



# EARLY VOTING WAIT-TIME TRACKER

OUTSTANDING INNOVATIONS IN ELECTIONS

DURHAM, NC

# 20 21



**DURHAM BOARD OF ELECTIONS**

201 N ROXBORO ST, DURHAM NC 27701  
919-560-0700 | ELECTIONS@DCONC.GOV

**PRESENTED BY:**

DEREK BOWENS,  
DIRECTOR OF ELECTIONS

# PROGRAM OVERVIEW

The ESRI Early Voting Wait Time Tracker was used in the 2020 Primary and General Elections to help voters locate sites closest to them, view voting information, view current site wait times, view bus routes, and get GPS directions through Google Maps.

The innovative tool was created through ESRI with two components: the wait time entry application that is added to each site cellphone and the website application where voters search for information using their address.

The results from using this application were extremely positive. For voters, the application streamlined their voting experience and made information they were looking for easily accessible beyond traditional fliers and advertisements. For election administrators, the application helped alleviate crowds at busy sites because voters went to nearby locations with reduced wait times, gave exposure to newly established sites that voters weren't used to voting at, and helped determine early voting staffing needs in real time.

## PROGRAM OBJECTIVES

01

### PROVIDE SITE WAIT TIMES

Allow voters to pre-plan their voting experience by finding the closest location with the lowest wait time.

02

### SITE TRACKING

Provide site workers with wait time collection methods and the ability to enter current wait times directly.

03

### PUBLIC VIEWING

Make site details, early voting information and wait times easily accessible online.

04

### REAL TIME WEBSITE UPDATES

Reported wait times must be updated in real time for public viewing to avoid delays.

05

### WHERE TO VOTE

Allow voters to avoid lines by choosing a nearby site that has a lower wait time.

06

### WHEN TO VOTE

Allow voters to avoid lines by choosing to vote at a different date/time.

07

### DIRECTIONS

Allow voters to open Google Maps by clicking on the site address to open navigation to the selected site.

08

### BUS ROUTES

Display the nearest bus stops and allow voters to view bus route directions from their address to sites.

# WHY IT WORKS

> 48%

The popularity of early voting continues to increase each election. In Durham County, over 48% of registered voters chose to vote early in the 2020 General Election. Tools like the ESRI Early Voting Wait Time Reporter will help manage crowding that increased turnout creates at popular sites. As new sites are added, this tool will help direct traffic to those locations so popular sites are not overwhelmed.

> 93,000

By the 5th day of early voting during the 2020 General Election, more than 93,000 clicks already occurred on the public application as it continued to increase in popularity among voters. The results show that voters are interested in having a plan and knowing how they can easily cast their ballot. Simple and accessible tools like this application help facilitate that.

\$0.00

Counties/jurisdictions often have resources that are not leveraged. By working with our county GIS department, we were able to create this innovative tool at no cost. Additionally, by leveraging media, social media, county, and local interest group resources, we incurred no advertising costs to obtain the results that we did. Today's technology means that innovative tools don't always have to make a dent in the budget.

**Early Voting Site Locator** ...find the nearest place to vote

**Search result**  
201 N ROXBORO ST  
Zoom to

**Find Nearest Early Voting Site**

Search for an address, then select an Early Voting site from the list of results.  
201 N ROXBORO ST X

Show results within 1 Miles  
0 25

← Early Voting Site

Approximate Distance: 0.08 mi

**Durham County Main Library**  
300 N. Roxboro St.  
Durham, NC 27701  
(Voting is in the main conference room)  
[Click here for directions](#)

**2020 General Election Early Voting Schedule**  
Thursday Oct. 15th – Saturday, Oct. 31st  
Mon-Fri 8:00 AM – 7:30 PM  
Saturdays 8:00 AM – 7:30 PM  
(ends 3:00 PM on 10/31)  
Sundays 2:00 PM – 7:30 PM

For more information contact:



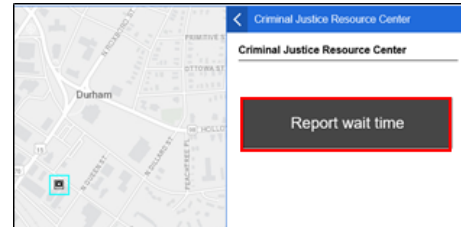
# HOW IT WORKS

The below roadmap will show the process for using the ESRI Early Voting Wait Time Reporter. This process includes the internal application for site workers and the public application for voters, media, and local interest groups.

