately one quarter mile of proposed station*

Ridgeland

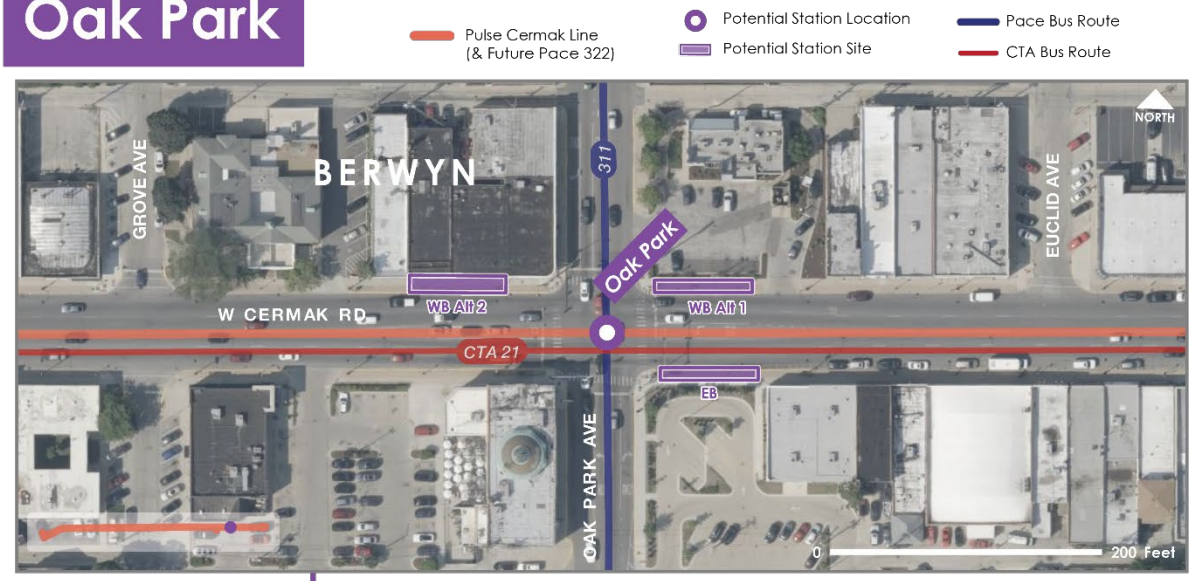


Cross streets	Ridgeland Ave / Cermak Rd
Municipality and County	City of Berwyn, Cook County
Roadway Jurisdiction	IDOT
Adjacent Context and Destinations	Mixed use commercial and residential
Pedestrian access	Signalized intersection with marked pedestrian crossings. Platforms will be connected to the existing pedestrian network.
Transit connections	Pace routes 314 and 322; CTA Route 21
Ridership Capture*	144
Signal Improvements for Buses	TSP

Station Site	***Westbound***	***Eastbound***
Location	Farside, Northwest corner	Farside, Southeast corner
Station Template	Standard (articulated)	Standard (articulated)
Potential Easement	No	No
Parking Impacts	1 space removed, ADA space to be relocated	7 spaces removed, ADA space to be relocated
Site Considerations	Conforms to Pulse Standard preference for farside station	Conforms to Pulse Standard preference for farside station

**Route 322 ridership from Fall 2022 within approximately one quarter mile of proposed station*

Oak Park

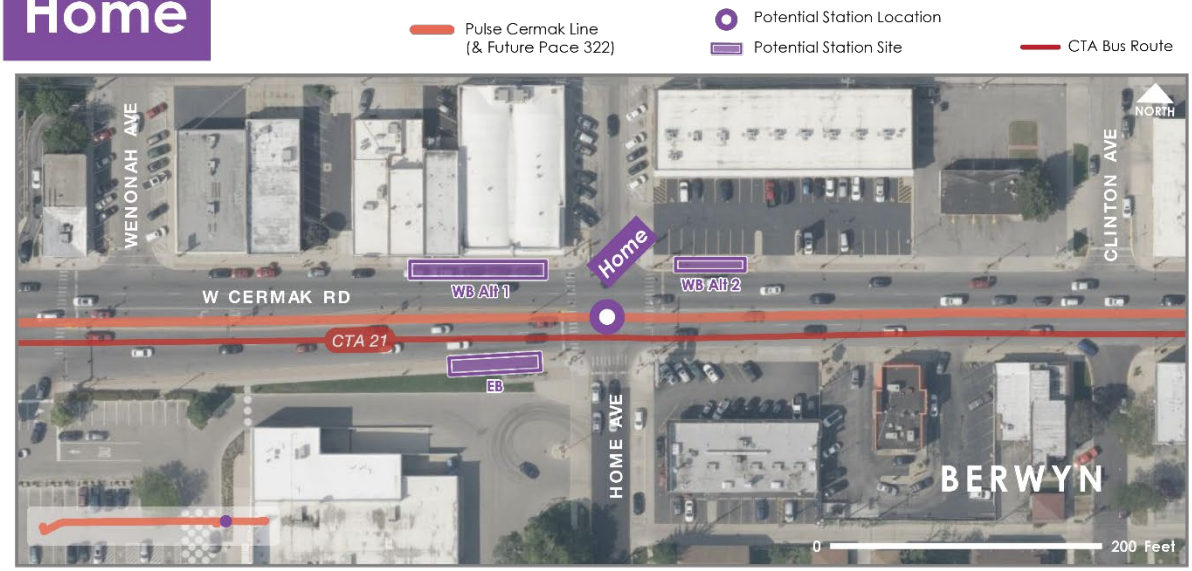


Cross streets	Oak Park Ave / Cermak Rd
Municipality and County	City of Berwyn, Cook County
Roadway Jurisdiction	IDOT
Adjacent Context and Destinations	Mixed use commercial and residential
Pedestrian access	Signalized intersection with marked pedestrian crossings. Platforms will be connected to the existing pedestrian network.
Transit connections	Pace route 311 and 322; CTA route 21
Ridership Capture*	178
Signal Improvements for Buses	TSP

Station Site	***Westbound Alt 1***	***Westbound Alt 2***	***Eastbound***
Location	Nearside, Northeast corner	Farside, Northwest corner	Farside, Southeast corner
Station Template	Depth Constrained (articulated)	Standard (Articulated)	Depth Constrained (articulated)
Potential Easement	No	No	Yes
Parking Impacts	none	none	none
Site Considerations	Avoids close proximity to storefronts (in front of parking lot instead)	Conforms to Pulse Standard preference for farside station; requires inclusion in future redevelopment plans of property on the NW corner	Conforms to Pulse Standard preference for farside station

**Route 322 ridership from Fall 2022 within approximately one quarter mile of proposed station*

Home

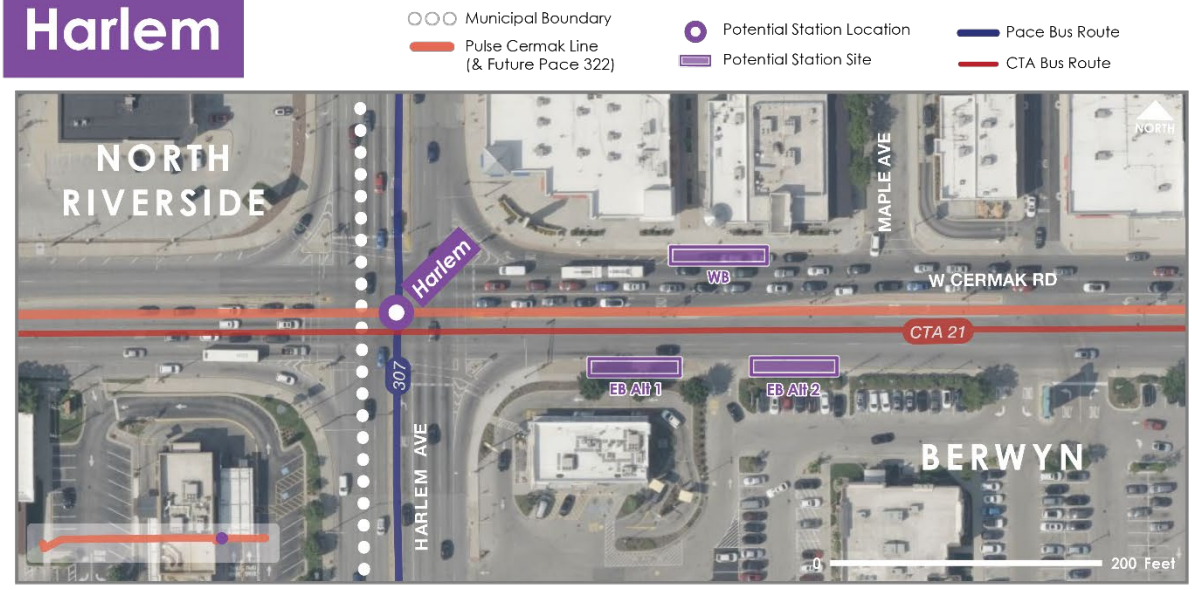


Cross streets	Home Ave / Cermak Rd
Municipality and County	City of Berwyn, Cook County
Roadway Jurisdiction	IDOT
Adjacent Context and Destinations	Mixed use commercial and residential; Large-setback Commercial; near Morton West High School
Pedestrian access	Signalized intersection with marked pedestrian crossings. Platforms will be connected to the existing pedestrian network.
Transit connections	Pace Route 322; CTA Route 21
Ridership Capture*	77
Signal Improvements for Buses	TSP; Potential queue jump (EB only)

Station Site	*Westbound Alt 1*	*Westbound Alt 2*	*Eastbound*
Location	Farside, Northwest corner	Nearside, Northeast corner	Nearside, Southwest corner
Station Template	Standard (articulated)	Length & Depth Constrained (articulated)	Standard (articulated)
Potential Easement	No	No	No
Parking Impacts	up to 7 parallel spaces removed	none	none
Site Considerations	Conforms to Pulse Standard preference for farside station; room for standard station	Avoids close proximity to storefronts (in front of parking lot instead)	Nearside due to ROW constraints

**Route 322 ridership from Fall 2022 within approximately one quarter mile of proposed station*

Harlem

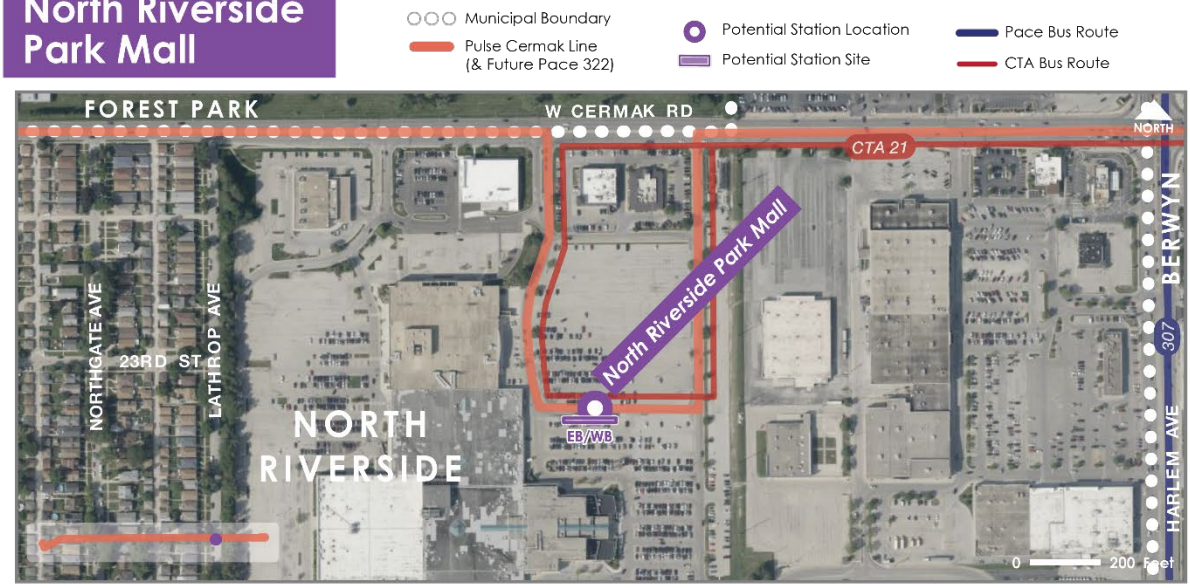


Cross streets	Harlem Ave / Cermak Rd
Municipality and County	City of Berwyn, Cook County
Roadway Jurisdiction	IDOT
Adjacent Context and Destinations	Large-setback commercial
Pedestrian access	Signalized intersection with marked pedestrian crossings. Platforms will be connected to the existing pedestrian network.
Transit connections	Pace routes 307 and 322; CTA Route 21
Ridership Capture*	253
Signal Improvements for Buses	none

Station Site	*Westbound*	*Eastbound Alt 1*	*Eastbound Alt 2*
Location	Nearside, Northeast corner	Farside, Southeast corner	Farside, Southeast corner
Station Template	Standard (articulated)	Standard (articulated)	Standard (articulated)
Potential Easement	No	No	No
Parking Impacts	Remove parallel parking	none	none
Site Considerations	Nearside due to road geometry and ROW constraints, driveways, and presence of utility lines	Conforms to Pulse Standard preference for farside station; closer to intersection	Conforms to Pulse Standard preference for farside station, IDOT preference

**Route 322 ridership from Fall 2022 within approximately one quarter mile of proposed station*

North Riverside Park Mall

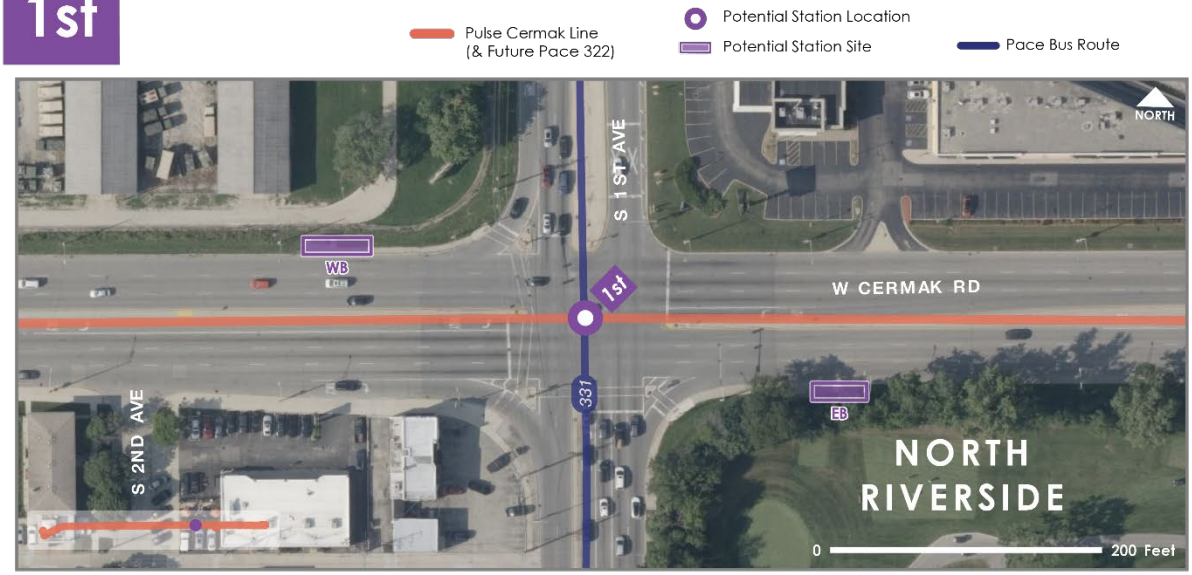


Cross streets	N/A
Municipality and County	Village of North Riverside, Cook County
Roadway Jurisdiction	Private, The Feil Organization
Adjacent Context and Destinations	Mall, large-setback commercial
Pedestrian access	Use existing stop crossing to mall entrance; ADA ramp will be reconstructed.
Transit connections	Pace Route 322; CTA Route 21
Ridership Capture*	126
Signal Improvements for Buses	N/A

