



# DURHAM COUNTY TRANSIT PLAN Process and Engagement Update

Durham-Chapel Hill-Carrboro MPO Board  
January 15, 2020

# AGENDA

- A. What have we heard from engagement efforts to date
- B. Key Items to Address in early 2020
  - Amendments to FY19-20 Work Plan
  - FY20-21 Work Plan
  - Upcoming Interim Decisions
- C. Preliminary Results from the Greater Triangle Commuter Rail Study:  
*Alternatives Analysis Update and Further Study*

# A. ENGAGEMENT TO DATE

- Listening and Learning Sessions
- Short Range Service Plan
- Move Durham
- Rider and Community Surveys
- FY20 Work Plan; 2017 Transit Plan

# A. WHAT WE'VE HEARD TO DATE

## Themes to inform the Community Transit Goals and Equity Principles:

- Improve Frequency
- Improve Geographic Coverage
- Environmentally Friendly Transit
- Improve Regional Connectivity
- Improve Bus Stop Infrastructure
- Ensure Transit is Affordable to All
- Improve Connectivity to Bus Stops
- Improve Information and its Communication
- Ensure Safe Travel for Youth
- Expand Paratransit Services

## B. CURRENT FY20 WORK PLAN PROJECTS

Project	FY20 Budget	Phase
GoDurham Service Improvements	\$2,083,895	Implementation
GoTriangle Service Improvements	\$1,202,330	Implementation
Northern Durham Vanpool	\$ 66,960	Planning
Village Transit Center	\$ 470,000	Planning
Chapel Hill Road TEC	\$ 886,450	Design
Holloway Street TEC	\$ 700,000	Design
Fayetteville Street TEC	\$ 280,000	Design
GoDurham Bus Stop Improvements	\$ 1,283,570	Implementation
GoTriangle Bus Stop Improvements	\$ 257,000	Implementation
Southpoint Transit Center	\$ 426,376	Implementation
Patterson Place P&R Improvements	\$ 183,000	Design
Durham-Wake Commuter Rail Study	\$ 810,000	Planning
Durham County Transit Plan Update	\$ 750,000	Planning



## B. PREVIOUS FY20 WORK PLAN AMENDMENTS

### COMPLETED:

- GoDurham increased service frequency on top five routes (by ridership) on nights and Sundays (January 2020)
- Purchase Durham County Access vehicles (2020)
- Mobile ticketing (Summer 2020)

Each of these previously approved work plan amendments addresses responses we have heard from engagement efforts to date.

## B. UPCOMING FY19-20 WORK PLAN AMENDMENTS [Now until June 30, 2020]

### What / When

- Amendments to the Work Plan \$ allocations for this fiscal year.
- Amendment applications are being submitted
- SWG will consider Jan 29
- DECISION: Feb 26 GoTriangle board

### Possible Amendments:

- Commuter rail early project development activities\*
- Bus stop and access improvements\*
- Expand Fayetteville Street Transit Emphasis Corridor
- Bus speed and reliability improvements
- Mobility and Transportation Demand Management (TDM) options to support emerging job centers (e.g. Treyburn)

\*These projects would require Durham BOCC and MPO board review and approval

**Due:  
NOW**

DECISION: Feb 26

Draft Plan  
NOV 2020

Complete:  
early 2021

TRANSIT PLAN UPDATE

**GO FORWARD**  
A COMMUNITY INVESTMENT IN TRANSIT

## B. UPCOMING FY20-21 WORK PLAN [July 1, 2020 - June 30, 2021]

### What / When

- Transit Plan \$ allocations for next year
- **Project applications due: Feb-Mar**
- Apr 29 GoTriangle budget WS
- INPUT: Jun 8 Durham BOCC
- INPUT: Jun 10 MPO board
- DECISION: Jun 24 GoTriangle board

### Possible Work Plan Projects

- Commuter rail early project development activities
- Bus stop, facility, access, and reliability improvements
- Develop Transit Emphasis Corridor Program
  - Fayetteville Street
  - Holloway Street
  - Chapel Hill Road
  - Evaluate and prioritize other potential corridors
- Upgrade and expand fleet and maintenance facilities
- Fleet renewal and expansion

**DUE: Feb**

DECISIONS: June

Draft Plan  
NOV 2020

Complete:  
early 2021

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## B. INTERIM DECISIONS FOR MID- TO LONG- TERM PROJECTS

- **FY 19-20 Work Plan Amendments:** Winter 2020 [Durham Transit Plan\*]
  - **Additional CRT Study:** Winter 2020 [County Transit Plans\*]
- **FY 20-21 Work Plan:** Spring 2020 [Durham Transit Plan\*]
- **SPOT 6.0:** Spring 2020 [NCDOT prioritization process for state funding]
- **Pipeline Highway Projects:** Timing uncertain [NCDOT]
- **2050 Metropolitan Transportation Plan:** Ongoing; transit network decisions needed by Summer of 2021 [MPO + Federal requirement]
- **FY 21-22 Work Plan:** Winter - Spring 2021 [Durham Transit Plan\*]

\*CRT is an example of a cross-county / regional project. There are many regional projects that require coordination among county transit plans during work plan development and adoption.

## C. Greater Triangle Commuter Rail Study



Update of Alternatives  
Analysis and Further Study

Draft/Preliminary  
Findings Snapshot

# Note

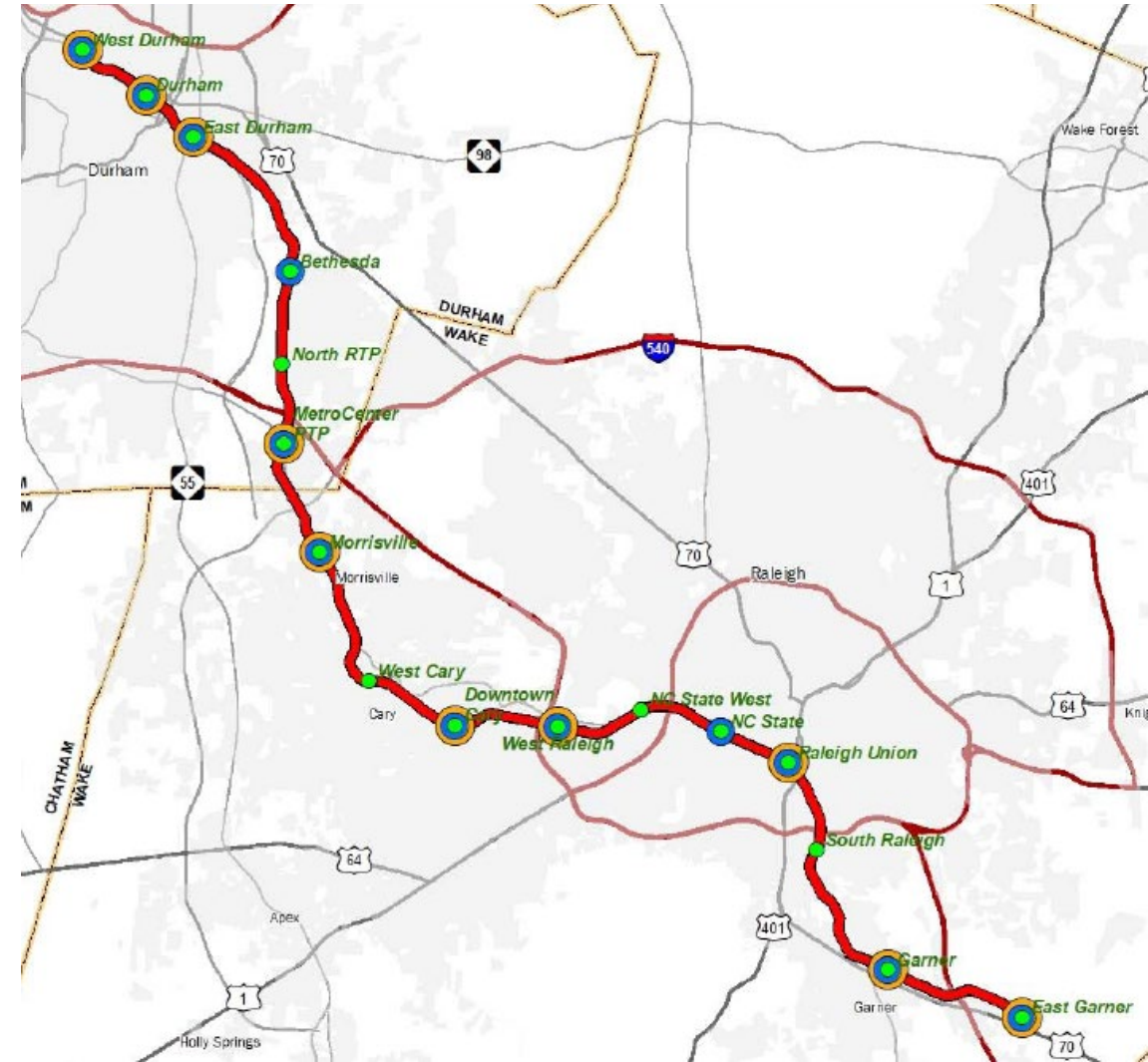
**The Greater Triangle Commuter Rail project needs additional study, coordination, and public engagement prior to project design and implementation.**