## VOTER WAIT TIME

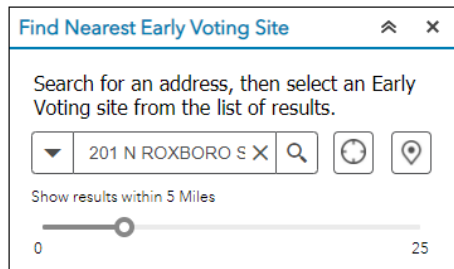
Site workers collect wait times using methods like distributing cards in line, a timer, or by simply requesting the wait times from voters as they enter.

STEP  
01



## WAIT TIME ENTRY

Using the site cell phone, iPad or computer, a site worker will login to the internal application and enter the wait time provided by the voter. This process is time stamped so in Durham County, it is completed every 30 minutes, even if the wait is 0.



STEP  
02

## VOTER SEARCH

When voters visit the BOE website for early voting information, they can enter their address into the public application to find the nearest sites. Current wait times and voting information will be displayed when each site is selected.

STEP  
03



## TRAVEL METHOD

When using the public application, voters also have the option to view the nearest bus routes for their address. In Durham County, public transportation to vote is free during early voting and on Election Day.



STEP  
04

## VOTE!

Voters will arrive at their chosen early voting site to cast a ballot! Feedback shows voters loved having the opportunity to determine the best time to vote and avoid waiting at busy sites.

STEP  
05





# HOW WE CUSTOMIZED IT

Field Name	Alias	Data Type
OBJECTID	OBJECTID	Object ID
facilityid	Facility ID	Text
name	Name	Text
fulladdr	Address	Text
municipality	Municipality	Text
pstlstate	State	Text
pstlzip5	Zip Code	Text
phone	Phone	Text
agencyurl	Website	Text
operdays	Operational Days	Text
handicap	Handicap Accessible	Text
pocname	Contact Name	Text
pocphone	Contact Phone	Text
pocemail	Contact Email	Text
earlyvoting	Early Voting Available	Text
earlyvotingdate	Early Voting Date	Date
nextelect	Next Election Date	Date
regdate	Voter Registration Deadline	Date
voteservices	Election Services	Text
dropbox	Dropbox	Text
boxlocation	Box Location	Text
comments	Comments	Text
GlobalID	GlobalID	Global ID
CreationDate	CreationDate	Date
Creator	Creator	Text
EditDate	EditDate	Date
Editor	Editor	Text

## Template Database Schema

The chart to the left is a feature layer for voting locations in the Elections Geography geodatabase.

These features were created by our GIS Analyst to allow us to differentiate between Election Day and One-Stop locations, along with filtering locations that double as a One-Stop Site and polling location. They also allowed us to establish acronyms, labels, time-frames, directions, transit stops, transit routes, and precinct locations.

## Maps, Popups and Arcade Expressions

The chart below provides fields that our GIS Analyst added to customize maps, popups, and Arcade expressions. These can be customized based on whether or not the user has knowledge of html/CSS. Cosmetic changes can be made to the popup template so that all functionality works correctly.

electdaysite	Polling Place	Text
os_site	One-Stop Site ID	Text
prec_label	Label	Text
earlyvotingend	Early Voting End Date	Date
dirdriving	Driving Directions	Text
hasttransit	Transit Stop Nearby	Text
dirtransit	Transit Directions	Text
transitstop	Transit Route and Stop	Text
enclosure	Voting Enclosure Location	Text
insideoutside	Inside or Outside Precinct	Text

# HOW WE CUSTOMIZED IT

Locate Voting Center

Search for an address or locate on map

▼

Springbrook Prairie Forest Preserv X

Q

Show results within 5 Miles

0

5

<

Voting Centers

Information

Directions

Approximate Distance: 1.21 mi

Breckenridge Clubhouse

Next Election Day  
August 4, 2020

2852 Breckenridge Ln.  
Naperville, IL 60564  
[Handicap Accessible](#)

Hours  
7AM - 7PM

Must register to vote by:  
August 4, 2020

Dropbox location:  
Ballot Box in the lobby of main entrance

For more information, contact:  
[Will County Election Department](#)  
815-740-4782  
[email](#)

## Early Voting Site and Bus Locator

The image to the left displays the site information template that was customized with our specific features (this is the Near Me widget in ArcGIS Web AppBuilder). Early voting information, images, directions, bus information, and wait times are reported here for voters.

Within this widget, our GIS Specialist added our Sidewalks and Bus Stops ArcGIS feature to the template map, which includes fields for bus stop name and the routes for each bus stop.