Station Site	***Westbound / Eastbound***
Location	On private property, northeast of the mall
Station Template	Custom
Potential Easement	Yes
Parking Impacts	none
Site Considerations	At site of existing bus stop

**Route 322 ridership from Fall 2022 within approximately one quarter mile of proposed station*

1st

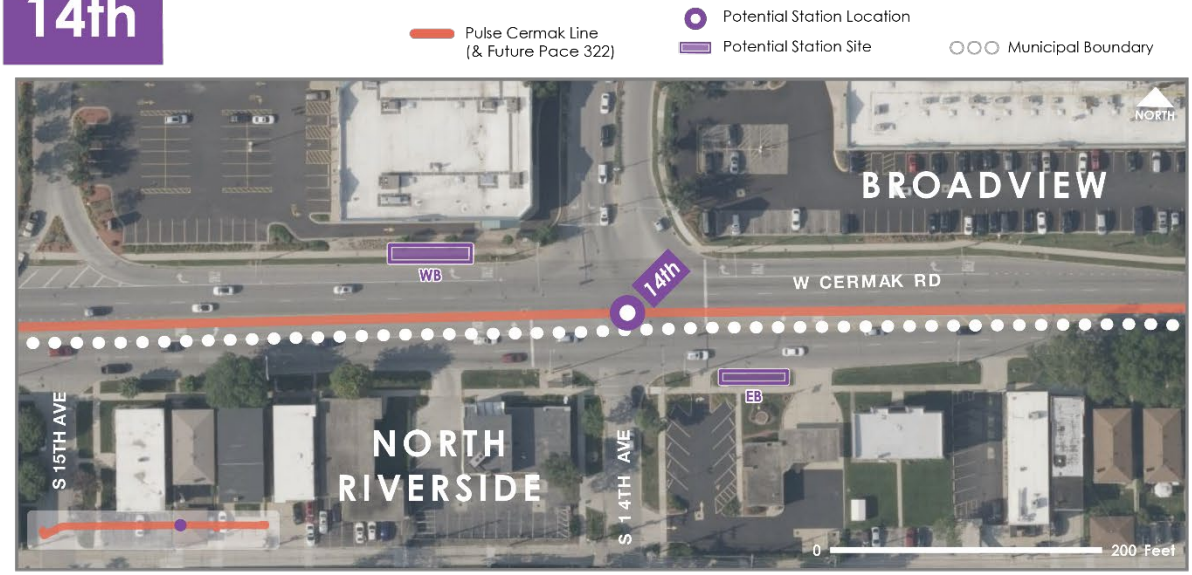


Cross streets	1st Ave / Cermak Rd
Municipality and County	Village of North Riverside, Cook County
Roadway Jurisdiction	IDOT
Adjacent Context and Destinations	Institutional: Hines VA Medical Center, Loyola Medical Center, Illinois National Guard; commercial; residential; open space: Miller Meadow, Riverside Golf Club
Pedestrian access	Signalized intersection, updated crosswalks and ADA ramps to be added as part of IDOT Smart Corridor project.
Transit connections	Pace routes 322 and 331
Ridership Capture*	59
Signal Improvements for Buses	TSP

Station Site	***Westbound***	***Eastbound***
Location	Farside, Northwest corner	Farside, Southeast Corner
Station Template	Standard	Standard
Potential Easement	No	Yes
Parking Impacts	none	none
Site Considerations	Conforms to Pulse Standard preference for farside station	Conforms to Pulse Standard preference for farside station

**Route 322 ridership from Fall 2022 within approximately one quarter mile of proposed station*

14th

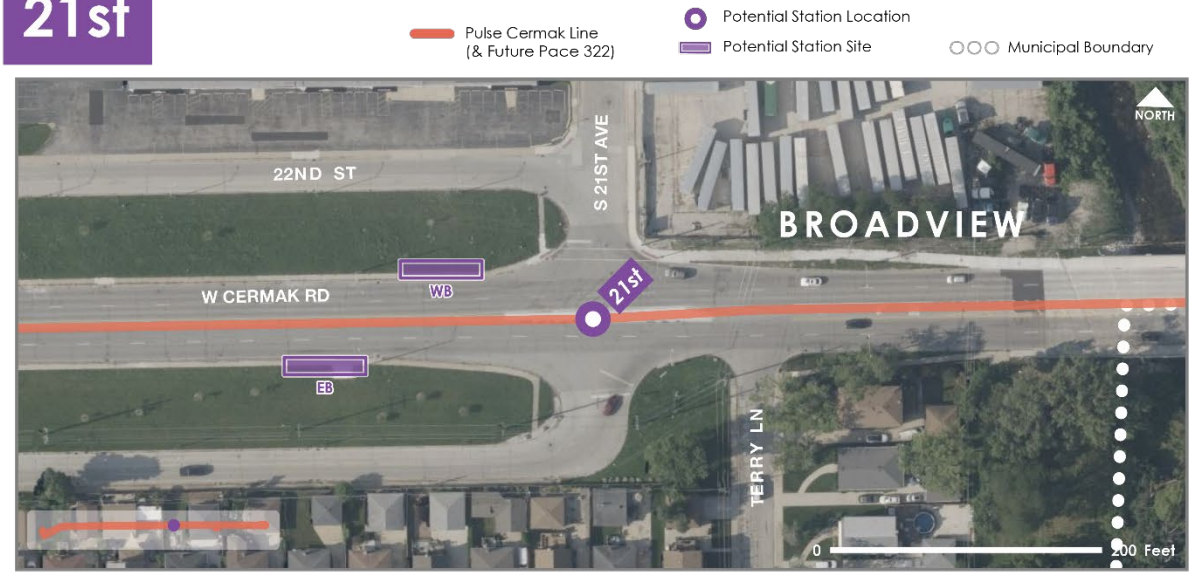


Cross streets	14th Ave / Cermak Rd
Municipality and County	Village of Broadview (WB) / Village of North Riverside (EB), Cook County
Roadway Jurisdiction	IDOT
Adjacent Context and Destinations	Commercial and large-setback commercial: Broadview Village Square; Residential
Pedestrian access	Signalized intersection, updated crosswalks and ADA ramps to be added as part of IDOT Smart Corridor project.
Transit connections	Pace Route 322
Ridership Capture*	138
Signal Improvements for Buses	TSP

Station Site	*Westbound*	*Eastbound*
Location	Farside, Northwest corner	Farside, Southeast Corner
Station Template	Standard	Length and Depth Constrained
Potential Easement	Yes	No
Parking Impacts	none	none
Site Considerations	Conforms to Pulse Standard preference for farside station	Conforms to Pulse Standard preference for farside station; Constrained by ROW and driveways

**Route 322 ridership from Fall 2022 within approximately one quarter mile of proposed station*

21st

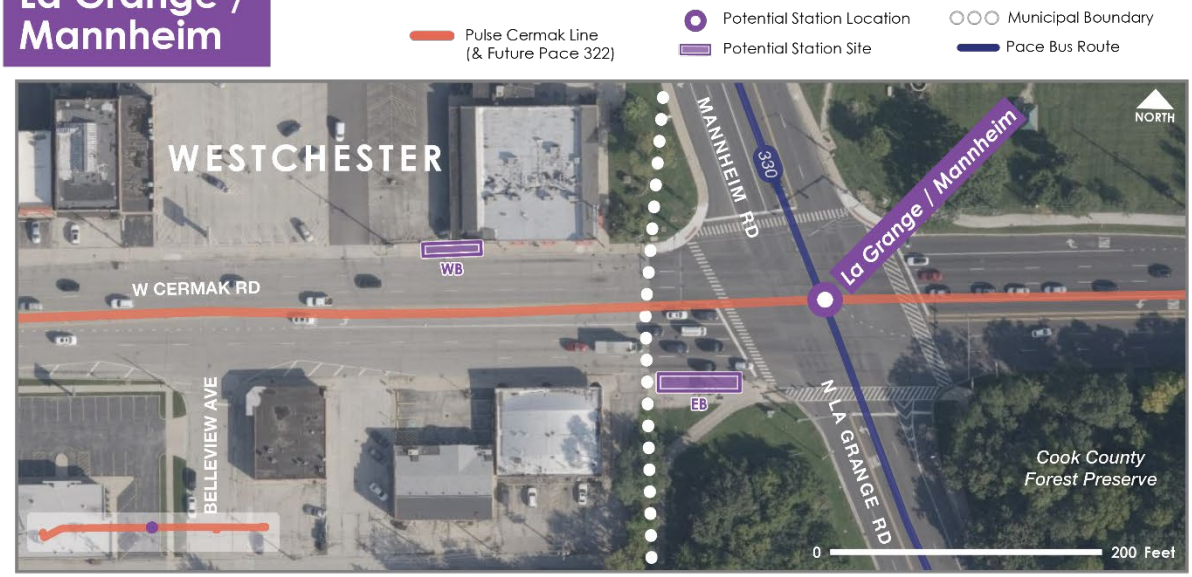


Cross streets	21st Ave / Cermak Rd
Municipality and County	Village of Broadview, Cook County
Roadway Jurisdiction	IDOT
Adjacent Context and Destinations	Industrial; residential
Pedestrian access	Non signalized intersection with no intersection crossings. Crosswalk or signal will be required and coordinated with IDOT
Transit connections	Pace Route 322
Ridership Capture*	54
Signal Improvements for Buses	TSP

Station Site	*Westbound*	*Eastbound*
Location	Farside, Northwest corner	Nearside, Southwest corner
Station Template	Standard	Standard
Potential Easement	No	No
Parking Impacts	none	none
Site Considerations	Conforms to Pulse Standard preference for farside station	Nearside due to conflicts with private property and to support placement of future crossing

**Route 322 ridership from Fall 2022 within approximately one quarter mile of proposed station*

La Grange / Mannheim



Cross streets	La Grange/Mannheim Rd / Cermak Rd
Municipality and County	Village of Westchester, Cook County
Roadway Jurisdiction	IDOT
Adjacent Context and Destinations	Commercial; residential; open space: Cook County Forest Preserve; Institutional: Westchester Park District
Pedestrian access	Signalized intersection with marked pedestrian crossings. Platforms will be connected to the existing pedestrian network.
Transit connections	Pace routes 322 and 330
Ridership Capture*	107
Signal Improvements for Buses	TSP

Station Site	*Westbound*	*Eastbound*
Location	Farside, Northwest corner	Nearside, Southwest corner
Station Template	Length & Depth Constrained	Standard
Potential Easement	Yes	Yes
Parking Impacts	none	none
Site Considerations	Conforms to Pulse Standard preference for farside station	Proximity to Salt Creek Trail and nearby commercial uses

**Route 322 ridership from Fall 2022 within approximately one quarter mile of proposed station*

Mayfair

Cross streets	Mayfair Ave / Cermak Rd
Municipality and County	Village of Westchester, Cook County
Roadway Jurisdiction	IDOT
Adjacent Context and Destinations	Residential
Pedestrian access	Signalized intersection with marked pedestrian crossings. Platforms will be connected to the existing pedestrian network.
Transit connections	Pace Route 322
Ridership Capture*	17
Signal Improvements for Buses	TSP

Station Site	***Westbound***	***Eastbound***
Location	Farside, Northwest corner	Nearside, Southwest corner
Station Template	Standard	Standard
Potential Easement	No	No
Parking Impacts	none	none
Site Considerations	Conforms to Pulse Standard preference for farside station	Nearside due to ROW constraints and to avoid impacts to fire station driveway access

**Route 322 ridership from Fall 2022 within approximately one quarter mile of proposed station*

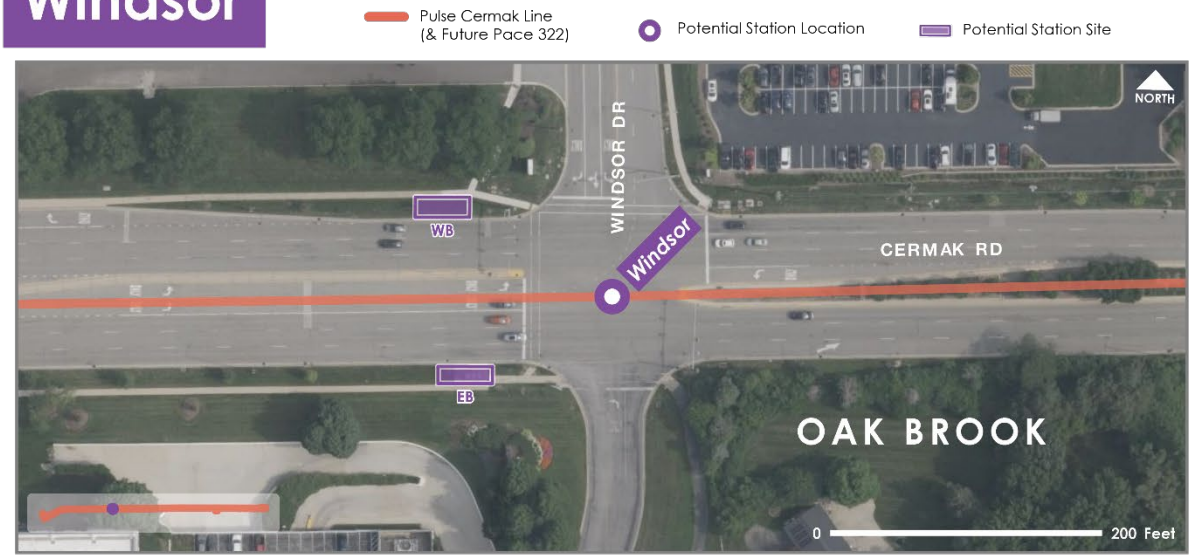
Wolf

Cross streets	Wolf Rd / Cermak Rd
Municipality and County	Village of Hillside, Cook County
Roadway Jurisdiction	IDOT
Adjacent Context and Destinations	Commercial; Office: Westbrook Center; Residential
Pedestrian access	Signalized intersection, updated crosswalks and ADA ramps to be added as part of IDOT Smart Corridor project.
Transit connections	Pace Route 322
Ridership Capture*	36
Signal Improvements for Buses	TSP

Station Site	***Westbound***	***Eastbound***
Location	Farside, Northwest corner	Farside, Southeast corner
Station Template	Standard	Depth Constrained
Potential Easement	No	No
Parking Impacts	none	none
Site Considerations	Conforms to Pulse Standard preference for farside station	Conforms to Pulse Standard preference for farside station; Depth constrained to avoid conflicts with overhead utility lines