**In the coming months, elected officials will consider whether to proceed with this additional study.**

# Commuter Rail Background

The Commuter Rail Transit project, as originally included in the Wake and Durham county transit plans, would run 37 miles from **Garner** to downtown **Raleigh**, **N.C. State**, **Cary**, **Morrisville** and the **Research Triangle Park** continuing to downtown **Durham**.

The current plan calls for: Evaluating up to eight trips in each direction during peak hours with up to two trips each way during midday and evening hours, for a total of **twenty weekday round trips**.



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# Why Is This Study Being Conducted?

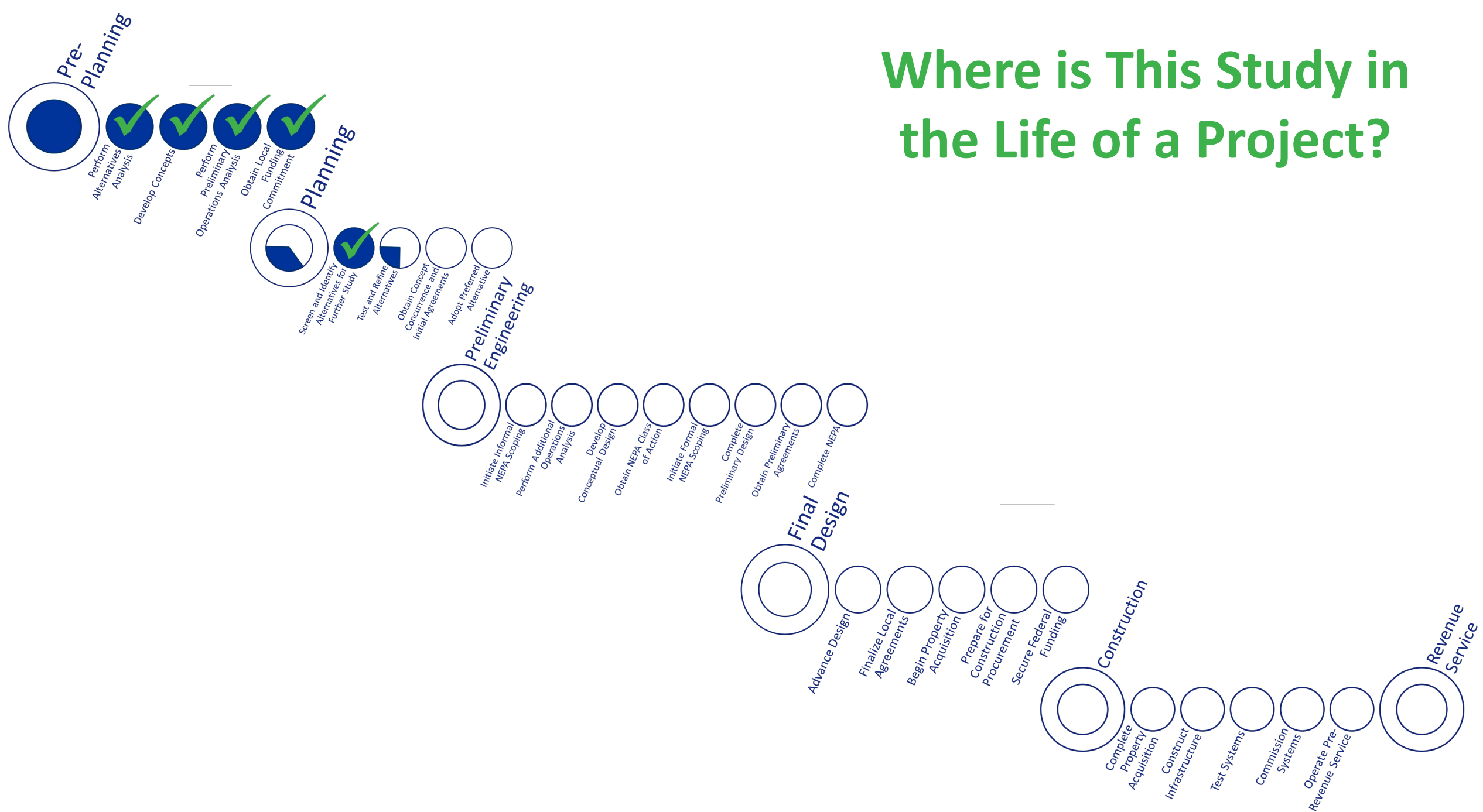
- Give elected officials the data needed to decide whether to take the project to the next phase of development
- Examine scenarios adding Johnston County/Selma and Orange County/Mebane
- Refresh and update ridership estimates, infrastructure assumptions, and cost estimates that were included in prior high-level planning studies
- Identify additional activities necessary before initiating project design and implementation