We also used an additional Near Me widget to find the nearest bus stop.

## Directions Tab

The Directions tab in the template utilizes our City/County subscription to the ArcGIS World Routing Service and each use consumes credits.

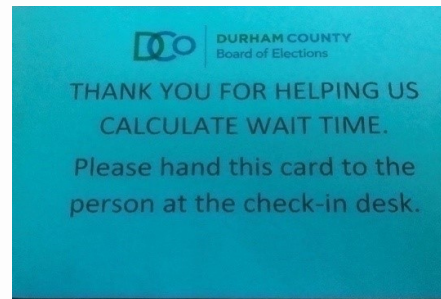
A free workaround for public apps is available by adding a field in the Voting Locations database for a customized URL link to Google Maps. This opens driving directions to each early voting site and polling place using a Google Place Name or Address. This is more familiar to end users.

Driving Directions
<a href="https://www.google.com/maps/dir/?api=1&amp;destination=Greater+Emmanuel+Temple+Pentecostal+Durham+NC">https://www.google.com/maps/dir/?api=1&amp;destination=Greater+Emmanuel+Temple+Pentecostal+Durham+NC</a>
<a href="https://www.google.com/maps/dir/?api=1&amp;destination=East+Regional+Library+Durham+NC">https://www.google.com/maps/dir/?api=1&amp;destination=East+Regional+Library+Durham+NC</a>
<a href="https://www.google.com/maps/dir/?api=1&amp;destination=Southern+High+School+Durham+NC">https://www.google.com/maps/dir/?api=1&amp;destination=Southern+High+School+Durham+NC</a>
<a href="https://www.google.com/maps/dir/?api=1&amp;destination=Hope+Valley+Baptist+Church+Durham+NC">https://www.google.com/maps/dir/?api=1&amp;destination=Hope+Valley+Baptist+Church+Durham+NC</a>
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<a href="https://www.google.com/maps/dir/?api=1&amp;destination=South+Regional+Library+Durham+NC">https://www.google.com/maps/dir/?api=1&amp;destination=South+Regional+Library+Durham+NC</a>
<a href="https://www.google.com/maps/dir/?api=1&amp;destination=NCCU+School+of+Law+Durham+NC">https://www.google.com/maps/dir/?api=1&amp;destination=NCCU+School+of+Law+Durham+NC</a>
<a href="https://www.google.com/maps/dir/?api=1&amp;destination=Karsh+Alumni+and+Visitors+Center+Durham+NC">https://www.google.com/maps/dir/?api=1&amp;destination=Karsh+Alumni+and+Visitors+Center+Durham+NC</a>
<a href="https://www.google.com/maps/dir/?api=1&amp;destination=George+W.+Newton+Industrial+and+Engineering+Technologies+Center+Durham,+NC">https://www.google.com/maps/dir/?api=1&amp;destination=George+W.+Newton+Industrial+and+Engineering+Technologies+Center+Durham,+NC</a>
<a href="https://www.google.com/maps/dir/?api=1&amp;destination=Eno+River+Unitarian+Universalist+Fellowship+(ERUUF)+Durham+NC">https://www.google.com/maps/dir/?api=1&amp;destination=Eno+River+Unitarian+Universalist+Fellowship+(ERUUF)+Durham+NC</a>
<a href="https://www.google.com/maps/dir/?api=1&amp;destination=Durham+County+Criminal+Justice+Durham+NC">https://www.google.com/maps/dir/?api=1&amp;destination=Durham+County+Criminal+Justice+Durham+NC</a>
<a href="https://www.google.com/maps/dir/?api=1&amp;destination=North+Durham+Center+Durham,+NC">https://www.google.com/maps/dir/?api=1&amp;destination=North+Durham+Center+Durham,+NC</a>
<a href="https://www.google.com/maps/dir/?api=1&amp;destination=300+N+Roxboro+St+Durham+NC">https://www.google.com/maps/dir/?api=1&amp;destination=300+N+Roxboro+St+Durham+NC</a>
<a href="https://www.google.com/maps/dir/?api=1&amp;destination=The+River+Church+Durham+NC">https://www.google.com/maps/dir/?api=1&amp;destination=The+River+Church+Durham+NC</a>
<a href="https://www.google.com/maps/dir/?api=1&amp;destination=Mt+Sylvan+United+Methodist+Church+Durham+NC">https://www.google.com/maps/dir/?api=1&amp;destination=Mt+Sylvan+United+Methodist+Church+Durham+NC</a>
<a href="https://www.google.com/maps/dir/?api=1&amp;destination=Brogden+Middle+School+Durham+NC">https://www.google.com/maps/dir/?api=1&amp;destination=Brogden+Middle+School+Durham+NC</a>

# Site Wait Time Entry

01

Sites have options for collecting wait times. In Durham County, workers distribute 'Wait Time Cards' to certain voters in line. The card and wait time is then collected at entry. Workers may also use the cellphone timer, or periodically ask voters how long they were waiting in line.