**Route 322 ridership from Fall 2022 within approximately one quarter mile of proposed station*

Windsor

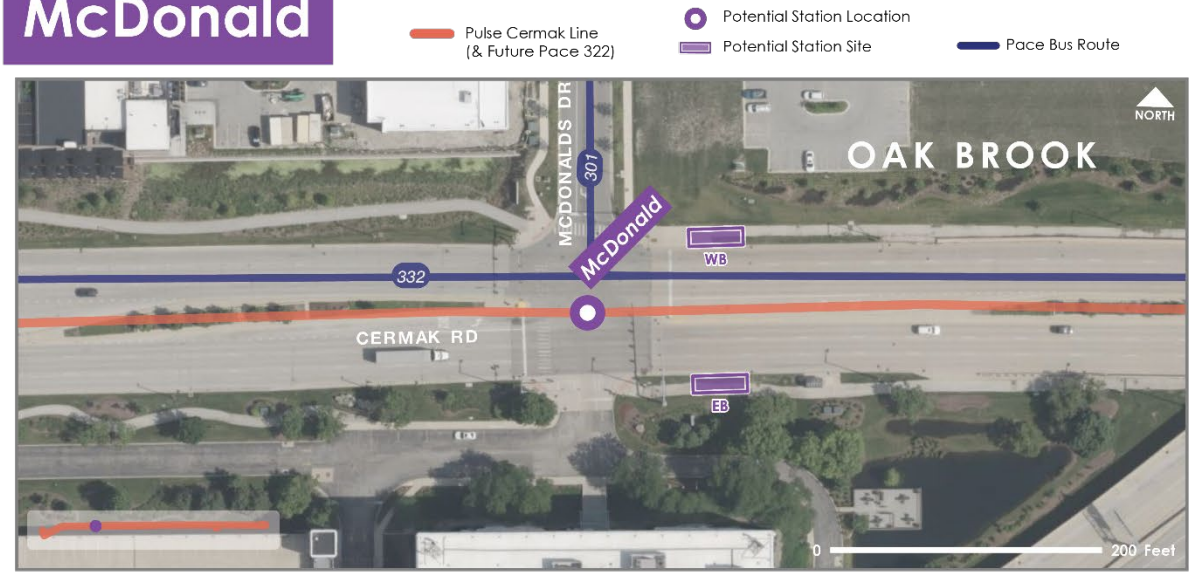


Cross streets	Windsor Dr / 22nd St
Municipality and County	Village of Oak Brook, DuPage County
Roadway Jurisdiction	IDOT
Adjacent Context and Destinations	Commercial; offices; hotels
Pedestrian access	Signalized intersection, updated crosswalks and ADA ramps to be added as part of IDOT Smart Corridor project.
Transit connections	Pace Route 322
Ridership Capture*	40
Signal Improvements for Buses	TSP

Station Site	***Westbound***	***Eastbound***
Location	Farside, Northwest corner	Nearside, Southwest corner
Station Template	Standard	Standard
Potential Easement	No	No
Parking Impacts	none	none
Site Considerations	Conforms to Pulse Standard preference for farside station	Proximity to existing sidewalks

**Route 322 ridership from Fall 2022 within approximately one quarter mile of proposed station*

McDonald



Cross streets	McDonald Dr / 22nd St
Municipality and County	Village of Oak Brook, DuPage County
Roadway Jurisdiction	IDOT
Adjacent Context and Destinations	Mixed use residential and commercial (new development); hotels
Pedestrian access	Signalized intersection, updated crosswalks and ADA ramps to be added as part of IDOT Smart Corridor project.
Transit connections	Pace routes 301, 322, and 332
Ridership Capture*	28
Signal Improvements for Buses	TSP

Station Site	*Westbound*	*Eastbound*
Location	Nearside, Northeast corner	Farside, Southeast corner
Station Template	Standard	Standard
Potential Easement	No	Yes
Parking Impacts	none	none
Site Considerations	Nearside to maintain access to other Pace routes (existing stop location)	Conforms to Pulse Standard preference for farside station; Existing stop location

**Route 322 ridership from Fall 2022 within approximately one quarter mile of proposed station*

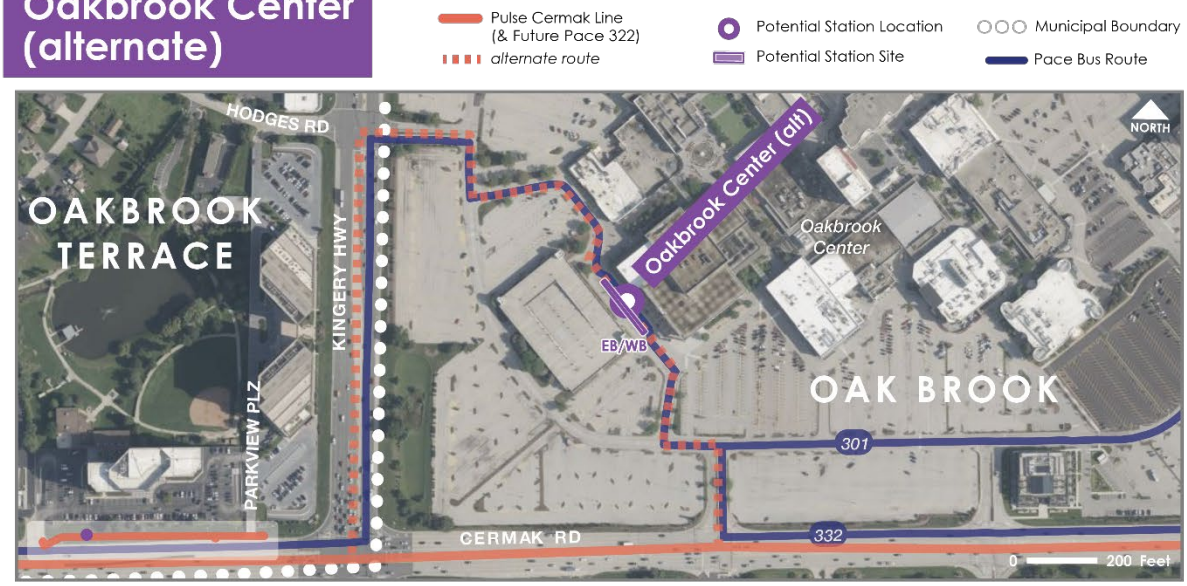
Oakbrook Center

Cross streets	Oakbrook Center Entrance / 22nd St
Municipality and County	Village of Oak Brook, DuPage County
Roadway Jurisdiction	IDOT
Adjacent Context and Destinations	Mall/Commercial; offices; hotels
Pedestrian access	Signalized intersection, crosswalk only on east side; no other surrounding sidewalks. Sidewalks will be built to connect platforms to crosswalk and existing mall pedestrian infrastructure
Transit connections	Pace Route 322
Ridership Capture*	206
Signal Improvements for Buses	TSP

Station Site	***Westbound***	***Eastbound***
Location	Nearside, Northeast corner	Farside, Southeast corner
Station Template	Standard	Standard
Potential Easement	No	Yes
Parking Impacts	none	none
Site Considerations	Nearside to better connect into existing mall pedestrian infrastructure	Conforms to Pulse Standard preference for farside station

**Route 322 ridership from Fall 2022 within approximately one quarter mile of proposed station*

Oakbrook Center (alternate)

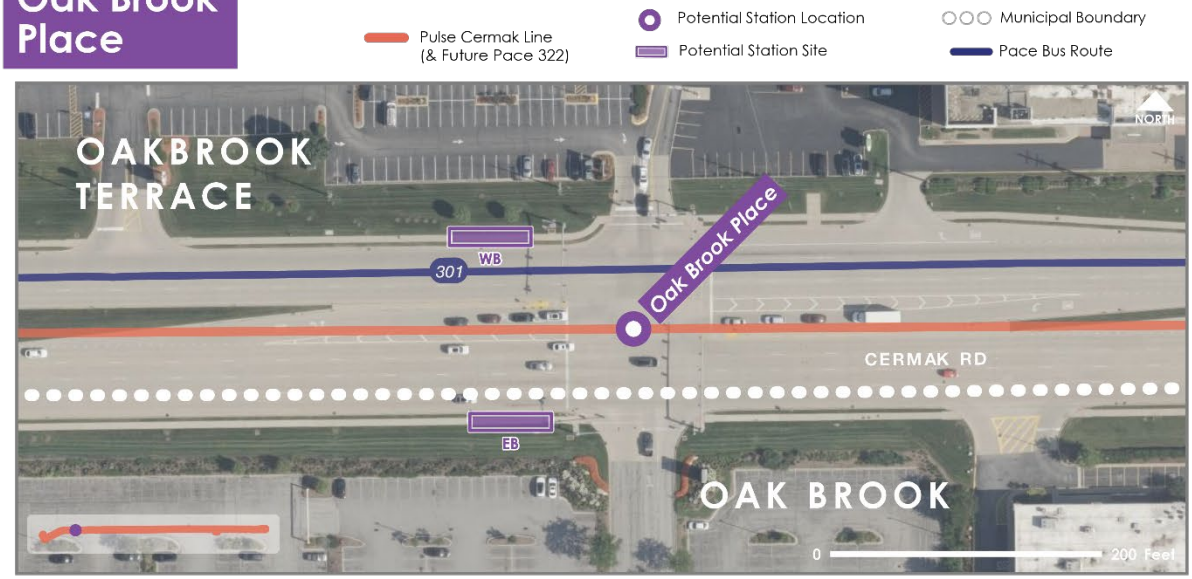


Cross streets	N/A
Municipality and County	Village of Oak Brook, DuPage County
Roadway Jurisdiction	Private, Macy's Inc.
Adjacent Context and Destinations	Mall/Commercial; offices; hotels
Pedestrian access	Crossings to be included from platform to existing mall pedestrian infrastructure
Transit connections	Pace routes 301, 322, and 332
Ridership Capture*	206
Signal Improvements for Buses	N/A

Station Site	***Westbound / Eastbound***
Location	On private property, near Macy's entrance
Station Template	Custom
Potential Easement	Yes
Parking Impacts	none
Site Considerations	At site of exiting bus stop

**Route 322 ridership from Fall 2022 within approximately one quarter mile of proposed station*

Oak Brook Place

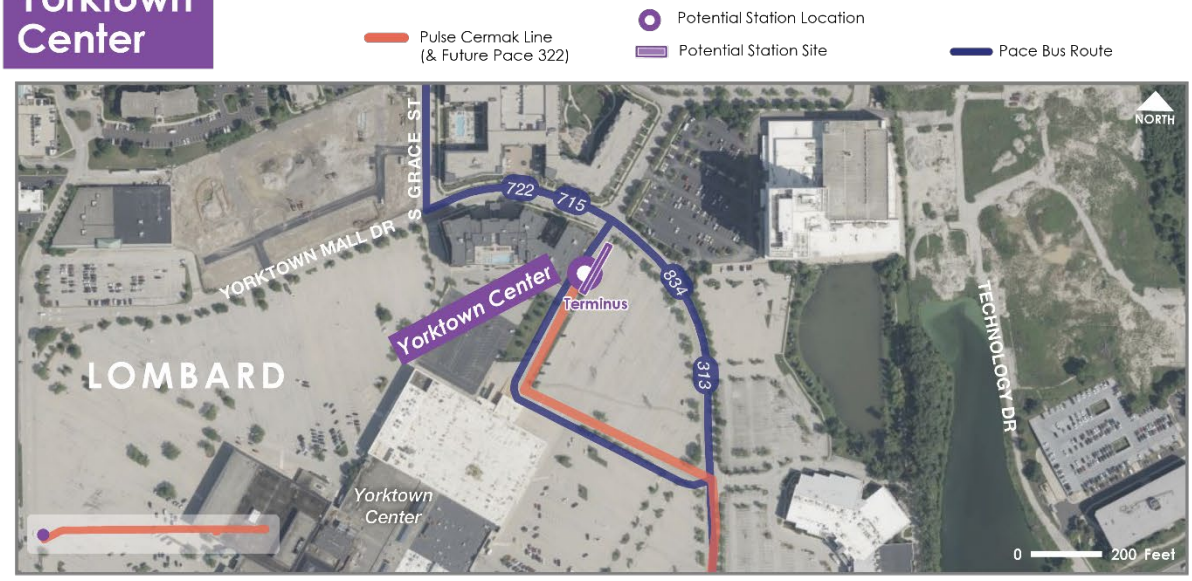


Cross streets	Oak Brook Place / 22nd St
Municipality and County	Village of Oak Brook (EB) / Village of Oakbrook Terrace (WB), DuPage County
Roadway Jurisdiction	IDOT
Adjacent Context and Destinations	Large-setback commercial
Pedestrian access	Signalized intersection, updated crosswalks and ADA ramps to be added as part of IDOT Smart Corridor project.
Transit connections	Pace routes 301 and 322
Ridership Capture*	10
Signal Improvements for Buses	TSP

Station Site	*Westbound*	*Eastbound*
Location	Farside, Northwest corner	Nearside, Southwest corner
Station Template	Standard	Standard
Potential Easement	No	No
Parking Impacts	none	none
Site Considerations	Conforms to Pulse Standard preference for farside station	Nearside due to potential issues with existing drainage

**Route 322 ridership from Fall 2022 within approximately one quarter mile of proposed station*

Yorktown Center



Cross streets	N/A
Municipality and County	Village of Lombard, DuPage County
Roadway Jurisdiction	Private, Pacific Retail
Adjacent Context and Destinations	Mall/Commercial; hotel; mixed use residential and commercial (new development)
Pedestrian access	Crosswalk will be built on south end of station to connect into existing pedestrian infrastructure
Transit connections	Pace routes 313, 322, 715, 722, and 834
Ridership Capture*	124
Signal Improvements for Buses	N/A

Station Site	***Terminus***
Location	On private property, northeast of the mall
Station Template	Custom
Potential Easement	Yes
Parking Impacts	none
Site Considerations	At site of existing bus stop

**Route 322 ridership from Fall 2022 within approximately one quarter mile of proposed station*

3.3 Preliminary Capital Cost

A preliminary capital cost estimate was developed based on the station and corridor improvements described in this report. The capital cost consists primarily of station construction and associated corridor improvements. The estimated total capital cost for station construction is approximately $32.1 million[12]. Table 3-2 provides an overview of the corridor construction cost elements and estimated costs.

TABLE 3-2 PULSE CERMAK LINE CONSTRUCTION COST ESTIMATE (IN 2024 DOLLARS)

Item	Cost
Stations	$16,305,000
Professional Services	$7,085,000
Contingency	$8,771,000
TOTAL	$32,161,000

Source: Pace, PMO

Station costs were estimated based on station type and location. Based on these factors, eight station cost templates were developed, as shown in Table 3-3. Stations on the eastern end of the corridor ("East stations") that are served by Pace and CTA services are typically more expensive than stations on the western end of the corridor ("West stations"). The East stations are longer to serve articulated buses and several also require additional pavement and modifications to connect to the surrounding environment. Stations that are custom designed for mall properties, including the North Riverside Park Mall, Oakbrook Center, and Yorktown Center, were estimated individually and range between $640,000 and $720,000.