# Who is Conducting This Study?

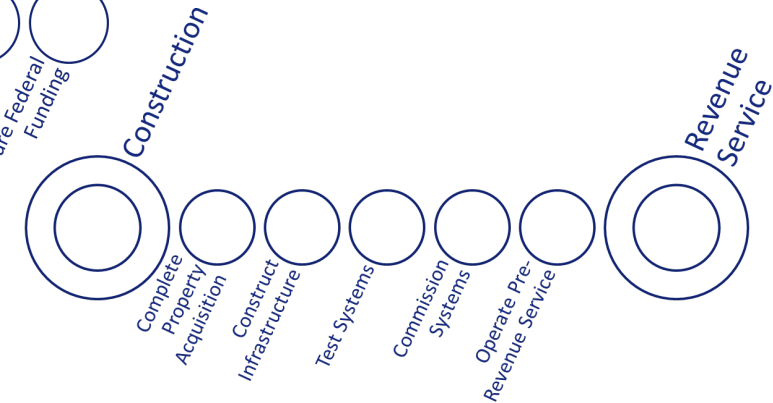
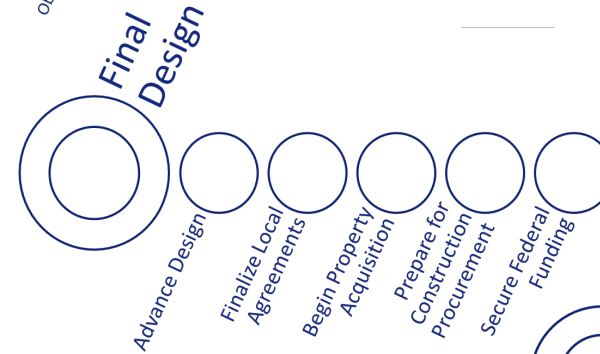
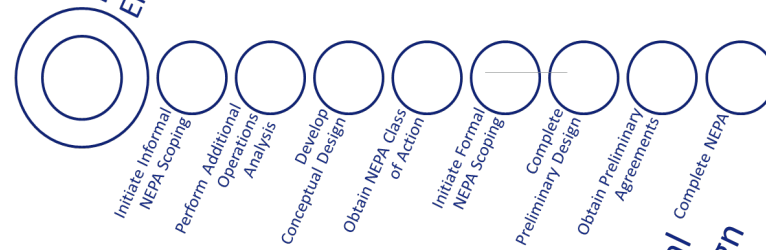
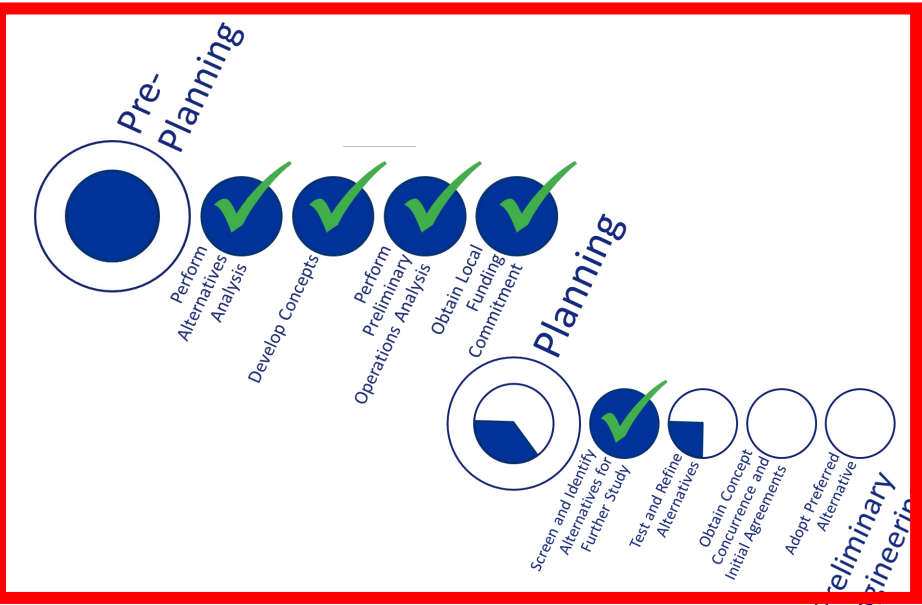
## Project Management Partners:

- Wake County
- Durham County
- Johnston County
- Orange County
- Capital Area Metropolitan Planning Organization
- Durham-Chapel Hill-Carrboro Metropolitan Planning Organization
- Research Triangle Foundation
- North Carolina Railroad Company
- GoTriangle

# Where is This Study in the Life of a Project?

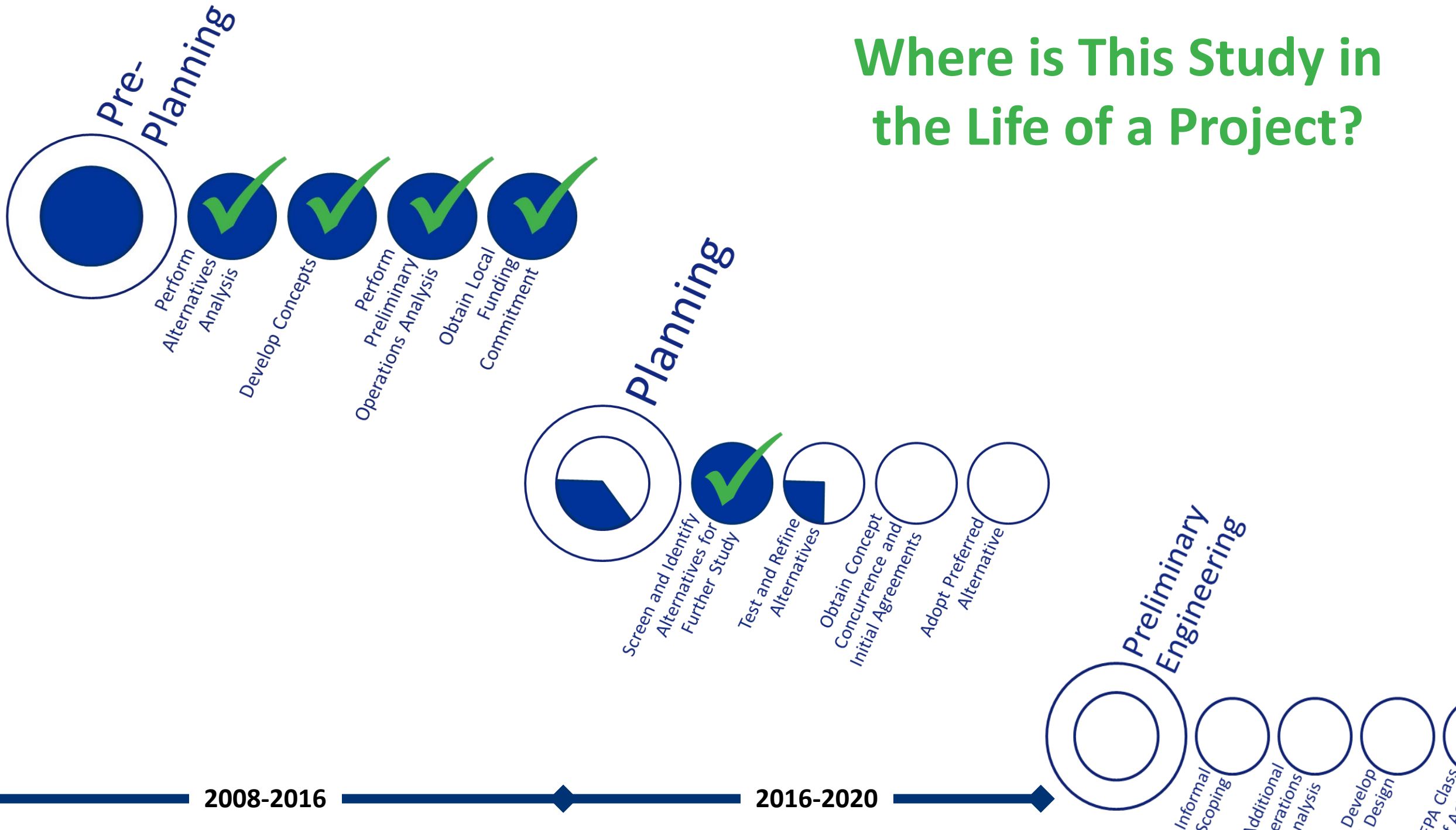


# Where is This Study in the Life of a Project?





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# Existing Rail Corridor

## ***Freight Rail – Heavy Rail***

- Freight operation constitutes the movement of goods and cargo in freight rolling stock (e.g., boxcars, flatcars), which are typically hauled by diesel-powered locomotives.
- The North Carolina Railroad Company (NCRR) owns the 317-mile corridor and Class I freight rail provider Norfolk Southern operates and maintains the railroad through a long-term lease with NCRR