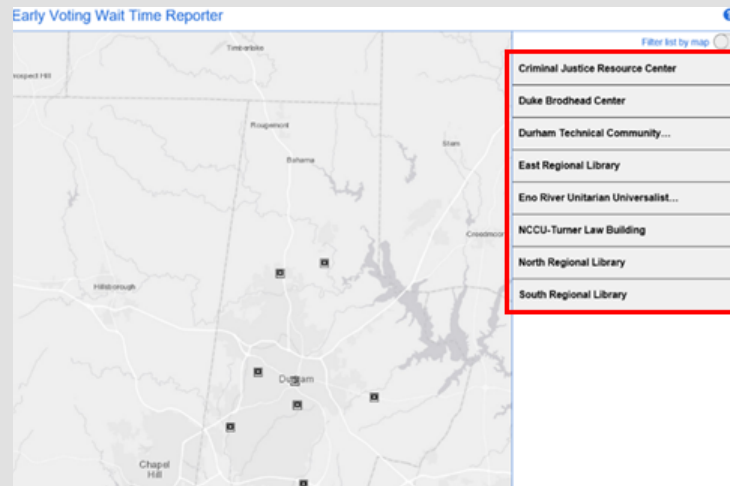
02

The site worker will open the application on the site cellphone and enter the credentials provided by the BOE. (This only needs to occur prior to the first entry if the worker doesn't log out.)

A screenshot of the ArcGIS login interface. It features a username field with a person icon, a password field with a lock icon, a "Keep me signed in" checkbox, a blue "Sign In" button, and links for "Forgot username?" and "Forgot password?". At the bottom, there is a link to "Create a Hub Community account." for users without an account.

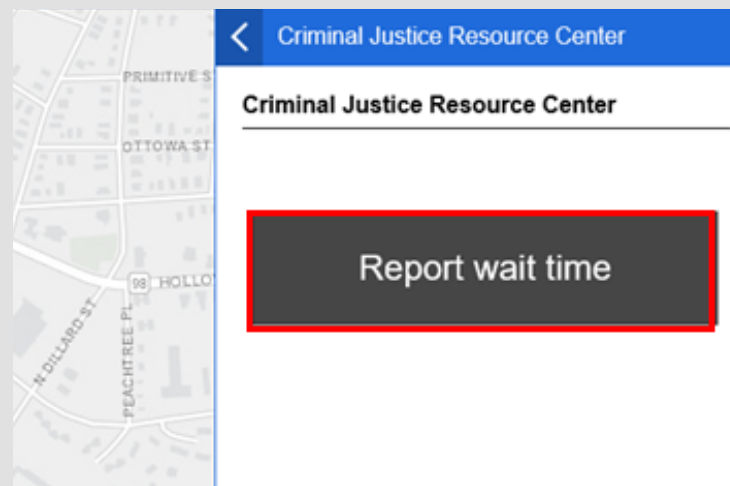
03

The site worker will select the location that he/she is working.



04

The site worker will click 'Report Wait Time' to enter the current wait time for the location.





Upon selection, the 'Election Wait Times' screen will load.  
The worker will enter the wait time in the form of minutes and click 'Submit'.

**Election Wait Times**

Enter the current wait time (in minutes), then click **Submit**.

**Details**

**Location**  
Criminal Justice Resource Center

**Current wait time\***

**Submit**

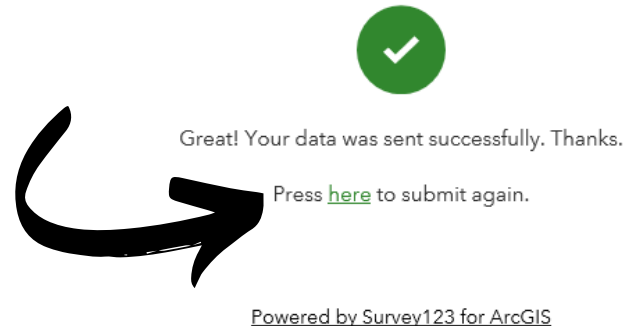
Powered by Survey123 for ArcGIS

## 06

Upon submission, a confirmation message will appear to confirm the data was sent successfully.