TABLE 3-3 STATION COST BY TEMPLATE TYPE AND LOCATION (IN 2024 DOLLARS)

Template	East	West
Standard	$450,000	$430,000
Depth Constrained	$430,000	$420,000
Length Constrained	$447,000	$434,000
Length and Depth Constrained	$415,000	$408,000

Source: Pace, PMO

Table 3-4 lists all stations, including alternates, for which costs were developed. Additional costs are included for stations that have extensive curb or sidewalk designs beyond the standard station template and are indicated with a "+" symbol. These stations include approximately $30,000 of additional cost per station site. Where multiple station site alternates were designed, the station with the higher cost is reflected in the total cost estimate for the project. Their higher costs are due to their larger size and

[12] 2024 dollars

additional furnishings. Additional costs were also assumed for the westbound Harlem Avenue station to accommodate a bumpout and account for the reconfiguration of the roadway median, and for the 21st Avenue stations to accommodate the installation of a potential traffic signal and assumptions for related intersection improvements. More detailed methodology and costs per station site and alternative are provided in Appendix C.

TABLE 3-4 STATION LOCATION AND TEMPLATE

Station Location	Station Site	East or West Segment	Template	Included in cost estimate?
Central	EB	East	Standard	Yes
Central	WB	East	Standard	Yes
Austin	EB	East	Standard +	Yes
Austin	WB	East	Standard +	Yes
Ridgeland	EB	East	Standard +	Yes
Ridgeland	WB	East	Standard +	Yes
Oak Park	EB	East	Depth Constrained	Yes
Oak Park	WB Alt 1	East	Depth Constrained	No
Oak Park	WB Alt 2	East	Standard	Yes
Home	EB	East	Standard	Yes
Home	WB Alt 1	East	Standard +	Yes
Home	WB Alt 2	East	Length and Depth Constrained	No
Harlem	EB Alt 1	East	Standard	Yes
Harlem	EB Alt 2	East	Length Constrained	No
Harlem[13]	WB	West	Standard +	Yes
North Riverside Park Mall	Mall	West	Custom Design	Yes
1st	EB	West	Standard	Yes
1st	WB	West	Standard	Yes
14th	EB	West	Length and Depth Constrained	Yes
14th	WB	West	Standard	Yes

[13] Includes additional cost for reconfiguration of the roadway median.

Station Location	Station Site	East or West Segment	Template	Included in cost estimate?
21st[14]	EB	West	Standard +	Yes
21st	WB	West	Standard +	Yes
La Grange/Mannheim	EB	West	Standard +	Yes
La Grange/Mannheim	WB	West	Length and Depth Constrained	Yes
Mayfair	EB	West	Standard	Yes
Mayfair	WB	West	Standard	Yes
Wolf	EB	West	Depth Constrained	Yes
Wolf	WB	West	Standard	Yes
Windsor	EB	West	Standard	Yes
Windsor	WB	West	Standard	Yes
McDonald	EB	West	Standard +	Yes
McDonald	WB	West	Standard +	Yes
Oakbrook Center Entrance	EB	West	Standard +	Yes
Oakbrook Center Entrance	WB	West	Standard +	Yes
Oakbrook Center	Mall	West	Custom Design	No
Oak Brook Place	EB	West	Standard	Yes
Oak Brook Place	WB	West	Standard	Yes
Yorktown Center	Mall	West	Custom Design	Yes

Source: Pace, PMO

The quantity and location of additional bus priority features along the corridor are still being evaluated and will require additional investment. Additional costs for features such as bus priority lanes and queue jumps are discussed in the next section but are not incorporated into the base project cost estimate shown in Table 3-4. TSP and vehicle costs are not included in the capital cost estimate as they are procured separately from Pulse construction and typically have separate funding sources.

3.4 Bus Priority Features

3.4.1 Overview

The existing service in the corridor experiences significant delays throughout the day due to traffic congestion. This impacts reliability and public perception of transit across the entire corridor. Improvements to service reliability through bus priority treatments

[14] 21st Avenue stations include added costs to accommodate the installation of a potential traffic signal and assumptions for related intersection improvements.

would enhance transit in the corridor and make the Pulse Cermak Line both faster and more reliable, especially during periods of peak ridership demand.

In consultation with IDOT, corridor stakeholders, and local municipalities, the project team identified preliminary opportunities for bus priority treatments within existing ROW, such as TSP, queue jumps, and bus priority lanes. The following elements were taken into consideration when identifying areas and intersections that would be good candidates for bus priority:

- OTP and the variability of running times, including the impact of congestion on service reliability, peak-hour versus off-peak running time, and delay by corridor segment or intersection
- Available ROW and roadway cross-section
- Input from municipalities and IDOT
- Stakeholder feedback

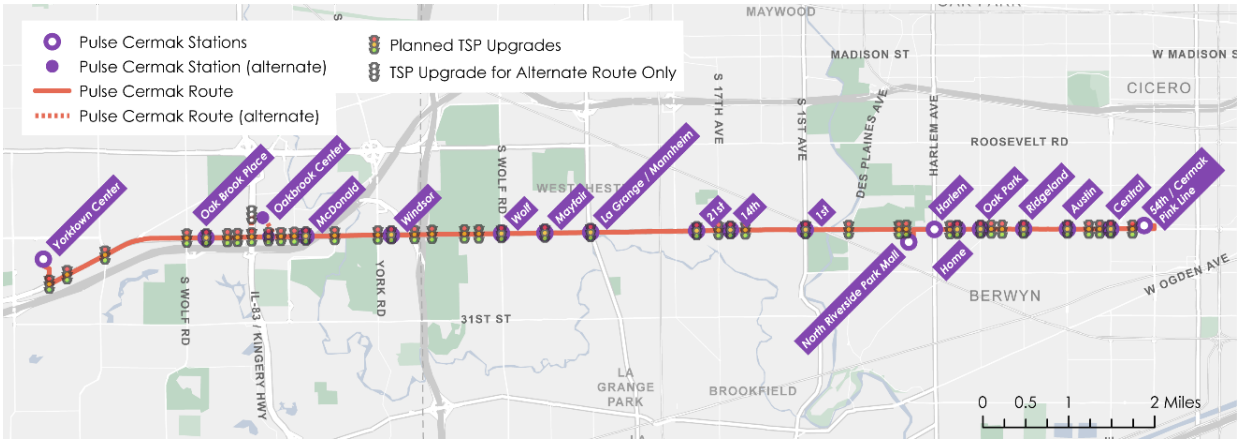
Additional analysis, coordination, and stakeholder feedback is needed for bus priority lanes and queue jumps, which will be further studied during the Environmental Review phase. Preliminary locations for bus priority lanes and queue jumps are presented in Section 3.4.5. The following defines the bus priority features being considered for the corridor.

3.4.2 Transit Signal Priority

TSP enables the bus's on-board computer to communicate with the traffic signal system without any action taken by the bus driver. When a bus is running behind schedule, TSP requests to shorten red lights or extend green lights giving buses an advantage to stay on a reliable schedule. Pace has been an active participant in regional coordination for TSP, which has been led by the RTA.

TSP is utilized by local Pace and CTA bus routes, in addition to Pulse. It is planned to be implemented on the Cermak Road corridor as a part of the Regional Transit Signal Priority Implementation Program (RTSPIP), in advance of Pulse Cermak Line construction and operation. It is anticipated that TSP will be installed at up to 42 intersections throughout the corridor, as shown in Figure 3-13 and listed in Table 3-5.

FIGURE 3-13 TRANSIT SIGNAL PRIORITY (TSP) LOCATIONS



Source: Pace, PMO

TABLE 3-5 PLANNED TSP LOCATIONS

PLANNED TSP LOCATION INTERSECTIONS	
Cermak Rd & 54th Ave	Cermak Rd & Wolf Rd
Cermak Rd & Central Ave	Cermak Rd & Westbrook
Cermak Rd & 57th Ave	Cermak Rd & Enterprise Dr
Cermak Rd & 58th Ave	Cermak Rd & I-294 (East)
Cermak Rd & Austin Blvd	Cermak Rd & I-294 (West)
Cermak Rd & Ridgeland Blvd	22nd St & Windsor Dr
Cermak Rd & East Ave	22nd St & York Rd
Cermak Rd & Wesley Ave	22nd St & Enterprise Dr
Cermak Rd & Oak Park Ave	22nd St & McDonald
Cermak Rd & Home Ave	22 St & Spring Rd
Cermak Rd & Cermak Plaza Shopping Center	22nd St & Oakbrook Center (East)
Cermak Rd & North Riverside Park Mall (East)	22nd St & Oakbrook Center (West)
Cermak Rd & North Riverside Park Mall (West)	22nd St & Kingery Hwy
Cermak Rd & Des Plaines Ave	22nd St & Parkview Dr
Cermak Rd & 1st Ave	22nd St & MacArthur Dr
Cermak Rd & 12th Ave	22nd St & Shops at Oak Brook
Cermak Rd & 14th Ave	22nd St & Midwest Rd
Cermak Rd & 17th Ave	Butterfield Rd & Meyers Rd
Cermak Rd & 21st Ave	Butterfield Rd & Fairfield Ave
Cermak Rd & Mannheim Rd / US-12	Butterfield Rd & Technology Dr
Cermak Rd & Mayfair Ave	

Source: Pace, PMO

3.4.3 Bus Priority Lanes

Bus priority lanes allow buses to travel through and between intersections with less interference from congestion. They may be exclusive or semi-exclusive (such as when a bus lane is shared with right-turning vehicles accessing businesses). When bus priority lanes are shared with right-turning vehicles accessing businesses, they are referred to as business access and transit (BAT) lanes.

Approval of bus priority lanes currently requires detailed traffic analysis, considerable design effort and coordination with the roadway jurisdiction to address impacts to other traffic. Pace is currently evaluating potential locations where bus priority would be feasible and effective and will further define these improvements in later phases of the Cermak Line development. Figure 3-14 displays an example of a bus priority lane.

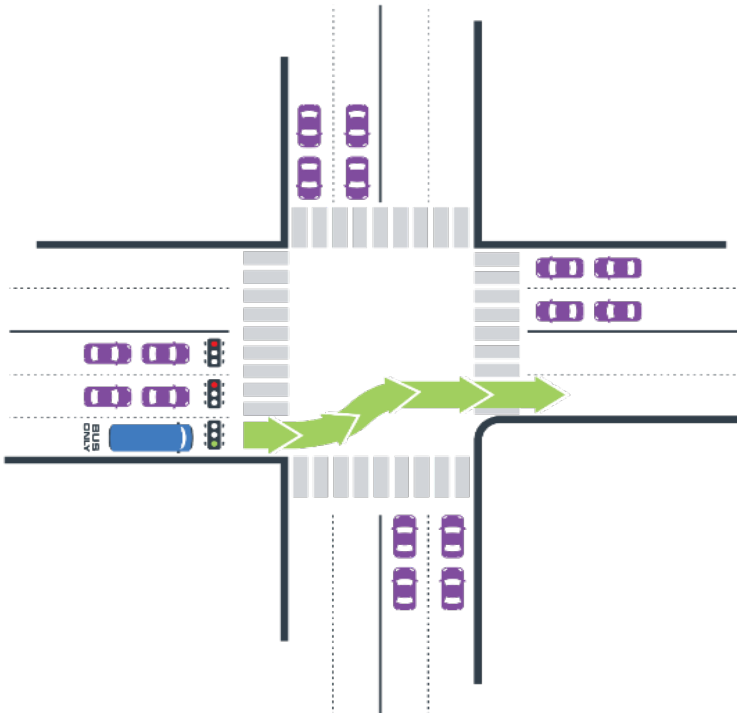
FIGURE 3-14 BUS PRIORITY LANE EXAMPLE RENDERING

Source: Pace, PMO

3.4.4 Queue Jumps

Queue jumps function as short segments of bus priority lanes that may be exclusive or semi-exclusive in the area immediately surrounding intersections. They allow buses to bypass intersection-related congestion and may require a dedicated signal if the bus merges into general traffic as it passes through an intersection. Queue jump lanes may be bus-only or shared with right-turning vehicles. Figure 3-15 displays an example diagram of a queue jump.

FIGURE 3-15 QUEUE JUMP EXAMPLE



Source: Pace, PMO

Detailed traffic analysis is required to determine where queue jumps are feasible and appropriate. The Project Definition study identifies three proposed queue jumps to be evaluated in future phases: both eastbound and westbound at Central Avenue, and eastbound at Home Avenue. Other opportunities for queue jumps will be explored in future phases based on stakeholder input and continuing evaluation of roadway conditions.

3.4.5 Bus Priority Opportunities

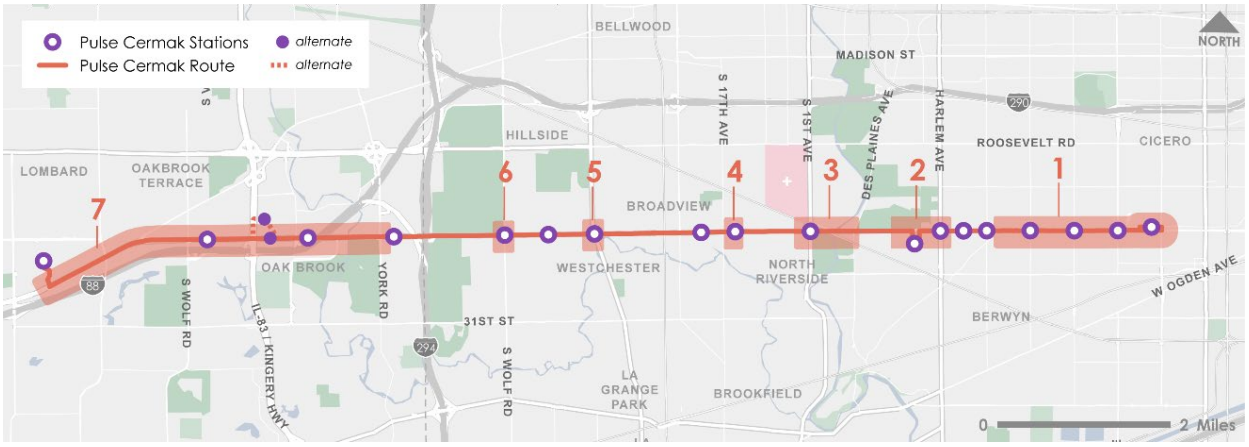
In cooperation with IDOT, corridor stakeholders, and local municipalities, the project team preliminarily identified and considered opportunities for bus priority lanes and queue jumps in the corridor. Table 3-6 details the preliminary locations where bus priority lanes and queue jump opportunities may be possible, due to existing ROW availability and/or the presence of additional travel lanes or turn lanes that could be repurposed. The locations are also shown in Figure 3-16.

TABLE 3-6 PRELIMINARY BUS PRIORITY LANE OR QUEUE JUMP LOCATIONS

Number	Segment	Roadway	Location
1	East	Cermak Rd	Laramie Avenue to Wesley Avenue
2	East/Central	Cermak Rd	Home Avenue to the North Riverside Park Mall (west entrance)
3	Central	Cermak Rd	Keystone Avenue to 3rd/Forest Avenue
4	Central	Cermak Rd	14th Avenue to 17th Avenue
5	Central	Cermak Rd	Westchester Boulevard to Hawthorne Avenue
6	Central	Cermak Rd	Wolf Road intersection and approaches
7	West	22nd St / Butterfield Rd	Windsor Drive to Fairfield Avenue

Source: Pace, PMO

FIGURE 3-16 PRELIMINARY BUS PRIORITY LANE OR QUEUE JUMP LOCATIONS



Source: Pace, PMO

These locations are preliminary, requiring additional analysis and coordination with local and regional stakeholders during future phases of the project to determine feasibility.