## ***Intercity Rail – Heavy Rail, Shared Track***

- Intercity transit mode services covering longer distances than commuter or regional trains
- The main provider of intercity passenger rail service in the U.S. is Amtrak
- Four intercity passenger service routes run on the North Carolina Railroad including the Carolinian and the Piedmont which are sponsored by NCDOT

**The North Carolina Railroad is built for the service it currently offers**

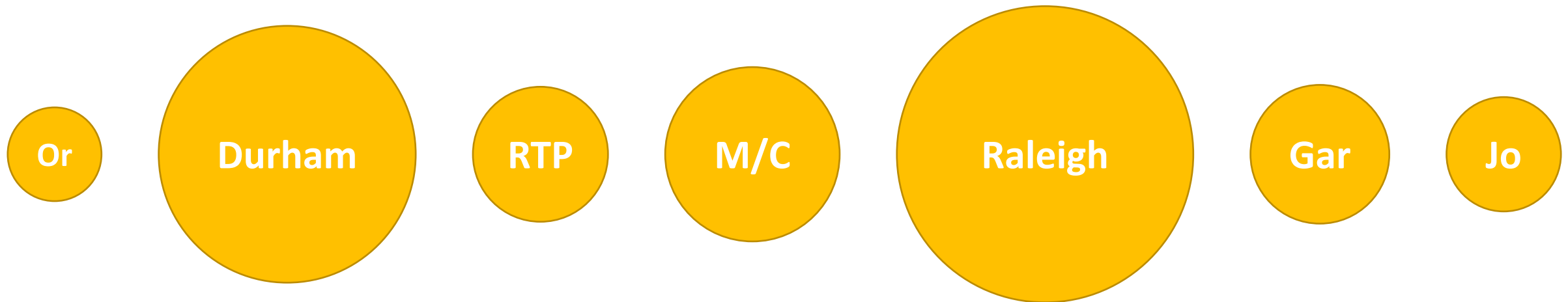
**Added capacity, including commuter rail, would require additional infrastructure, including added tracks**



# Finding: All Scenarios Necessitate Another Track

- Existing/Planned Traffic
  - 27 freight and intercity passenger trains per day
- Scenario 1: Three round trips in the peak periods
  - +14 commuter trains per day (7 round trips)
- Scenario 2: Five round trips in the peak periods
  - +24 commuter trains per day (12 round trips)
- Scenario 3: Eight round trips in the peak periods
  - +40 commuter trains per day (20 round trips)

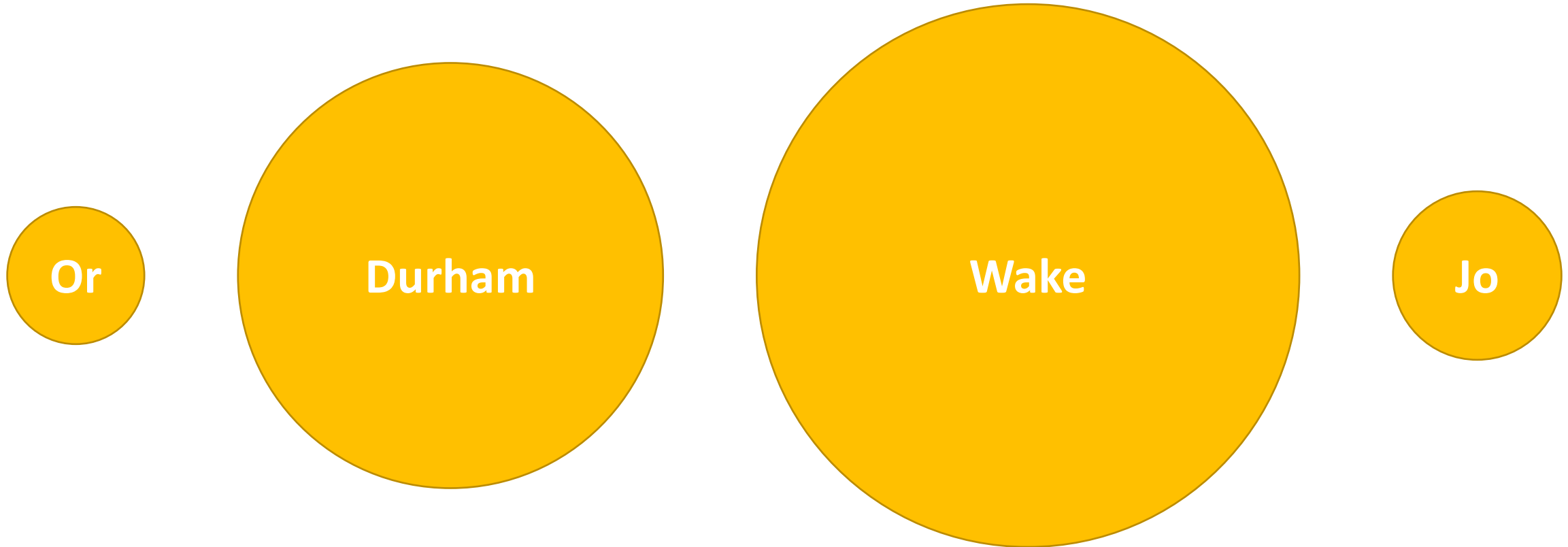
# The Busiest Stations in Raleigh and Durham



Note: circle sizes are relative to the number of boardings at stations within each jurisdiction



# Busiest Stations in Wake and Durham Counties



Note: circle sizes are relative to the number of boardings at stations within each county.

# This is a Preliminary Feasibility Study

- Further detailed railroad capacity modeling would be needed to confirm infrastructure requirements
- Cost estimates require further definition
  - Cost estimates are planning-level
  - No engineering has been performed yet as part of this study
  - Cost estimates would be refined once preliminary engineering work and railroad capacity modeling is completed
- Ridership estimates would require further refinement

# Evaluated Eight Scenarios

Geography	Weekday Round Trips	Service Pattern	Range of Cap. Cost* [YOE\$]	O&M Cost [2019\$]	Range of Ridership**
Durham-Garner	20	8-2-8-2	\$1.4B – \$1.8B	\$29M	7.5K – 10K
Durham-Garner	12	5-1-5-1	\$1.4B – \$1.8B	\$20M	5K – 7.5K
Durham-Garner	7	3-1-3	\$1.4B – \$1.7B	\$13M	4.5K – 6K
Mebane-Selma	20	8-2-8-2	\$2.5B – \$3.2B	\$57M	8K – 11.5K
Mebane-Selma	12	5-1-5-1	\$2.5B – \$3.2B	\$40M	6K – 9K
Mebane-Selma	7	3-1-3	\$2.3B – \$3.1B	\$26M	5K – 7.5K
Hillsb.-Clayton	20	8-2-8-2	\$1.8B – \$2.4B	\$44M (+\$15M)	8K – 11.5K
Durham-Clayton	20	8-2-8-2	\$1.6B – \$2.1B	\$37M (+\$8M)	7.5K – 10K

**Note: Current Wake Transit Plan assumes \$1.33B capital cost for Durham-Garner 8-2-8-2**

\*Cost: Year-of-Expenditure Dollars (YOE\$)