**Note:** Site workers should not logout of the application. In 30 minutes, the site worker will click 'here' to return to Step 5 and re-enter the wait time.

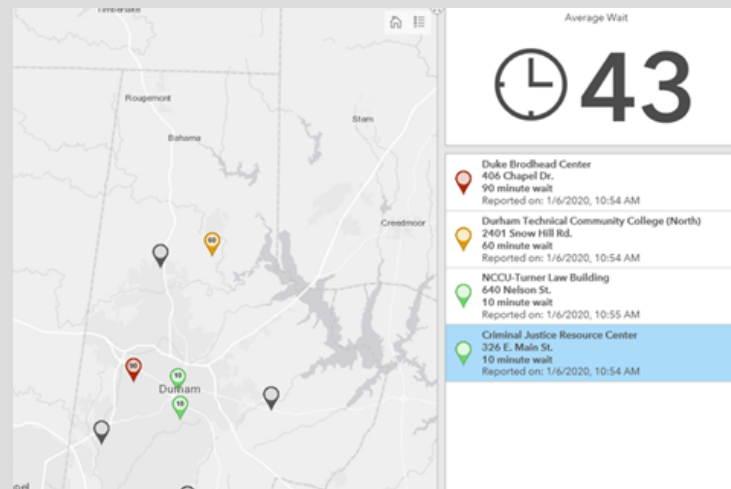
### Election Wait Times



## 07

Entries can be viewed by the public for each site.

See Attachment B.



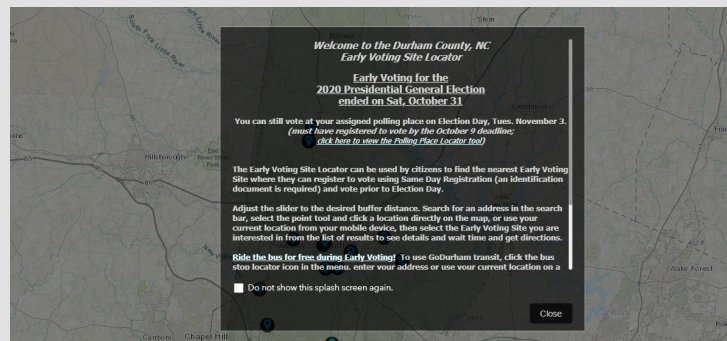
**Note:** It is recommended that entries are updated even if the wait time does not change so the time stamp displayed on the public application is current.

# Site Wait Time Entry

# Early Voting Site Search

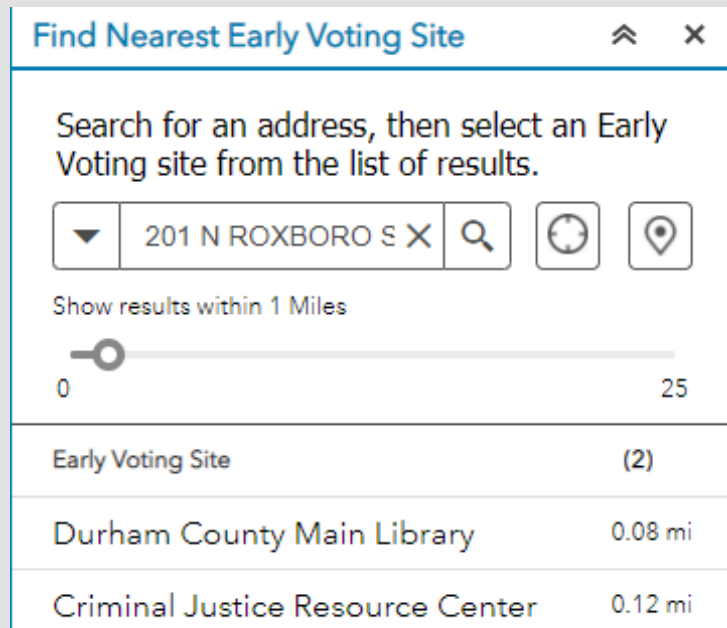
01

When the public visits the site locator through the BOE website, instructions will appear regarding how to use the tool, along with early voting information.