Conceptual estimates were developed for implementing bus priority features, including: three queue jumps on segment #1; an eastbound BAT lane through segments #2 and #3; queue jumps through intersections #4, #5, and #6; and BAT lanes on segment #7. With minimal roadway and traffic signal changes, these queue jumps and BAT lanes within the existing ROW could be added to the project for less than $10M.

There is also a larger opportunity for a more transformative project on the east end of the corridor, east of Home Avenue, but this project would be significantly more costly and require extensive coordination with IDOT and the municipalities to define and advance.

3.5 Service Plan and Operating Statistics

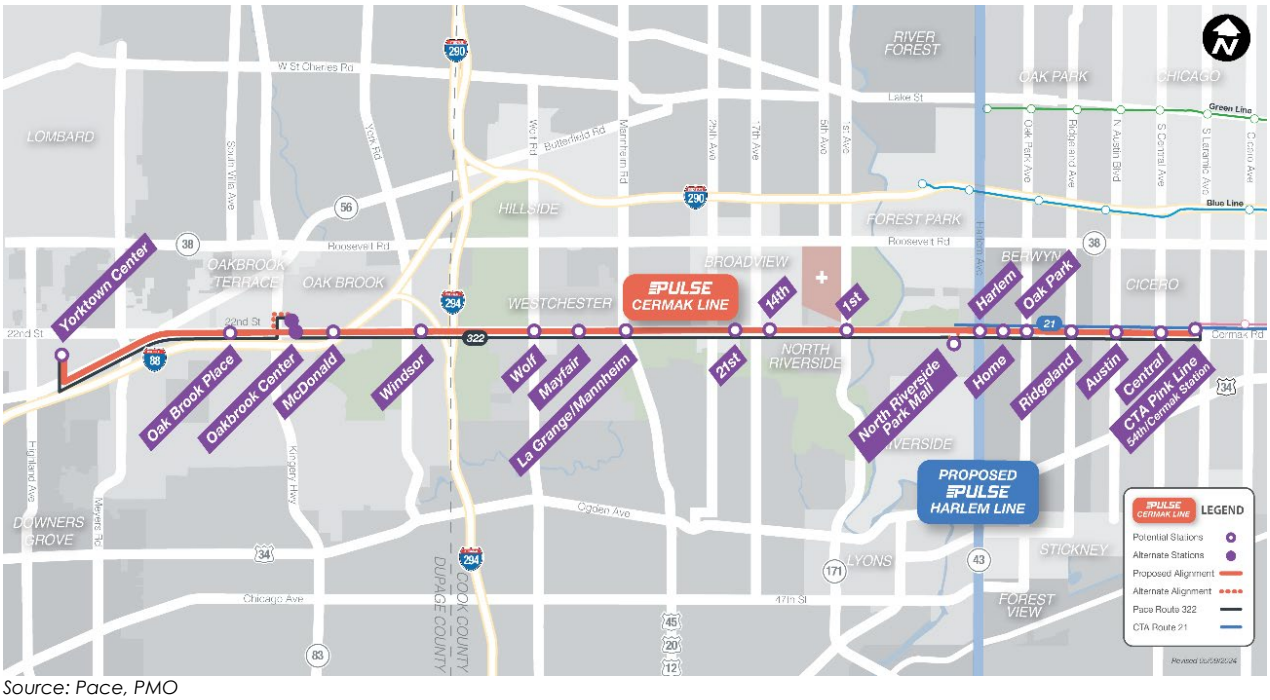
This section describes Pace's recommended service plan, running time estimates, operating statistics, and operations and maintenance (O&M) costs for the Pulse Cermak Line and associated changes to Route 322.

3.5.1 Recommended Service Plan

The Pulse Cermak Line will serve 19 station locations and operate east-west along Cermak Road, 22nd Street, and Butterfield Road between the CTA Pink Line 54th/Cermak station in the Town of Cicero and the Yorktown Center area in the Village of Lombard. The route will briefly divert off Cermak Road in the Village of North Riverside to serve a station on the property of the North Riverside Park Mall. The service plan also assumes that the Pulse Cermak Line will divert off 22nd Street in the Village of Oak Brook to serve a station location on the Oakbrook Center property. This routing and station location was selected to assist with the development of operating requirements; however, the routing and station locations at Oakbrook Center are considered alternatives and will continue to be evaluated during the Environmental Review phase.

The proposed extent of the Pulse Cermak Line mirror Pace's existing Route 322. To complement Pulse, Route 322 will continue to operate in the corridor and serve all local stops but at a reduced frequency. Additionally, CTA Route 21 will continue to operate in the eastern portion of the corridor and terminate at the North Riverside Park Mall. No changes are proposed for CTA Route 21 as part of the project; however, Pace and CTA will continue to coordinate on service in the corridor. Figure 3-17 displays the proposed Pulse Cermak Line, Route 322, and CTA Route 21 services.

FIGURE 3-17 PROPOSED SERVICE AND PULSE STATIONS



Source: Pace, PMO

The Pulse Cermak Line is recommended to operate between approximately 4:30 a.m. to 1 a.m. on weekdays, 5 a.m. to 1 a.m. on Saturdays, and 5:30 a.m. to 1 a.m. on Sundays. It will operate every 15 minutes during most of the day, seven days a week, with 20-minute service provided during select early morning and evening periods. The modified Route 322 is recommended to operate every 60 minutes, seven days a week, between approximately 5:30 a.m. and 10 p.m. on weekdays and 6 a.m. to 10 p.m. on Saturdays and Sundays. Additionally, the service will also continue to provide school-related trips between the CTA Pink Line 54th/Cermak station and Morton West High School on school days. The recommended service spans and frequencies for the Pulse Cermak Line and modified Route 322 are summarized in Table 3-7 and Table 3-8.

TABLE 3-7 PULSE CERMAK LINE PROPOSED SERVICE SPAN AND FREQUENCIES

Operating Hours						
	EARLY	**AM PEAK**	**MIDDAY**	**PM PEAK**	**EVENING**	**NIGHT**
Weekday	4:30-6a	6-9a	9a-3p	3-6p	6-10p	10p-1a
Saturday	5-7a	7-9a	9a-3p	3-6p	6-10p	10p-1a
Sunday/Holiday	5:30-7a	7-9a	9a-3p	3-6p	6-10p	10p-1a
Frequency						
Weekday	15 min	15 min	15 min	15 min	15 min	20 min
Saturday	20 min	15 min	15 min	15 min	15 min	20 min
Sunday/Holiday	20 min	15 min	15 min	15 min	15 min	20 min

Source: Pace, PMO

TABLE 3-8 MODIFIED ROUTE 322 PROPOSED SERVICE SPAN AND FREQUENCIES

Operating Hours						
	EARLY	AM PEAK	MIDDAY	PM PEAK	EVENING	NIGHT
Weekday	5:30-6a	6-9a	9a-3p	3-6p	6-10p	-
Saturday	-	6-9a	9a-3p	3-6p	6-10p	-
Sunday/Holiday	-	6-9a	9a-3p	3-6p	6-10p	-
Frequency						
Weekday	60 min	60 min	60 min	60 min	60 min	-
Saturday	-	60 min	60 min	60 min	60 min	-
Sunday/Holiday	-	60 min	60 min	60 min	60 min	-

Source: Pace, PMO

3.5.2 Running Time Estimate

Planning-level running time estimates were developed for the Pulse Cermak Line and modified Route 322 to assist with the development of preliminary operating statistics and O&M costs (refer to Section 3.5.3). The running time estimates were developed as part of this study and are based on the existing Route 322 timetables; analyses of actual Route 322 running times, schedule adherence, and floating car travel time analyses; and estimated changes from TSP, limited stops, and raised boarding platforms. The following summarizes the running time estimates for each service including potential Pulse running time savings over local service.

3.5.2.1 Pulse Cermak Line Running Times

Running time estimates were developed using a detailed model. The model develops station-to-station peak and off-peak running times by direction based on three main factors: calculated travel time, intersection delay, and station dwell. Additional inputs also factor into the model: adjustments for industry standard bus acceleration and deceleration rates, speed limits, roadway congestion, intersection delay/queuing, TSP, raised boarding platforms, current Pulse operations and previous studies, and calibration based on existing Route 322 service. The peak and off-peak running time estimates[15] are factored into other designated time periods (i.e., midday, evening, etc.) based on ratios developed from running time differences in similar time periods for the existing Route 322, and adjustments from other supportive analyses. The specific running times by time period are used in combination with the service plan to develop operating statistics and requirements for the Pulse Cermak Line. The overall running times are assumed to be conservative as they designate Pulse buses to stop at every

[15] Peak running times are calibrated to be representative of the PM Peak period. Off-peak running times are calibrated to be representative of the Early or Night periods with limited congestion and delay.

station location, a practice that may not occur during actual trips if riders are not present.

The Pulse Cermak Line end-to-end running times are estimated to be between 47 minutes and 59 minutes depending on the time of day and direction of travel. The average speed of the service is anticipated to be between approximately 15 miles per hour (mph) and 18 mph. The inclusion of TSP in the corridor is estimated to reduce intersection delay by approximately 3 to 4 minutes (6%) per trip during the peak period. Additional running time savings and more consistent travel times throughout the day may be possible with additional bus priority features. Table 3-9 and Table 3-10 provide detailed timepoint-to-timepoint estimates for Pulse Cermak Line peak and off-peak running times by direction.

TABLE 3-9 ESTIMATED PULSE WESTBOUND RUNNING TIMES AND SPEEDS BY TIME POINT

Westbound Running Times	PM Peak	Off Peak
Station/Time Point (TP)	TP-TP Travel Time	TP-TP Travel Time
CTA Pink Line 54th / Cermak station	0:00:00	0:00:00
Cermak Rd / Ridgeland Ave	0:08:00	0:06:23
North Riverside Park Mall	0:09:22	0:07:35
Cermak Rd / 1st Ave	0:06:40	0:06:02
Cermak Rd / Mannheim	0:06:40	0:05:46
Cermak Rd / Wolf Rd	0:03:26	0:03:12
Oakbrook Center station	0:09:40	0:08:21
Yorktown Center	0:11:09	0:09:41
Total	**0:54:58**	**0:47:00**

Source: Pace, PMO

TABLE 3-10 ESTIMATED PULSE EASTBOUND RUNNING TIMES AND SPEEDS BY TIME POINT

Eastbound Running Times	PM Peak	Off Peak
Station/Time Point (TP)	TP-TP Travel Time	TP-TP Travel Time
Yorktown Center	0:00:00	0:00:00
Oakbrook Center station	0:12:04	0:09:54
Cermak Rd / Wolf Rd	0:10:55	0:08:43
Cermak Rd / Mannheim	0:04:02	0:03:11
Cermak Rd / 1st Ave	0:07:57	0:05:46
North Riverside Park Mall	0:06:08	0:05:51
Cermak Rd / Ridgeland Ave	0:08:54	0:07:46
CTA Pink Line 54th / Cermak CTA station	0:08:56	0:07:20
Total	**0:58:57**	**0:48:30**

Source: Pace, PMO

3.5.2.2 Modified Route 322 Running Times

Running time estimates for the modified Route 322 were developed based on an assessment of the existing Route 322 service (i.e., schedule adherence, observed running times by time of day, etc.) and floating car analysis. The 85th percentile of observed existing Route 322 running times by time of day plus assumptions for improving OTP, future congestion considerations, the addition of TSP, and reduced passenger volumes were factored into the development of the estimate. The estimates are meant to be conservative to assist with developing operating statistics and allowing for future

planning flexibility. They were based on the development of revised PM Peak running times that are factored into other designated time periods, like the process used for the Pulse Cermak Line running time estimates (refer to Section 3.5.2.1). The running times also account for the removal of a mid-route layover at Oakbrook Center, a practice that is utilized with existing Route 322 service.

The performance of Route 322 will continue to be monitored prior to the implementation of the Pulse Cermak Line. Pace will consider additional modifications to the service and its running times, as necessary, to accommodate future needs in the corridor. A summary of the modified Route 322 running times is provided in Table 3-11 and Table 3-12 in the following section.

3.5.2.3 Estimated Running Time Comparison Summary

Estimated end-to-end running times by time period and direction for the Pulse Cermak Line and modified Route 322 are summarized in Table 3-11 and Table 3-12. They also include comparisons of Pulse running times to existing and modified Route 322 services.[16] The Pulse Cermak Line is estimated to operate approximately 13% to 14% faster than existing and 16% to 21% faster than the modified Route 322 during the PM Peak. The modified Route 322 running times are estimated to be longer than existing service to account for potential improvements required to improve reliability (i.e., OTP) and account for future congestion. Detailed preliminary timetables for the Pulse Cermak Line and modified Route 322 are included in Appendix D.

[16] Running times reflect modeled service and are rounded to the nearest minute for comparison purposes. Existing Route 322 running times include a 5-minute mid-route layover at Oakbrook Center, while the Pulse Cermak Line and modified Route 322 do not.

TABLE 3-11 WESTBOUND ESTIMATED RUNNING TIME COMPARISON BY TIME PERIOD

Westbound Comparison						
	EARLY	AM PEAK	MIDDAY	PM PEAK	EVENING	NIGHT
Existing Route 322	53 min	59 min	60 min	63 min	55 min	51 min
Modified Route 322	53 min	62 min	63 min	70 min	60 min	53 min
Pulse Cermak Line	47 min	52 min	52 min	55 min	52 min	47 min
Pulse Savings Over Existing	**6 min**	**7 min**	**8 min**	**8 min**	**3 min**	**4 min**
Pulse Savings Over Modified	**6 min**	**10 min**	**11 min**	**15 min**	**8 min**	**6 min**

Source: Pace, PMO

TABLE 3-12 EASTBOUND ESTIMATED RUNNING TIME COMPARISON BY TIME PERIOD

Eastbound Comparison						
	EARLY	AM PEAK	MIDDAY	PM PEAK	EVENING	NIGHT
Existing Route 322	58 min	61 min	62 min	69 min	59 min	54 min
Modified Route 322	58 min	62 min	63 min	70 min	60 min	54 min
Pulse Cermak Line	49 min	54 min	54 min	59 min	54 min	49 min
Pulse Savings Over Existing	**9 min**	**7 min**	**8 min**	**10 min**	**5 min**	**5 min**
Pulse Savings Over Modified	**9 min**	**8 min**	**9 min**	**11 min**	**6 min**	**5 min**

Source: Pace, PMO

3.5.3 Operating Statistics

Operating statistics for both the Pulse Cermak Line and the modified Route 322 were generated based on the proposed service plan and estimated running times. Four main operating statistics were calculated:

- **Revenue hours**: the annual in-service hours based on the proposed span and frequency and estimated running times, including a minimum assumption of 15% layover.
- **Vehicle hours**: the annual total hours including layover and deadhead. Revenue hours were converted to vehicle hours by using the existing ratio of vehicle to revenue hours for Route 322 service.
- **Revenue miles**: the annual in-service miles required to operate the Pulse service and modified Route 322.
- **Peak vehicles**: the number of vehicles required for Pulse and modified Route 322, based on the defined peak frequency and associated cycle time. Total vehicle requirements were also calculated using a 20% spare ratio applied to the peak vehicle requirement.

Table 3-13 summarizes the operating statistics for the proposed service plan. The Pulse Cermak Line requires 17 total vehicles (14 for peak service plus three spares), and the modified Route 322 requires five total vehicles (four for peak service plus one spare) to operate service. This is an increase of seven vehicles over existing service. The collective service changes will also generate approximately 86,400 annual vehicle hours, an increase of almost 44,000 (104%) annual vehicle hours over existing Route 322 service in the corridor. Additional details of the estimated operating statistics are provided in Appendix E.