\*\*Daily Ridership: Average of Current Year and Horizon Year Forecast

# Funding Capacity



## **Needs federal funding to be affordable**

**Orange:** Incremental cost to include Hillsborough and/ or Mebane is large relative to est. ridership

**Johnston:** Would require significant additional new revenue

**Durham and Wake:** Affordability will depend on:

- Cost share
- Prioritization versus other investments
- Ability to control costs

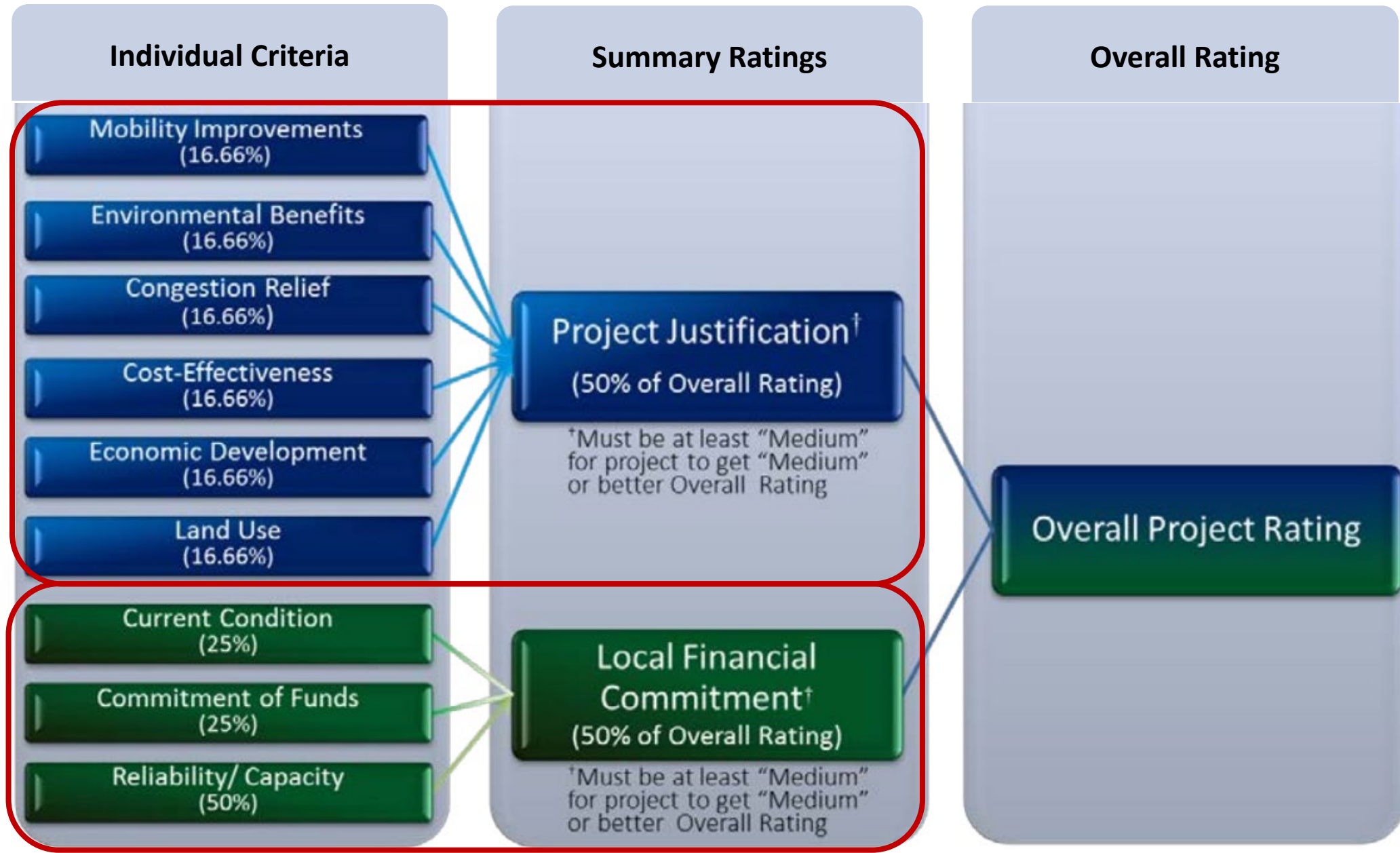


# Project Must Meet Set Criteria for Federal Funding

The Federal Transit Administration publishes guidelines for project evaluation and rating as a part of the Federal New Starts program

To be eligible for federal funding, **projects must score a Medium** overall rating across a range of pre-determined categories assessing financial factors, ridership and travel demand projections, and corridor characteristics (e.g. population and employment)

# Federal Criteria: Must Score Medium in Both Categories



# Driven by Six Project Justification Factors

Criterion	Description
<b><u>Criteria Based on Cost Estimates and Ridership Modeling</u></b> <i>Calculated Based on Average of Current Year (2018) and Horizon Year (2040) Models</i>	
<b>Mobility Improvements</b>	Total annual trips on the project, with trips of riders from zero-car households doubled
<b>Environmental Benefits</b>	Monetized benefit of change in vehicle miles traveled, divided by annualized cost (capital and O&M)
<b>Congestion Relief</b>	New weekday trips on the project
<b>Cost Effectiveness</b>	Total annual project trips divided by annualized cost (capital and O&M)
<b><u>Criteria Based on Corridor Characteristics</u></b>	
<b>Economic Development</b>	Qualitative score based on city and county- adopted plans and policies, their performance, the potential of the project to impact development patterns and affordable housing plans and policies.
<b>Land Use</b>	Quantitative and qualitative score based on existing station area population density, jobs, affordable housing, central business district parking ratio and cost, and built environment characteristics

# Lower Service and Higher Cost Scenarios Do Not Score Well

End Points	Weekday Round Trips	Service Level	Expected Score	“Upside” Score	“Downside” Score
Mebane-Selma	20	8-2-8-2	Medium-Low	Medium	Medium-Low
Mebane-Selma	12	5-1-5-1	Medium-Low	Weak Medium	Medium-Low
Mebane-Selma	7	3-1-3	Medium-Low	Weak Medium	Medium-Low
Durham-Garner	20	8-2-8-2	Medium	Medium	Medium-Low
Durham-Garner	12	5-1-5-1	Weak Medium	Weak Medium	Medium-Low
Durham-Garner	7	3-1-3	Weak Medium	Weak Medium	Medium-Low
Hillsb.-Clayton	20	8-2-8-2	Weak Medium	Medium	Medium-Low
Durham-Clayton	20	8-2-8-2	Medium	Medium	Medium-Low

**Note:** Scenarios rated as “Weak Medium” are projected to score at the low end of the Medium range, meaning that if any single component score is reduced, the overall score would fall below the eligibility requirements