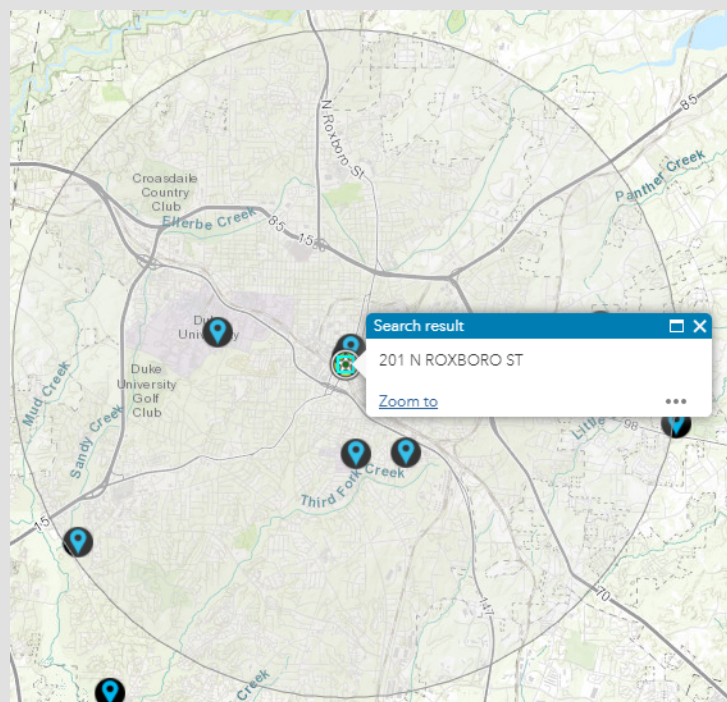
02

The application will load and allow the user to enter his/her address. Once the address is searched, a list of nearby sites, along with the travel distance will be displayed.



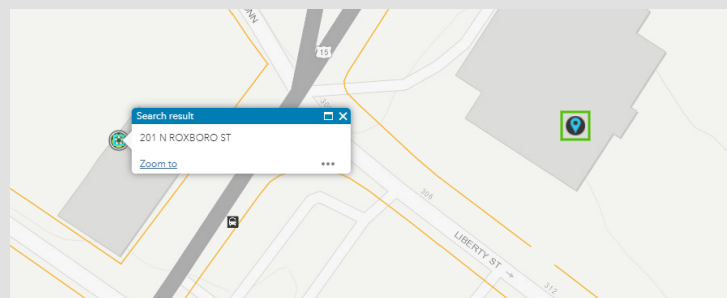
02(a)

Additionally, the map will display the location entered, along with the sites that are in the selected radius. Users have the option to expand or reduce the radius within 25 miles.



02(b)

Users may also zoom into the map to view more specific information like street names and nearby buildings.



# Early Voting Site Search

## 03

Once a nearby site is selected, the following information will be displayed:

- Travel Distance
- Site Address
- Voting Enclosure at the Site
- Site Image
- Early Voting Schedule
- Site Wait Time
- Link to Open GPS Directions

## 04

A street map will also be available for viewing.

Show results within 5 Miles

0 25

< Early Voting Site

Approximate Distance: 0.08 mi


**Durham County Main Library**

**300 N. Roxboro St.**  
**Durham, NC 27701**  
(Voting is in the main conference room)


[Click here for directions](#)

**8:00AM - 7:30PM**  
**Open Now**

**Wait Time**

 **15**

Reported on: 1/5/2021, 13:35



**2020 General Election Early Voting Schedule**

**Thursday, Oct. 15th – Saturday, Oct. 31st**

Mon-Fri	8:00 AM – 7:30 PM
Saturdays	8:00 AM – 7:30 PM
	<b>(ends 3:00 PM on 10/31)</b>
Sundays	2:00 PM – 7:30 PM

Find Nearest Early Voting Site

Search for an address, then select an Early Voting site from the list of results.