TABLE 3-13 OPERATING STATISTICS SUMMARY

Operating Requirement Summary					
Route	**Annual Revenue Hours**	**Annual Vehicle Hours**	**Annual Revenue Miles**	**Peak Vehicles**	**Total Vehicles**
Existing Route 322	39,574	42,454	477,563	8	10
Total	**39,574**	**42,454**	**477,563**	**8**	**10**
Pulse Cermak Line	62,509	67,131	813,556	10	12
Modified Route 322	17,952	19,282	176,656	4	5
Total	**80,461**	**86,412**	**990,212**	**14**	**17**
Increase Over Existing	**40,887**	**43,959**	**512,649**	**6**	**7**

Source: Pace, PMO

3.5.4 Estimated Operating Costs

Operating costs for the proposed Pulse Cermak Line and the modified Route 322 were estimated based on two inputs:

- Annual vehicle hours for the proposed service plan; and
- Pace-provided costs per vehicle hour

For the purposes of operating cost estimation, it was assumed that the Pulse Cermak Line will be operated by Pace's West Division, which operates the existing Route 322. Costs are developed in 2024 dollars and 2030 dollars to provide an estimate for potential opening year service.

Pace provided a fully allocated cost per hour and a marginal cost per hour. The fully allocated rate was used for the Pulse Cermak Line to be conservative, as it is a new service that may carry additional operating and agency-related costs. The cost per vehicle hour provided by Pace for the Pulse Cermak Line is $84.70 in 2024 dollars and $104.12 in 2030 dollars based on a 3.5% annual inflation rate. The marginal cost per hour was used for the modified Route 322, as it is an existing service. The cost per vehicle

hour provided by Pace for the modified Route 322 is $72.23 in 2024 dollars and $88.79 in 2030 dollars based on a 3.5% annual inflation rate.

Table 3-14 summarizes the cost estimate for the recommended service plan. The results show that the introduction of Pulse service will add approximately $4.01 million in 2024 dollars and $4.93 million in 2030 dollars. These summaries include costs for operating the service and maintaining vehicles but do not include additional maintenance costs associated with station infrastructure and amenities to be constructed in the Pulse Cermak Line corridor.

TABLE 3-14 ESTIMATED OPERATING COSTS (IN 2024 AND 2030 DOLLARS)

Operating Cost Summary			
Route	**Annual Vehicle Hours**	**O&M Cost (FY24 $)**	**O&M Cost (FY30 $)**
Existing Route 322	42,454	$3,066,424	$3,769,418
Total	**42,454**	**$3,066,424**	**$3,769,418**
Pulse Cermak Line	67,131	$5,685,955	$6,989,491
Modified Route 322	19,282	$1,392,720	$1,712,008
Total	**86,412**	**$7,078,675**	**$8,701,499**
Increase Over Existing	**43,959**	**$4,012,251**	**$4,932,081**

Source: Pace, PMO

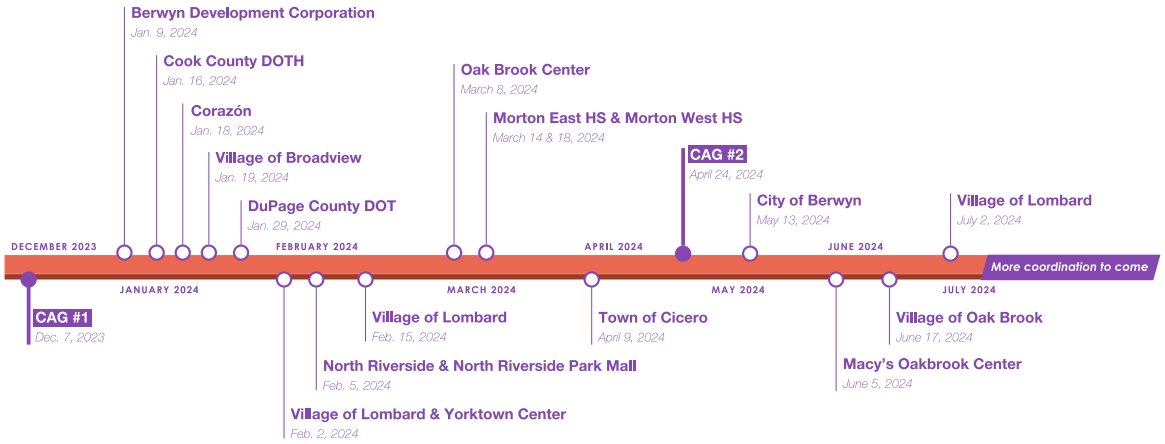
4 Stakeholder Engagement

4.1 Overview

Pace is committed to a collaborative process where a diverse group of stakeholders are actively involved and provide input that will directly shape the project from planning to implementation. Pace produced an initial Stakeholder Involvement Plan (SIP)[17] in spring 2023 to determine the desired activities during the Project Definition phase and the entirety of the project.

Engagement during Project Definition focused on coordination with government agencies at the local, state, and federal levels, as well as other local organizations, property owners, and schools. In the various activities, Pace introduced the project, gathered feedback on station locations and proposed roadway improvements, and called for interagency partnerships. Activity formats ranged from CAG meetings to individual meetings with property owners, local government representatives, and agency representatives, as well as focus groups and interviews with students and community groups. Figure 4-1 displays a timeline of stakeholder involvement activities.

FIGURE 4-1 OUTREACH TIMELINE



Source: Pace, PMO

Ongoing discussion and feedback from stakeholders informed outcomes of this Project Definition study. For example, representatives from Morton West High School, as well as the students themselves, shared that the bus stop on Home Avenue and Cermak Road was the primary location used by students traveling to and from school. As a result of that feedback, Home Avenue has been included as a preferred station location.

[17] Available by request to Pace Priority Project Management Office

Another example of stakeholder engagement shaping the project is the Harlem Avenue station location, which incorporates IDOT's future intersection design plans (ascertained from meetings with the City of Berwyn and IDOT) and the preferences of CTA.

As the Project Definition phase concludes and the project advances into the Environmental Review phase, stakeholder involvement and outreach efforts will be crucial. Coordination with communities, government officials, public agencies, and individual interest groups will continue. The project team will also continue to emphasize public involvement and broad community outreach. Guided by established plans, Pace will connect with its customers, the public, affected property owners, and business groups through outreach that includes a project website, project newsletters, public meetings, and one-on-one stakeholder meetings.

4.2 Key Stakeholder Activities

A stakeholder is anyone who is affected by the project and has a stake in its outcome. Since the transit corridor project spans 14 miles and impacts a wider region, the Pulse Cermak Line stakeholders represent a large group that includes area residents, property owners, business owners, state and local elected officials, agency staff, special interest groups, community organizations, local school administrators and students, transit users, and interested parties who can directly influence the outcome of a planning process. Therefore, Pace focused initial outreach effort on key stakeholders, intended to be as representative as possible of the larger group. Key stakeholders were identified through a combination of input from staff, local government officials and agency knowledge, and recommendations from other stakeholders. The initial stakeholder list was developed in spring 2023 and updated throughout the Project Definition phase as opportunities arose. It is anticipated that new stakeholders will be added throughout the life of the project.

4.2.1 Corridor Advisory Group

Representatives from municipalities, agencies, schools, property owners, and community groups were invited to join the CAG. The CAG members were asked to assist with representing the views and priorities of the communities and transit users within the project area. As Project Definition advanced, additional stakeholders were invited to join based on identified needs and stakeholder recommendations. CAG meetings were scheduled and designed to encourage timely and meaningful opportunities for input and to encourage information sharing with Pace. In addition, individual meetings with CAG members to address specific concerns were coordinated as needed.

The first CAG meeting was held in person on December 7, 2023, at the North Riverside Public Library in North Riverside. Thirty-nine invitees attended the first CAG meeting. The

purpose was to introduce the project and seek initial reactions from the CAG members. The meeting included a presentation, which introduced the project team as well as an overview of the Pulse program and Pulse Cermak Line project area; role of the CAG; activities conducted so far; existing conditions and transit needs within the project corridor; preliminary station concepts and station locations; potential bus priority treatments; and project next steps. A breakout discussion allowed attendees to review exhibits of preliminary station locations, provide comments, and share their suggestions and knowledge regarding potential station sites and roadway treatments. A subsequent online comment period allowed attendees additional time to send comments to the project team and allowed invitees who could not attend the first CAG meeting an opportunity to participate in the process.

Key topics that emerged from the discussion and virtual feedback covered the importance of having a station at Home Avenue for Morton West High School students, recommendations for sidewalks and pedestrian connections, bus routing issues in North Riverside Park Mall and the CTA Pink Line 54th/Cermak station, and information about local roadway projects.

The second CAG meeting was held in-person on April 24, 2024, at the Westchester Public Library in Westchester. Forty invitees attended the meeting. Updates on the project since the first meeting were presented and feedback was sought from the CAG members on a revised proposed Pulse alignment and station locations, conceptual station designs, bus priority treatments, and proposed operating plan. The meeting included a presentation that re-introduced the Pulse Program and Pulse Cermak Line project area, a recap of the first CAG meeting, and a summary of project updates related to the proposed alignment, station locations, bus priority treatments, and service plan. The meeting also covered station concepts, proposed conceptual station designs, and next steps. Project team members responded during an open question-and-answer session. A breakout discussion allowed attendees to review exhibits of revised station locations and conceptual designs, provide comments on aerial maps, and share their suggestions and knowledge regarding potential station sites and infrastructure changes. An online comment period for feedback was also available.

This additional feedback included the importance of maintaining local service at the start and end of local school hours, preferred improvements in and around the station at Yorktown Center, and information about local regulations that might conflict with elements of the project.

4.2.2 Government Agencies

Pace pursued meetings with municipalities, counties, and agencies to introduce the project. Through these meetings, Pace sought to align Pulse goals with local or partner agency needs; document requirements and laws that could impact the project; and identify any potential challenges with the roadway and adjacent areas. Pace had

meetings with the Illinois Department of Transportation (IDOT), the CTA, Cook and DuPage counties, and the municipalities of Berwyn, Broadview, Cicero, Lombard, North Riverside, and Oak Brook.

Regular meetings were held with IDOT as part of the Pace's ongoing, quarterly calls between the two agencies. Pace also held multiple meetings with IDOT to coordinate on two IDOT projects currently being developed in the corridor: a Smart Corridor project with extents that overlap the Pulse Cermak Line, and a separate project to change the lane and crosswalk configurations at the intersection of Harlem Avenue and Cermak Road. These meetings focused on compatibility between IDOT's proposed improvements and proposed Pulse station locations, potential future opportunities to add bus priority features to the corridor, and other opportunities to collaborate on future enhancements.

Pace also has ongoing coordination with the FTA and closely coordinates with the agency during the Environmental Review given FTA's regulatory role and reviews of planning documents during that phase.

Two special meetings were held with CTA to coordinate proposed Pulse service and station locations where service overlaps between the agencies from the CTA Pink Line to North Riverside Mall at Harlem Avenue. CTA staff also attended both CAG meetings and several meetings with local municipalities and property owners.

4.2.3 Property Owners, Interest Groups, and Other Community Outreach

During the Project Definition phase, Pace met with the owners of three mall properties that are being considered for Pulse stations, in coordination with the municipalities in which they are located. Pace met with the owners of Yorktown Center on February 2, 2024, the owners of North Riverside Park Mall on February 5, 2024, and the owners of Oakbrook Center on March 8, 2024, as well as a follow up meeting with the owners of the Oak Brook Macy's (the owners of the alternate station site) on June 5, 2024. Pace will continue to engage these property owners with their respective municipalities during future phases to ensure that station designs and bus routing through the property remains aligned with future development plans.

Pace held meetings with Corazón Community Services, a Cicero-based social services organization that serves communities in the eastern portion of the corridor and students attending Morton East and Morton West High Schools. The purpose of these coordination meetings was to gain a deeper understanding of community needs and identify potential community-based advocates for the project, as many of their constituents use the existing service. From both the CAG feedback and the meetings with students, the importance of the Home Avenue station was highlighted as the primary stop location to serve Morton West High School and was solidified as a recommended station location for the new Pulse service. In future phases of the study,

Pace will continue to engage these groups and identify additional organizations that will bring valuable perspectives. Finally, Pace is participating in the steering committee for the Town of Cicero's Local Road Safety Plan, which is being provided through technical assistance by the Chicago Metropolitan Agency for Planning (CMAP). The safety plan goals are closely aligned with the Pulse Cermak Line corridor goals. Efforts to coordinate outreach will allow the Pulse Cermak Line to have a greater reach into Cicero as public meetings and activities begin in the Environmental Review phase.

5 Preliminary Grant Review

Pace requires outside funding to support implementation of the Pulse program. To date, Pace has secured more than $70 million in discretionary federal and local grants to develop and implement the Pulse Milwaukee, Dempster, Halsted, and 95th Street lines. The Pulse Cermak Line has also received a $500,000 Invest in Cook (IIC) grant from Cook County for the upcoming Environmental Review phase. As Pace has not yet sought funding for design and construction, this section describes potential options and evaluates the Pulse Cermak Line for its eligibility based on how the project is currently defined.

5.1 FTA Small Starts Eligibility

The FTA Capital Investment Grant (CIG) program is the primary federal discretionary grant program for major transit projects. The CIG program is subdivided into three project categories each with its own eligibility and evaluation criteria: New Starts, Small Starts, and Core Capacity.

The FTA defines each program's eligibility and evaluation criteria in the Capital Investment Grant Policy Guidance document, with the most recent version published in January 2023.[18] Small Starts, designated for new transit corridors with a capital cost of less than $400 million and which are seeking a federal grant of no more than $150 million, would be the applicable CIG funding category for this project. Small Starts is statutorily limited to 80% of the total project cost, although FTA has discretion to, and typically does, award considerably less than 80%. Other federal funding sources can be used together with Small Starts, but the total federal share cannot exceed 80%.

Small Starts projects must be rated against nine criteria, which are described in the CIG Policy Guidance and are grouped into two categories: Project Justification (consisting of six criteria) and Local Financial Commitment (consisting of three criteria). Projects must score a Medium rating or better in both categories to be eligible for funding. In April 2024, the FTA proposed new CIG policy guidance introducing potential changes to program eligibility thresholds and project rating criteria with the intention of amending the January 2023 policy guidance[19]. That proposed guidance has not been officially adopted as of the publication of this Project Definition report.

Pace will consider pursuing this funding source depending on the agency's overall capital program goals, available funding sources and awards at the local and state

[18] https://www.transit.dot.gov/sites/fta.dot.gov/files/2023-01/CIG-Policy-Guidance-January-2023.pdf
[19] https://www.transit.dot.gov/sites/fta.dot.gov/files/2024-04/Proposed-CIG-Policy-Guidance-4-5-24.pdf

level, and resources to pursue discretionary grants. Securing a Small Starts grant entails a multi-year partnership with the FTA rather than a one-time application.

A preliminary evaluation of the Pulse Cermak Line's performance against the Small Starts rating criteria was conducted to better understand the likelihood of an award and the effort remaining to obtain the required Medium rating. This evaluation will inform the funding strategy that Pace pursues to fund remaining project phases including construction.