To be eligible for federal funding, project must score a Medium rating

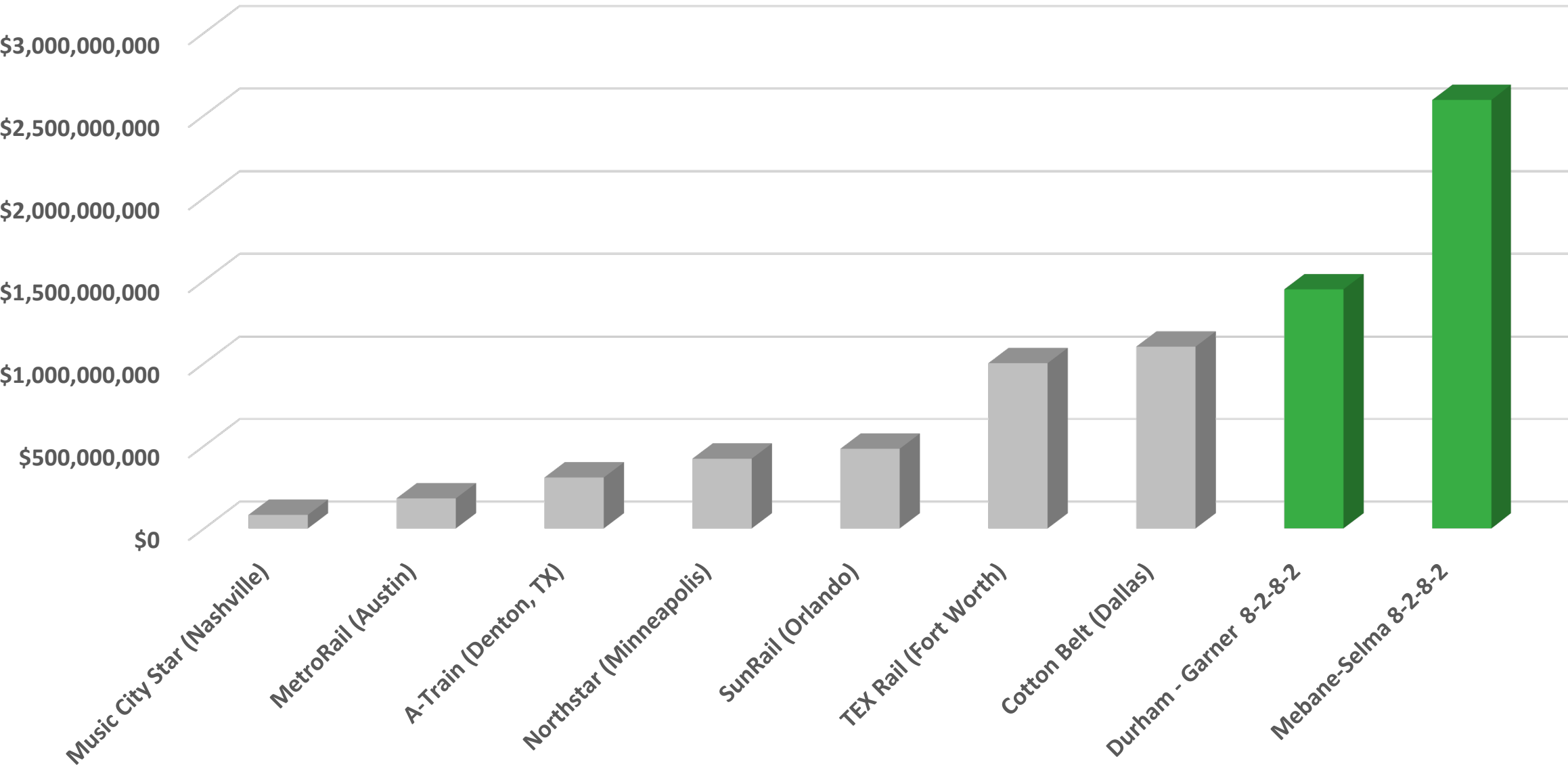
# Peer Comparison

Prior Major Investment Study identified peer systems for comparison of key metrics:

- System Capital Cost
- Capital Cost Per Mile
- Average Weekday Trips
- Average Trip Length
- Capital Cost Per Passenger Mile Traveled
- Operating Cost Per Passenger Mile Traveled

note: not all data were available for each peer system

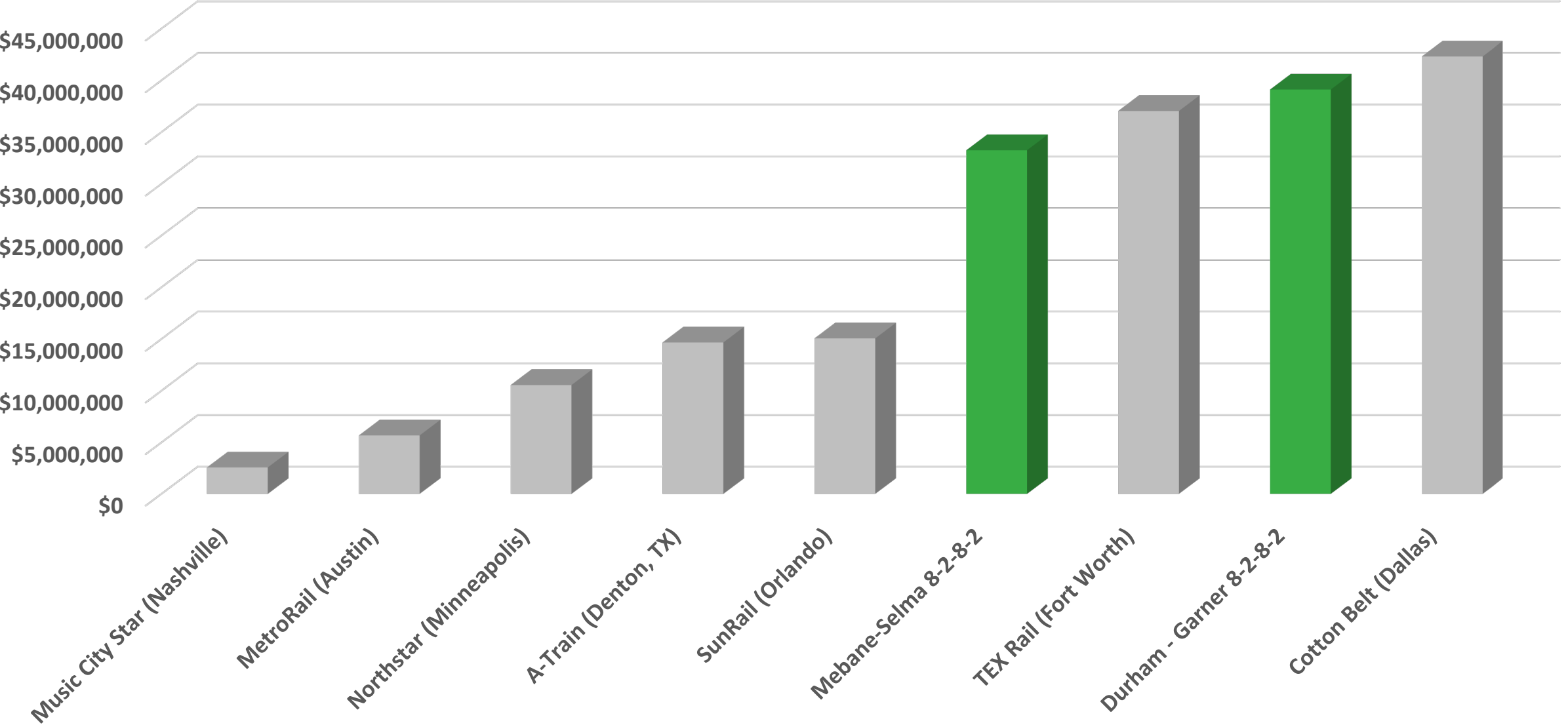
# System Capital Cost (2020\$)