201 N ROXBORO ST

Show results within 1 Miles

0 25


< Early Voting Site

Approximate Distance: 0.08 mi

**Durham County Main Library**

**300 N. Roxboro St.**  
**Durham, NC 27701**  
(Voting is in the main conference room)

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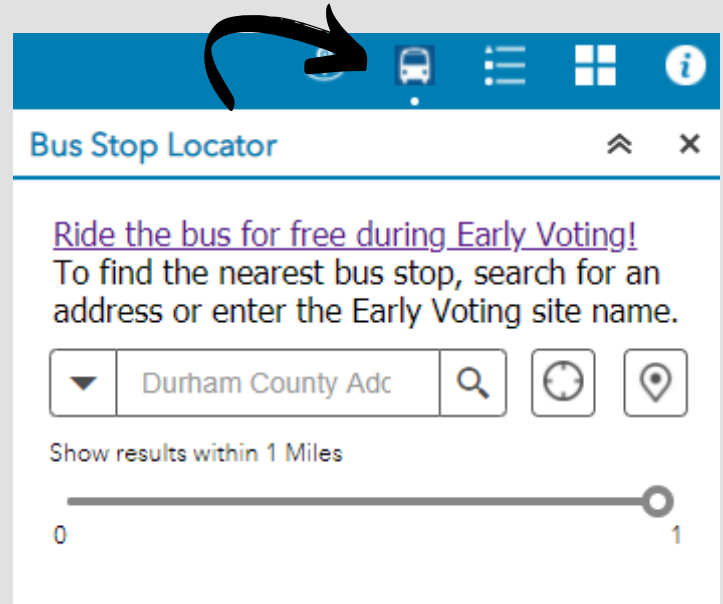
For more information contact:  
Durham County Board of Elections  
919-560-0700  
[www.dco.nc.gov](#)



# Bus Routes

01

In the public application, voters may also select the 'Bus' icon and enter their address to locate the closest bus routes.



**Bus Stop Locator**

[Ride the bus for free during Early Voting!](#)  
To find the nearest bus stop, search for an address or enter the Early Voting site name.

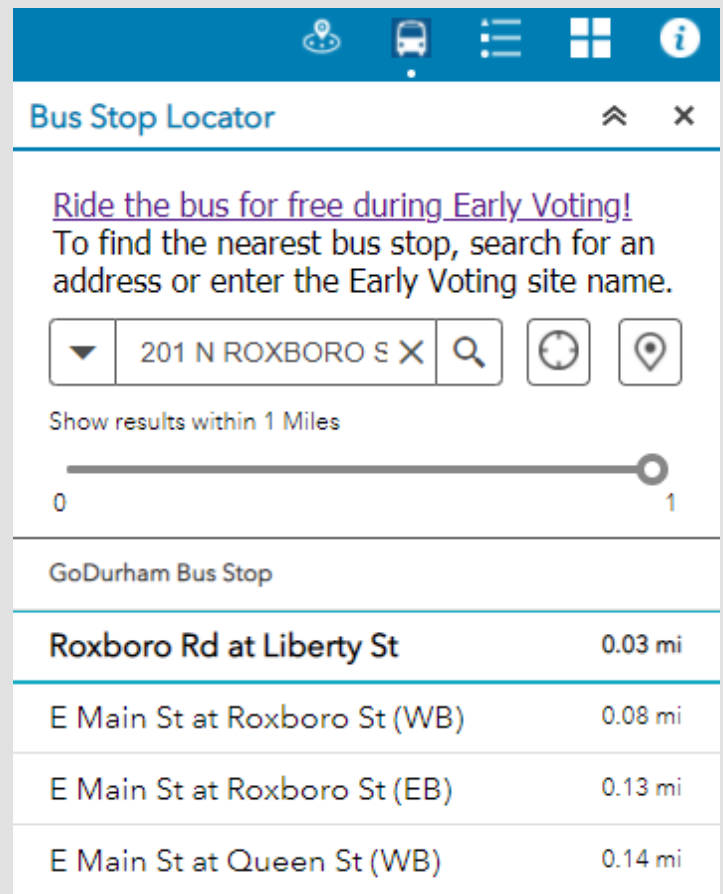
▼ Durham County Adc 🔍 ⌚ 📍

Show results within 1 Miles

0 ————— 1

02

Once the address is searched, a list of stops by location will be displayed. Voters may expand or reduce the radius displayed within 1 mile.



**Bus Stop Locator**

[Ride the bus for free during Early Voting!](#)  
To find the nearest bus stop, search for an address or enter the Early Voting site name.