While the proposed 2024 policy guidance has not yet been adopted, the preliminary grant review for the Pulse Cermak Line considers the proposed criteria and procedures defined in the proposed 2024 guidance. Full documentation of the analysis and resulting scores, including a comparison between the current and proposed guidance and associated risks, are available in the Small Starts Grant Assessment report.

5.1.1 Project Justification

Eligibility for Project Justification Warrants, a streamlined Project Justification evaluation process, is determined based on thresholds for project capital cost and the existing transit trips along the project corridor as defined in the CIG Policy Guidance documentation. The preliminary cost estimate and existing corridor transit trips for the Project does not meet the warrants threshold under the 2023 policy guidance but may meet the warrants threshold under the 2024 proposed policy guidance. Projects that qualify for Warrants are not required to prepare a ridership forecast. Because detailed ridership projections are not yet available for the Pulse Cermak Line, the preliminary Small Starts assessment assumes that it qualifies for warrants and the streamlined evaluation process.

A project that qualifies for Project Justification Warrants will receive automatic Medium ratings for three of six Project Justification rating criteria. The expected rating of each Project Justification rating category for the Pulse Cermak Line is summarized below:

- Mobility Improvements: Medium (automatic rating if using warrants)
- Cost Effectiveness: Medium (automatic rating if using warrants)
- Congestion Relief: Medium (automatic rating if using warrants)
- Environmental Impact: Low
- Land Use: Medium (assumed placeholder rating)
- Economic Development: Medium-Low

Based on the preliminary assessment of Project Justification rating categories, the Project will likely score very close to the breakpoint between a Medium and Medium-Low rating for Project Justification.

5.1.2 Local Financial Commitment

This evaluation assumes that the Pulse Cermak Line will rate similarly to the preliminary ratings for Local Financial Commitment from a previous assessment completed for the Pulse Halsted Line. The expected rating of each Local Financial Commitment rating is summarized below:

- Current Financial Condition: Medium-High
- Commitment of Funds: Medium
- Reasonableness of the Financial Plan: Medium

Based on the assumed Local Financial Commitment category ratings, the Pulse Cermak Line is likely to meet the criteria of the Local Financial Commitment rating. If the requested federal share is less than 50%, the Project will also receive a one-level increase to the Local Financial Commitment rating.

5.1.3 Conclusion

To qualify for Small Starts, the project must secure an overall Medium rating for Project Justification. This can be achieved by:

- Verifying eligibility for Project Justification Warrants;
- Completing the full Land Use analysis and achieving a rating of Medium or higher;
- Providing sufficient documentation to support an Economic Development rating higher than Medium-Low;
- Further assessing the anticipated increase transit ridership in the corridor to support the Environmental Benefits evaluation, resulting in a rating higher than Low; or
- Conducting a ridership projection for the Pulse Cermak Line, supporting ridership that result in ratings higher than Medium in Mobility Improvements, Cost Effectiveness, and Congestion Relief without the use of Project Justification Warrants.

Project ratings may also differ based on the final criterial or procedural details and the timing of any CIG Policy Guidance updates.

5.2 Other Supportive Grants

Below are grant programs Pace has and will continue to consider for the remaining phases of the Pulse Cermak Line. More than one funding source will likely be needed.

5.2.1 Federal Funding

5.2.1.1 Rebuilding American Infrastructure with Sustainability & Equity (RAISE)

A competitive grant program managed through USDOT's Office of Surface Transportation, RAISE serves as one of the most consistent discretionary funding sources for multimodal transportation projects in the country, including fixed guideway transit projects. Maximum awards are typically $25 million, with an 80% federal cost share limit, covering planning, design, ROW, and construction activities. Typically 140-150 awards are made annually, with an average award of $12 million in 2024. Pace previously received a RAISE grant for the Pulse Halsted Line.

5.2.1.2 Congestion Mitigation and Air Quality (CMAQ) and Carbon Reduction Program (CRP)

CMAQ is a program run by the Federal Highway Administration (FHWA) that is apportioned to metropolitan planning organizations (MPO), who distribute program funds to selected projects within each region of the country. The program focuses primarily on projects that reduce transportation-related emissions, through mode shift, vehicle electrification, congestion reduction, and other strategies. In the Chicago region, the CMAP competitively awards CMAQ funding on a biannual basis. CMAP generally has discretion on how to distribute the funding, with 26 CMAQ awards programmed in the current CMAP Transportation Improvement Program (TIP) ranging from $108,000 to $169,320,000 in size. The federal cost share limit on CMAQ awards is 80%.

In 2021, the Bipartisan Infrastructure Law (BIL) introduced the Carbon Reduction Program (CRP), which, like CMAQ, is apportioned to states and, in the Chicago region, is also administered by CMAP. CMAP awards CRP and CMAQ funds through a joint call for projects, and in the 2024-2028 funding cycle, they awarded a combined $399.5 million in CMAQ and CRP funds.

Pace has been awarded CMAQ or CRP funds to cover design and construction for all four Pulse lines preceding the Pulse Cermak Line, as well as additional funds to support up to three years of initial operating costs for the Pulse Milwaukee Line and Pulse Dempster Line.

5.2.1.3 FTA Urbanized Area Formula Grants (Section 5307)

FTA 5307 program is formula funding that is distributed directly to transit agencies throughout the United States. In 2023, the FTA distributed more than $321 million of 5307

funding to CTA, Metra, and Pace. In regions greater than 200,000 in population, the program can fund capital expenses (including planning, design, construction, and equipment) but not operational expenses. The federal cost share limit is 80% for capital projects, 85% for vehicles, and 90% for ADA-related vehicle and facility expenses. Pace typically uses 5307 funding for the purchase of buses, including Pulse buses.

5.2.1.4 FHWA Congestion Relief Program

As part of the BIL, USDOT has programmed $250 million for federal fiscal years 2022 through 2026 toward the FHWA Congestion Relief Program. The Congestion Relief Program aims primarily at reducing highway congestion and related impacts by improving intermodal integration, reducing congestion at peak travel times, at advancing congestion pricing initiatives. It also funds the deployment and operation of mobility services, including commuter buses and vans, paratransit and microtransit. Transit agencies, MPOs, state agencies, or local units of government are eligible to apply for this competitive program. In 2022, the program made eight awards, ranging from $1 million (the minimum grant request value) to $11.9 million, including awards to TSP and autonomous transit vehicle projects. The federal cost share limit is 80%.

5.2.1.5 FTA All Stations Accessibility Program (ASAP)

As part of the bipartisan infrastructure law, USDOT has programmed $1.75 billion from 2022-2026 toward the FTA All Stations Accessibility Program (ASAP). The focus of the program is to repair, improve, modify, retrofit, or relocate infrastructure of legacy stations or facilities for passenger use, to meet or exceed current ADA standards. Transit agencies, MPO's, state agencies, or local units of government are eligible to apply for this competitive program. In 2024, the program made eight awards, ranging from $4 million to $156 million. The federal cost share limit is 80%

5.2.1.6 FTA Bus & Bus Facilities Program (5339(b))

Provided both through formula allocations and competitive grants, FTA 5339(b) funds the replacement, rehabilitation and purchasing of buses (and related equipment), construction of bus-related facilities, including technological changes to modify low or no emission vehicles or facilities. Transit agencies, MPO's, state agencies, or local units of government are eligible to apply for this competitive program. In 2024, FTA awarded $1.5 billion in funding to 117 projects under the 5339 program. The federal cost share limit is 80%.

5.2.1.7 FTA Low or No Emission Grant Program (5339(c))

Provided through competitive grants, FTA 5339(c) funds the purchase or lease of zero-emission and low-emission transit buses as well as acquisition, construction, and leasing of required supporting facilities. Transit agencies, MPO's, state agencies, or local units of government are eligible to apply for this competitive program. In 2024, FTA awarded

$1.5 billion in funding to 117 projects under the 5339 program. The federal cost share limit is 85% for the purchase of buses and 90% for bus-related equipment and facilities.

5.2.2 State and Local Funding

5.2.2.1 RTA Innovation, Coordination & Enhancement (ICE)

The ICE program provides funds to enhance the coordination and integration of public transportation, and to develop and implement innovations to improve the quality and delivery of public transportation. The ICE program is state-funded, with no match requirement, and can be programmed toward both operations and capital project costs. ICE has been used to fund new transit services as well as technology improvements ranging from fare collection systems to transit priority signals. The ICE program maintains an annual call for projects with 54 awards made between 2010-2024. The median award through the program has been $949,408.

5.2.2.2 Cook County – Department of Transportation & Highways - Invest in Cook (IIC) Program

Funded through Cook County Motor Fuel Tax revenues, the IIC program has awarded $64.4 million in grants for a total of 278 projects throughout Cook County since 2017. On an annual basis, the Notice of Funding Opportunity (NOFO) period for IIC opens typically in February and closes in April, with award announcements in July. IIC can go towards support planning of transit service lines and planning, design, and construction activities at transit facilities. Awards are capped at $650,000. The Pulse Cermak Line received a $500,000 IIC grant for the upcoming Environmental Review phase.

6 National Environmental Policy Act (NEPA) Documentation

Pace anticipates pursuing federal funding for the Pulse Cermak Line and will therefore comply with the NEPA process. The Pulse Cermak Line is likely to qualify for a Documented Categorical Exclusion (DCE) NEPA class of action under 23 CFR 771.118(d), although the class of action has not been formally determined yet. All four Pulse lines that have completed the NEPA process (Milwaukee, Dempster, Halsted, and 95th Street lines) have qualified for a DCE.

This section includes the project's proposed Purpose and Need statement, as well as a preliminary screening of historic resources that could be impacted by the project. Both are required for NEPA and will be submitted to the FTA but were prepared in advance of initiating the NEPA process to support coordination with FTA.

6.1 Purpose and Need

6.1.1 Purpose Statement

According to the Council on Environmental Quality (CEQ), a Purpose and Need Statement "shall briefly specify the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action."[20]

The purpose of the Pulse Cermak Line is to provide an enhanced and cost-effective bus rapid transit service along Cermak Road, 22nd Street, and Butterfield Road through improved frequency, reliability, and travel times, as well as enhanced passenger facilities. The Pulse Cermak Line will be the fifth line in Pace's growing Pulse network, the mission of which is to provide fast, frequent, and reliable bus service on heavily traveled corridors in northeastern Illinois. Pulse achieves its mission through station and ROW improvements, including transit priority treatments, as well as upgrades to vehicle technology and operational efficiency.

6.1.2 Need Elements

The proposed action will address the following needs that are specific to the Pulse Cermak Line corridor:

- **On-time performance and reliability of transit service lags on the corridor.** Existing transit service experiences significant delays throughout the day due to traffic congestion, diminishing reliability, and public perception of transit across the entire

[20] Council on Environmental Quality, §1502.13. https://www.gpo.gov/fdsys/pkg/CFR-2012-title40-vol34/pdf/CFR-2012-title40-vol34-sec1502-13.pdf

corridor. During the PM Peak (3-6 p.m.), weekday congestion is at its worst and can significantly delay those traveling in the corridor. As of Fall 2022, Pace Route 322's average weekday on-time performance (OTP) during the PM Peak was only 64%, which is less than the Pace network average of approximately 71%.[21] Additional running time analysis of the service indicates that, on average, PM Peak trips in either direction require more than 20% more running time (approximately 14 to 19 minutes) compared to off-peak times with less congestion, demonstrating a need to improve transit trip consistency and reliability on the corridor. Improving running times through strategies like station improvements, ROW enhancements, and operational/technology upgrades will contribute to increasing transit trip reliability.

- **Current frequency impedes transit's convenience and competitiveness.** Pace Route 322's service is every 20 minutes during most of the day on weekdays (30- to 60-minute frequencies during evenings/nights) and every 20 – 60 minutes on weekends. Improving frequency to every 15 minutes or better for most of the day – which is the standard headway for Pulse lines – will allow transit riders more flexibility with reduced waiting times. This amounts to greater competitiveness of transit service on the corridor.

- **Projected growth in the corridor will lead to greater congestion if bus transit service is not improved.** By 2050, the corridor is projected to add more than 22,000 residents and 12,000 jobs.[22] Increased population and job density on the corridor will produce new demand and a need for mobility improvements and congestion relief. Enhanced transit service will be able to provide additional person throughput and help preserve the capacity of the existing ROW.

- **The corridor's transit functionality and profile need to be elevated to be recognized as a connection to the regional transit network.** The corridor links high-quality rapid transit (CTA Pink Line) with Pace transfer hubs at Oakbrook Center and Yorktown Center, as well as intersecting with many north-south bus routes. Additionally, the corridor is in a gap between two Metra regional commuter rail lines: the Union Pacific West (UP-W) Line and the Burlington Northern Santa Fe (BNSF) Line. Based on data from fall 2022, more than 40% of Route 322 riders transferred to or from another transit service as a part of their trip, underscoring the role of this corridor as a regional connector. Although two existing bus lines serve all or part of the corridor, neither provide limited stop or express service, which would effectively

[21] Pace, Suburban Service and Regional ADA Paratransit Budget, November 2023. https://www.pacebus.com/sites/default/files/2023-10/2024%20Final%20Budget%20Book%20for%20BOD%20%26%20Internet_compressed.pdf
[22] Chicago Metropolitan Agency for Planning, *ON TO 2050.* https://cmap.illinois.gov/regional-plan/

reduce transit travel times, help induce a mode shift from cars to transit, and preserve the capacity of the existing ROW.

- **Expanding mobility options is crucial for low-income and zero-vehicle households.** In the eastern segment of the corridor, defined as the U.S. Census block groups within approximately one half mile of Cermak Road between 54th Avenue in Cicero and Harlem Avenue in Berwyn, 29% of residents are low-income and 49% of households have one or fewer vehicles.[23] Eighty-nine percent are people of color. These factors indicate a concentration of residents who are transportation cost-burdened and transit-dependent, underscoring the importance of improved connectivity and quality of transit in the corridor.

6.2 Historic Resources

Documentation of historic resources relative to the Pulse Cermak Line was based on data from the Historic and Architectural Resources Geographic Information System (HARGIS) database maintained by the Illinois State Historic Preservation Office (SHPO). The HARGIS database includes properties, structures, buildings, landscapes, or objects of historic significance in Illinois that are listed in the National Register (NR), are deemed eligible for the NR, or have been surveyed as a potentially historic or architecturally significant property but their significance has not yet been confirmed or determined. The database is not a comprehensive resource of historic and architecturally significant properties, as there may be relevant properties that are not documented in the database. Additionally, it is noted by the SHPO that the data are not guaranteed to be accurate or current, as properties may have been changed, demolished, or moved since they were added to the database. Nonetheless, HARGIS data is a useful research and screening tool to identify potential historic or architecturally significant properties that may exist along the corridor. This information can then be used to inform station site selection as well as the potential historic resource impacts that may need to be documented during the Environmental Review phase.

Additional information was obtained from the Certified Local Governments (CLGs) in the study area. The CLG Program recognizes municipal and county governments that have established effective preservation programs that meet criteria established by the U.S. Secretary of the Interior and the State of Illinois. Illinois requires that CLGs maintain an inventory of historic properties, typically provided through their individual Historic Preservation Commissions. Two local governments in the study area are CLGs including the City of Berwyn and the Village of Lombard. Both municipalities provided a list of historic properties within their jurisdictions.

[23] US Census, 2017-2021 American Community Survey.