System Capital Cost in 2020\$  
Source: 2019 CRT MIS Report

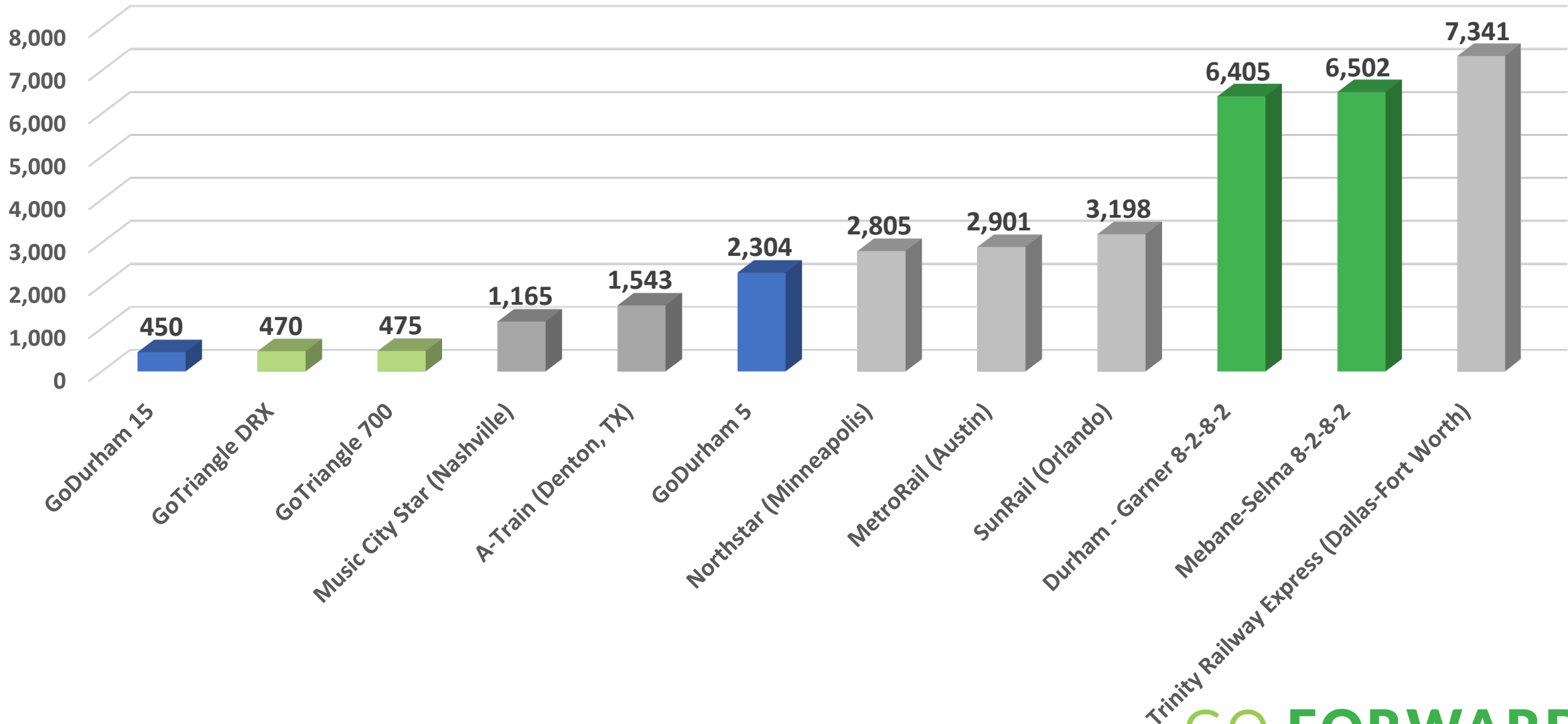


Capital Cost (2020\$)/Mile



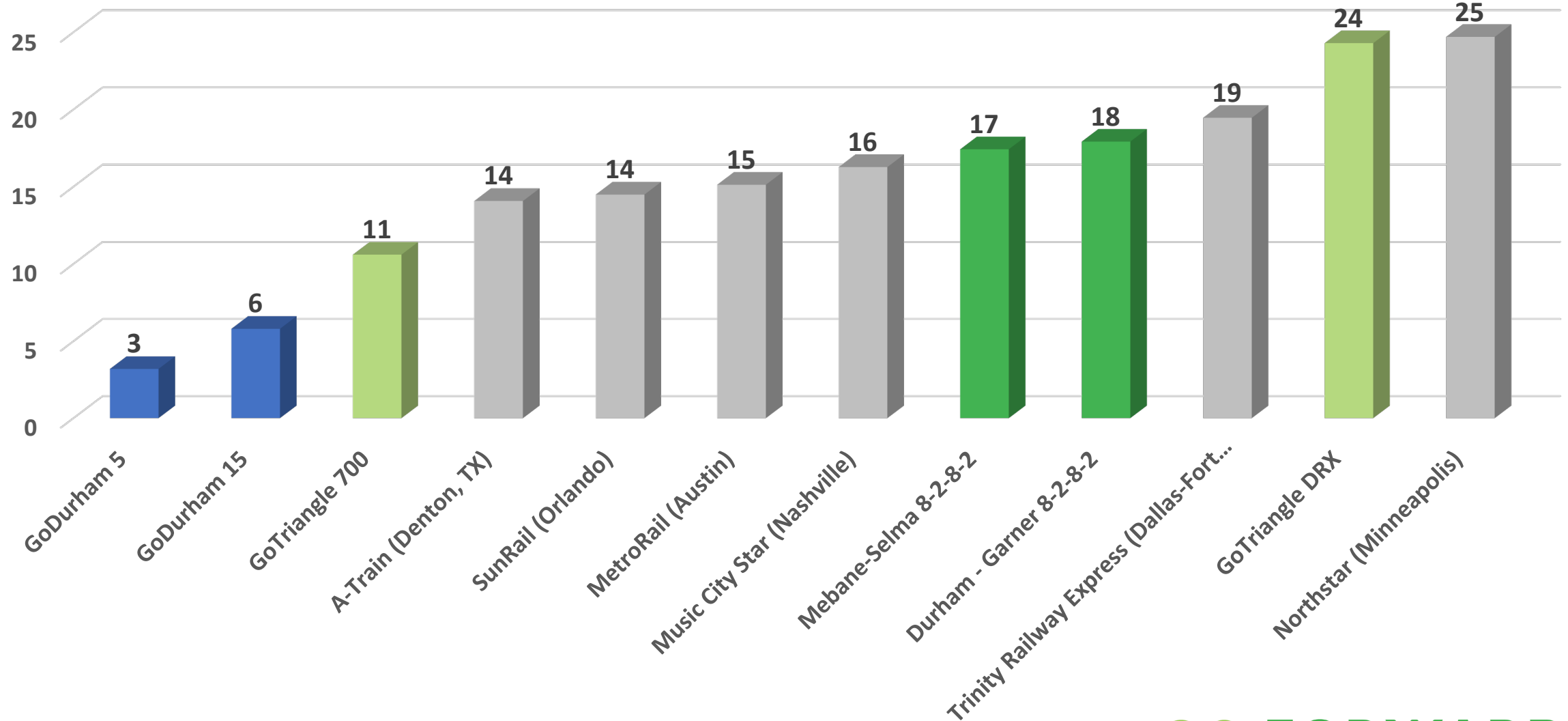
System Capital Cost in 2020\$ divided by length of system.  
Source: 2019 CRT MIS Report

# Average Weekday Trips (2018)



Average Weekday Ridership for 2018.  
Source: NTD 2018 and GoTriangle FY2018 Bus Performance Report.