▼ 201 N ROXBORO S X 🔍 ⌚ 📍

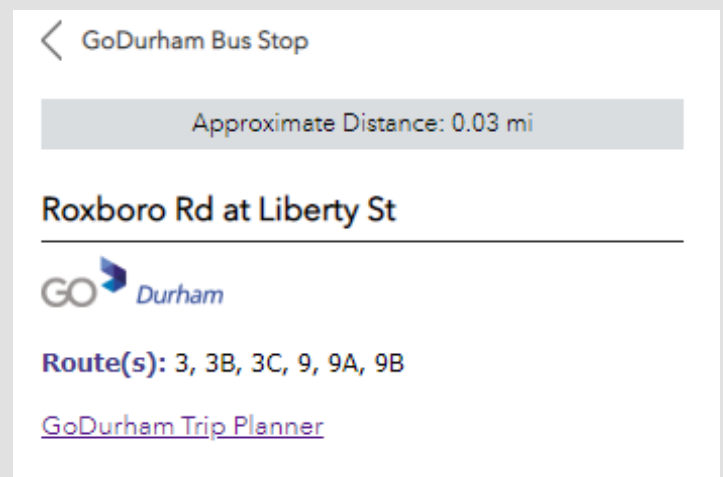
Show results within 1 Miles

0 ————— 1

GoDurham Bus Stop	
<b>Roxboro Rd at Liberty St</b>	0.03 mi
E Main St at Roxboro St (WB)	0.08 mi
E Main St at Roxboro St (EB)	0.13 mi
E Main St at Queen St (WB)	0.14 mi

03


The bus routes will be displayed for each stop. Voters may also select the 'Go Durham Trip Planner' to map the entire bus route.



< GoDurham Bus Stop

Approximate Distance: 0.03 mi

**Roxboro Rd at Liberty St**

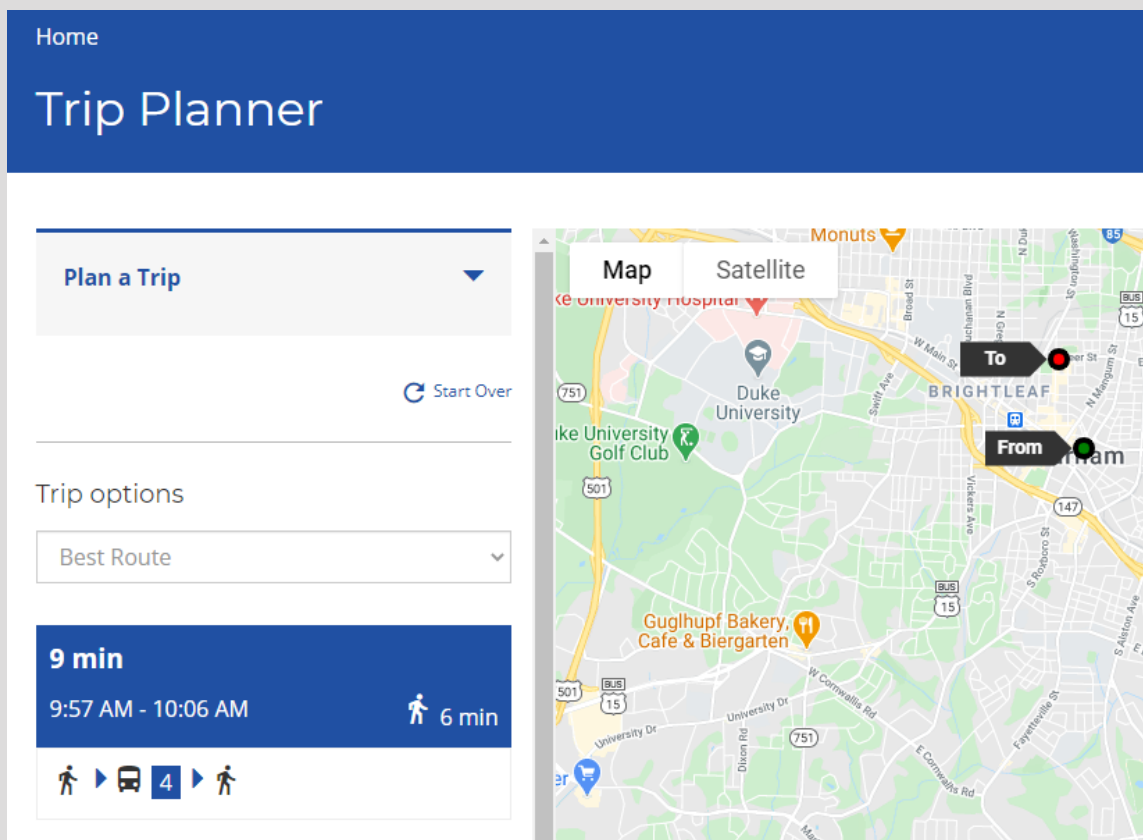


**Route(s):** 3, 3B, 3C, 9, 9A, 9B

[GoDurham Trip Planner](#)

The trip planner will provide travel times, travel distances,  
and a map to view street information.

# Bus Routes



**Note:** In Durham County, bus transportation to vote is free during the early voting period and on Election Day. This is coordinated with the City of Durham Public Transportation Department.