To capture the historic property data that will be relevant to the Pulse Cermak Line, the historic features were filtered to include only those located within one quarter mile of the Pulse Cermak Line corridor.

6.2.1 Results

Based on the HARGIS data, 22 resources were identified within the quarter mile corridor buffer, including two historic districts and 20 historic properties, as summarized in Table 6-1. All historic resources identified by the CLGs that fell in the quarter mile corridor were already included in the HARGIS data.

TABLE 6-1 HARGIS PROPERTY TYPE AND HISTORIC DISTRICTS.

Station Location	Count
Undetermined	17
Part of a NR Historic District- Contributing	2
Entered in the NR	2
District Determined Eligible for NRHP	1
Total	***22***

Source: Pace, PMO

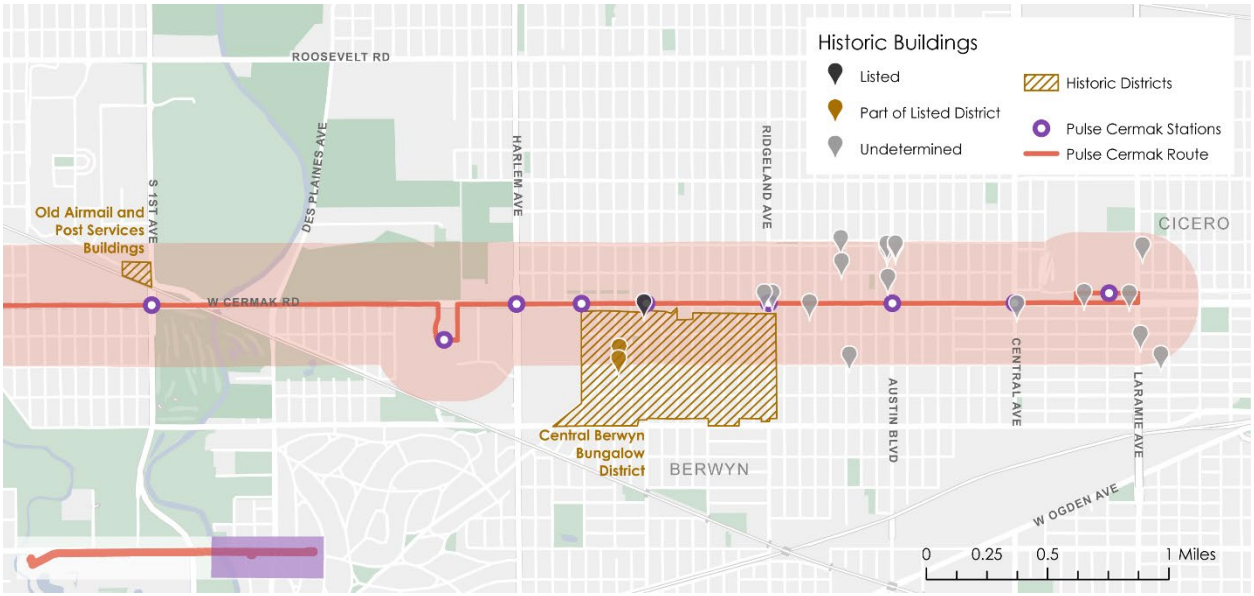
Of the 20 properties and two historic districts within one quarter mile of the Pulse Cermak Line corridor, nearly all are on the eastern portion of the corridor in Cicero and Berwyn, between the 54th/Cermak Pink Line and Harlem Avenue stations. One of the historic districts (Old Airmail and Postal Service Buildings) is located slightly farther west near 1st Avenue, in unincorporated Hines Township. Table 6-2 identifies the number of historic properties and/or districts within one quarter mile of the stations. They are also shown in Figure 6-1.

TABLE 6-2 PROPERTIES AND DISTRICTS ALONG THE CERMAK LINE CORRIDOR

Station Location	Count
CTA Pink Line: 54th/Cermak	3
Central Ave / Cermak Road	1
Austin Blvd / Cermak Road	5
Ridgeland Avenue/ Cermak Road	4
Oak Park Ave/ Cermak Road	3
Home / Cermak Road	1
1st Ave / Cermak Road	1

Source: Pace, PMO

FIGURE 6-1 HARGIS PROPERTIES AND DISTRICTS NEAR PULSE CERMAK LINE.



Source: Pace, PMO

Additional details and maps from the historic resources review process are provided in Appendix F.

7 Project Delivery

7.1 Approach

Pace evaluates and determines the preferred delivery method for each capital project on a case-by-case basis and has not yet made a final determination for the Pulse Cermak Line. However, for the purposes of schedule and cost considerations, it is currently predicted that the Pulse Cermak Line will utilize a design-bid-build delivery method. While the timing of all project phases is subject to funding availability, Pace intends to proceed into the required environmental documentation in late 2024. At the conclusion of the Environmental Review phase and pending funding, Pace will procure a consultant to complete project engineering, followed by the procurement of a construction contractor. Pace has a goal of implementing the Pulse Cermak Line and beginning revenue service in 2030.

7.1.1 Conceptual Design, NEPA Clearance, and Public Involvement

Conceptual design of the Pulse Cermak Line is complete and documented in this Project Definition study. To advance the project through the environmental documentation phase in compliance with NEPA and to support the 2030 implementation timeline, survey and advanced conceptual design is anticipated to begin in late 2024 or early 2025. During this time, the conceptual station layouts will be updated to reflect conditions documented in the survey to a preliminary level of detail to support the environmental analysis. During the Environmental Review phase, Pace will undertake public involvement and stakeholder outreach that will include public, CAG, and one-on-one meetings to facilitate input on impacts such as those related to affected properties.

7.1.2 Engineering

As Pace anticipates using federal dollars to fund the capital construction of the Pulse Cermak Line, a qualifications-based solicitation will be used to procure a final design consultant. It is anticipated that Pace will solicit a qualified engineering firm using a Request for Proposals (RFP) procurement. A scope of work for the designer will be developed during the Environmental Review phase based on the scope of the project and previous Pulse project design scopes. During the engineering phase, the designer will also coordinate with Pace to obtain the necessary project permits.

Throughout the engineering phase, Pace's Community Relations department will support the PPMO department by coordinating community outreach and stakeholder involvement efforts appropriate to the engineering phase, including the development

of intergovernmental agreements and coordination with property owners, businesses, and other stakeholders.

7.1.3 Construction

As the engineering phase draws to a close, Pace will procure a general contractor (GC) to construct the Pulse Cermak Line capital facilities. The GC will team with qualified subcontractors, fabricators, and vendors capable of ensuring the fit and proper function of all station elements, including the real time information signs. Pace will separately contract for the fabrication, delivery, and installation of shelters and vertical markers.

As with the engineering phase work, Pace's Community Relations will support the PPMO by coordinating community outreach and stakeholder involvement efforts appropriate to the construction phase.

7.1.4 Operations

At the close of project construction, Pace will conduct testing of the capital facilities and systems associated with the Pulse Cermak Line and will train staff on Pulse operations. Revenue service is planned to begin in 2030, pending funding. From that point forward, Pace will focus on launching and evaluating the performance of the service and making any necessary adjustments.

7.2 Intergovernmental Coordination

During the development of previous Pulse lines, Pace coordinated with municipal and agency representatives and the appropriate roadway authorities on roadway design modifications, ROW improvements, and the construction of station facilities. Pace developed intergovernmental agreements (IGAs) with these partnering entities to facilitate project implementation. These IGAs have set precedents for the implementation of future Pulse projects and helped establish a consistent strategy for negotiating and administering community partnerships.

On the Pulse Cermak Line, Pulse vehicles will operate on roadways that are primarily under the jurisdiction of IDOT and at off-street facilities controlled by local municipalities or other partners including potentially Yorktown Center, Oakbrook Center, and North Riverside Park Mall.

Roadway design modifications, ROW improvements, and the construction of station facilities will require IGAs with partner entities in advance of construction. During this Project Definition phase, Pace initiated coordination with partners including municipal and agency representatives and the appropriate roadway authorities. These efforts will continue through the NEPA, engineering, and construction phases of the project, and IGAs will be finalized during the engineering phase prior to the start of construction.

Pace will need to develop, negotiate, and execute IGAs with each party as appropriate. Coordination and support in the following areas will be critical to ensure maximum mutual benefit from Pace's investments:

- Facilitating efficient transfers between Pulse and connecting transit service at the CTA Pink Line 54th/Cermak station.
- IDOT investments in providing and maintaining appropriate roadway access and conditions, including coordination of ROW acquisition or easements with local jurisdictions in advance of construction.
- IDOT support for innovative transit facilities that support the program goals and project needs.
- Support for Pulse station improvements including construction within the public ROW and on publicly or privately owned property outside of the ROW limits.
- Permission for Pace to access and maintain station facilities within the public ROW as needed.
- Proactive coordination of agency activities that could impact access to or use of Pulse station facilities to ensure minimal service impacts.
- Local community investments in "last mile" mobility, ensuring adequate sidewalk and crosswalk access to Pulse stations.
- A coordinated strategy to mutually publicize and reinforce the Pulse brand, while also providing opportunities for local branding, advertising, and community expression.

7.2.1 Pace Responsibilities

As the lead agency responsible for implementing the Pulse program and the Pulse Cermak Line project, Pace's responsibilities are generally the following:

- Station area construction that complies with state and local codes, standards and permitting requirements.
- Timely and reasonable requests for zoning variances, if needed.
- Coordination with local and other authorities, as appropriate, regarding:
    - Utility service to the station/shelter during and after construction, and any needed relocation of existing utility infrastructure.
    - Demolition, clearing and earthwork at the station site.

  - Connection to the existing sidewalk network in an ADA-compliant manner adjacent to the station site.
  - Containment, mitigation, or removal and appropriate disposal of any hazardous materials disturbed during station site construction.
  - Maintenance of traffic during station construction.
  - Relocation of existing bus shelters to facilitate construction of a Pulse station and custom Pulse shelter.
  - Installation and removal of any required temporary facilities associated with station site construction.

- Minimization of disruptions to nearby property owners and the existing transportation network resulting from Pulse construction activities.
- Construction of the station shelter, platform, vertical marker, and other associated amenities.
- Maintenance of the vertical marker and periodic updates to associated information signage.
- Regular cleaning and sweeping of Pulse shelter structure and station platform, if not provided for in a service agreement with an advertising shelter contractor.
- Regular trash collection (frequency to be determined by Pace).
- Guarantee of a minimum number of years of Pulse service in response to local infrastructure investments (pending discussion between Pace and local agencies).
- Release of Pulse operations-related liability for local governments and DOTs (pending discussion between Pace and local agencies).

7.2.2 Local Municipality Responsibilities

While the construction of the station improvements will be Pace's primary responsibility, local municipalities may be relied upon to deliver, facilitate, or support some or all of the following:

- Commitment to implement complementary improvements at on-street stations and transit centers such as the CTA Pink Line 54th/Cermak station.
- Timely reviews and a streamlined and predictable permitting process, and approval of reasonable zoning variances when needed (e.g., to accommodate the size of the vertical marker, if needed, and Pulse-related electronic signage).
- Location and marking of any existing underground utilities in the station area prior to commencement of construction (Pace will bear no responsibility for impacts to existing utilities not accurately marked in advance by others).

- Provision and maintenance of sufficient street lighting near the station platform area for visibility of and for Pulse passengers.
- Facilitation of agreements with advertising shelter contractors for station and shelter maintenance, if appropriate.
- Timely snow and ice removal when needed, including salting/sanding for slip resistance. (The station snow melt system included at stations will melt snow falling at a moderate rate, but significant snow events will require manual clearing of snow and ice.)
- Installation and maintenance of public art, if desired.
- Maintenance and replacement of any non-standard station furnishings included at the community's request, such as trash receptacles and bicycle racks.
- Provision of ADA-accessible sidewalk access routes to the station.
- Provision of at least one fully marked and signalized pedestrian crossing across an arterial roadway within 200 feet of a station platform with crossing locations to be mutually agreed upon by Pace and the local municipality.
- Installation of missing segments, or upgrades to existing segments, of the broader pedestrian and bicycle access network within one quarter mile area surrounding each station location.
- Coordination with local plans and programmed roadway improvements:
- Turn lane and other roadway configuration coordination.
- Facilitation of use agreements with adjacent private property owners where temporary and/or permanent off-street station access is needed.
- Facilitation of ROW acquisition or easement negotiations as needed (and potentially acquiring ROW or easements on Pace's behalf, as appropriate).
- Development of transit-supportive land uses along the Cermak Road corridor and TOD-friendly zoning amendments.

7.2.3 Transportation Department Responsibilities

Departments of Transportation, in this case primarily IDOT, have a critical role to play in facilitating the development of the Pulse Cermak Line, which may include, but not be limited to, the following:

- Timely reviews and permitting.

- Allowing reasonable use of and access to the ROW:
    - Allowing installation and use/maintenance of structures within the ROW.
    - Coordinating with Pace with regards to any changes to the station improvements or access and ensuring that Pace will have continued access to and use of such improvements.
    - Facilitating transit signal priority, raised platforms, bus pads, curb bump outs, and other roadway treatments as appropriate.
- Allowing the installation of, and participating in the maintenance of, innovative transit facilities (e.g. bus priority features, raised platforms and bus curbs) that support the program goals and project needs.
- Supporting the ROW acquisition process.

7.2.4 Transit Partner Responsibilities

The CTA and the RTA have a role to play in facilitating the Pulse Cermak Line through the following actions:

- Commitment by the CTA through an IGA to implement effective Pulse transfers at the CTA Pink Line 54th/Cermak station, which may involve:
    - Allocation of bus bays or stop locations to Pulse service.
    - Allocation of space for a vertical marker and/or other Pulse signage.
- Commitment by the RTA to support Pulse throughout the suburban market where demand has been identified:
    - Provide general support and funding for BRT projects throughout the region.
    - Provide support and leadership on interagency signage, including real time information signs where two or more transit services meet.
    - Facilitating IGAs when needed (e.g., CTA and Pace).

8 Next Steps

As Pace anticipates pursuing federal funding for the Pulse Cermak Line, the next phase of the project will be the Environmental Review as required by NEPA. Environmental Review is anticipated to begin in late 2024 or early 2025.

Additional key steps to continue the implementation process may include the following:

- Solicit feedback from the public and project stakeholders on the location and configuration of each station, bus priority features, and the proposed operating plan.
- Complete the NEPA documentation process and receive FTA approval.
- Update conceptual station layouts, capital cost estimates, and station design criteria to incorporate and respond to survey information.
- Secure funding for final design and construction.
- Complete the design of the project, including:
    - Engage a design contractor to design the station improvements and prepare construction bid documents as part of the engineering phase.
    - Prepare a topographic survey to delineate the ROW, grades, and utilities, and perform a boundary survey where needed to identify parcel boundaries.
    - Identify easements, land acquisitions, and driveway closures and/or consolidations needed to support the construction of the stations and shelters.
    - Complete engineering of the station improvements, roadway improvements, and any traffic signal improvements.
- Develop legal agreements with local communities, IDOT, retail centers, and other stakeholders to address the varied aspects of Pulse, as described in previous sections.
- Acquire any easements or ROW and complete any driveway closures or consolidations needed to support the construction of the stations, shelters, and ROW improvements.
- Secure the necessary project permits.

- Procure a general contractor to construct the station improvements.
- Train Pulse operators on the use of the near level boarding and bus curbs.
- Complete operational test of facilities.