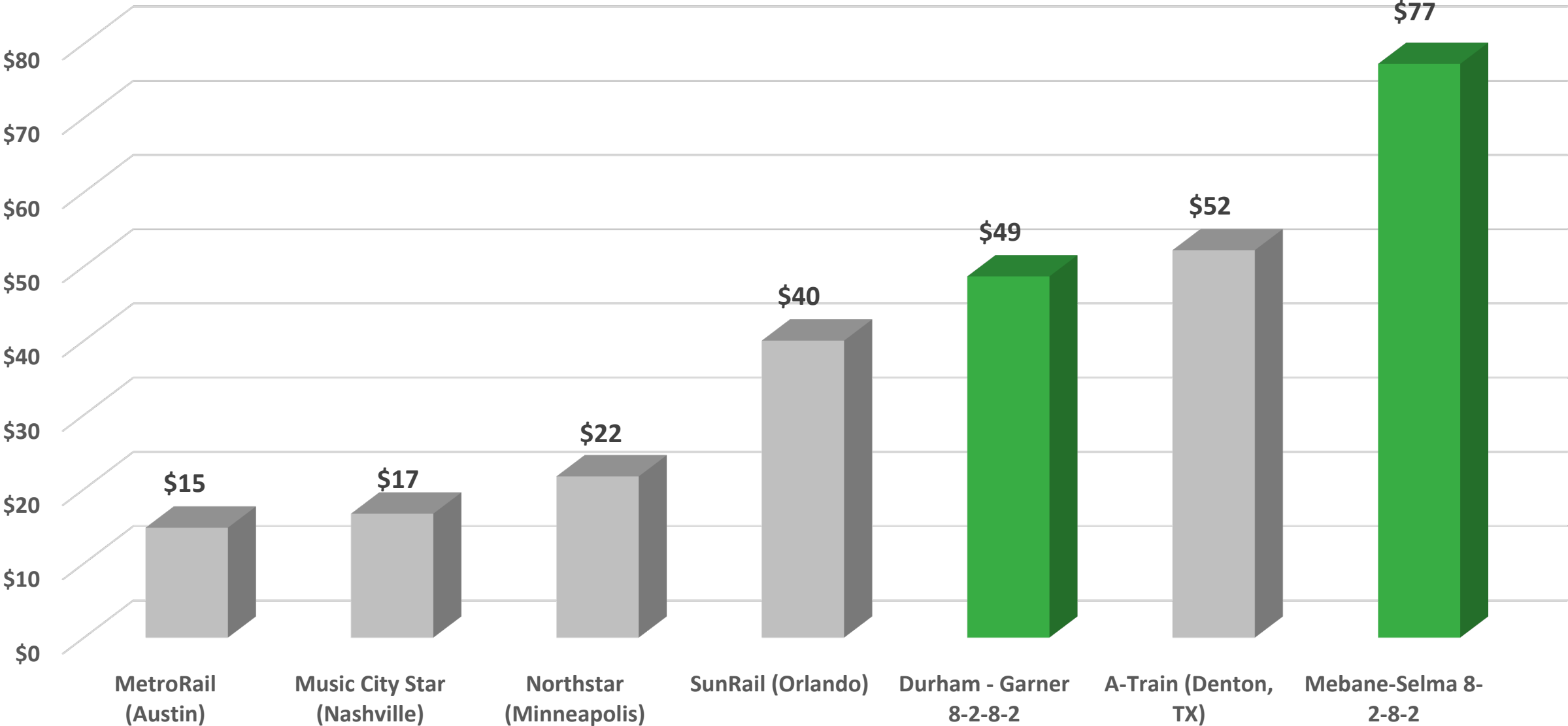
## Average Trip Length (miles)



Average Unlinked Trip length.

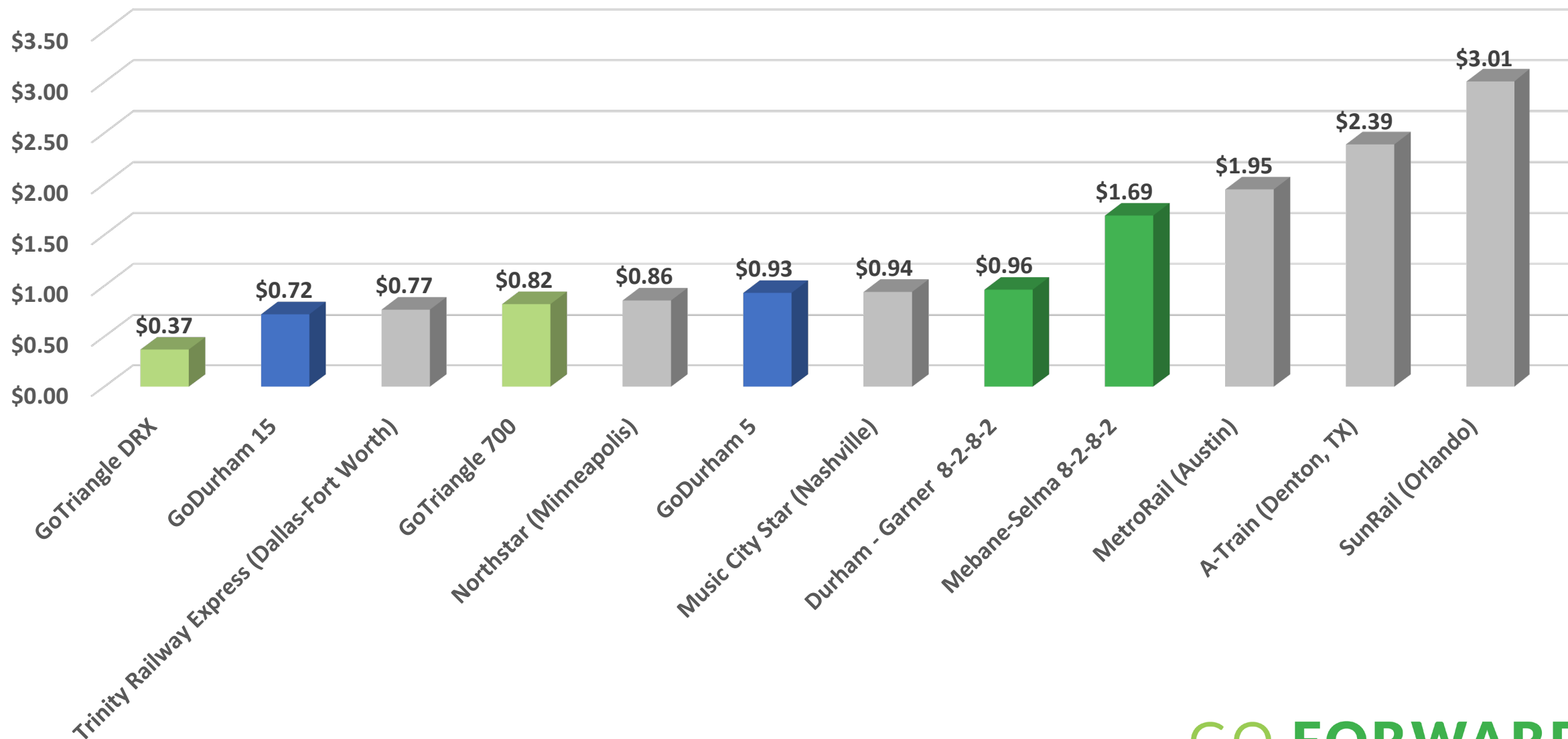
Source: NTD 2018 and GoTriangle FY2019 Bus Operations Report.

Capital Cost (2020\$) / Annual Passenger Miles Traveled (2018)



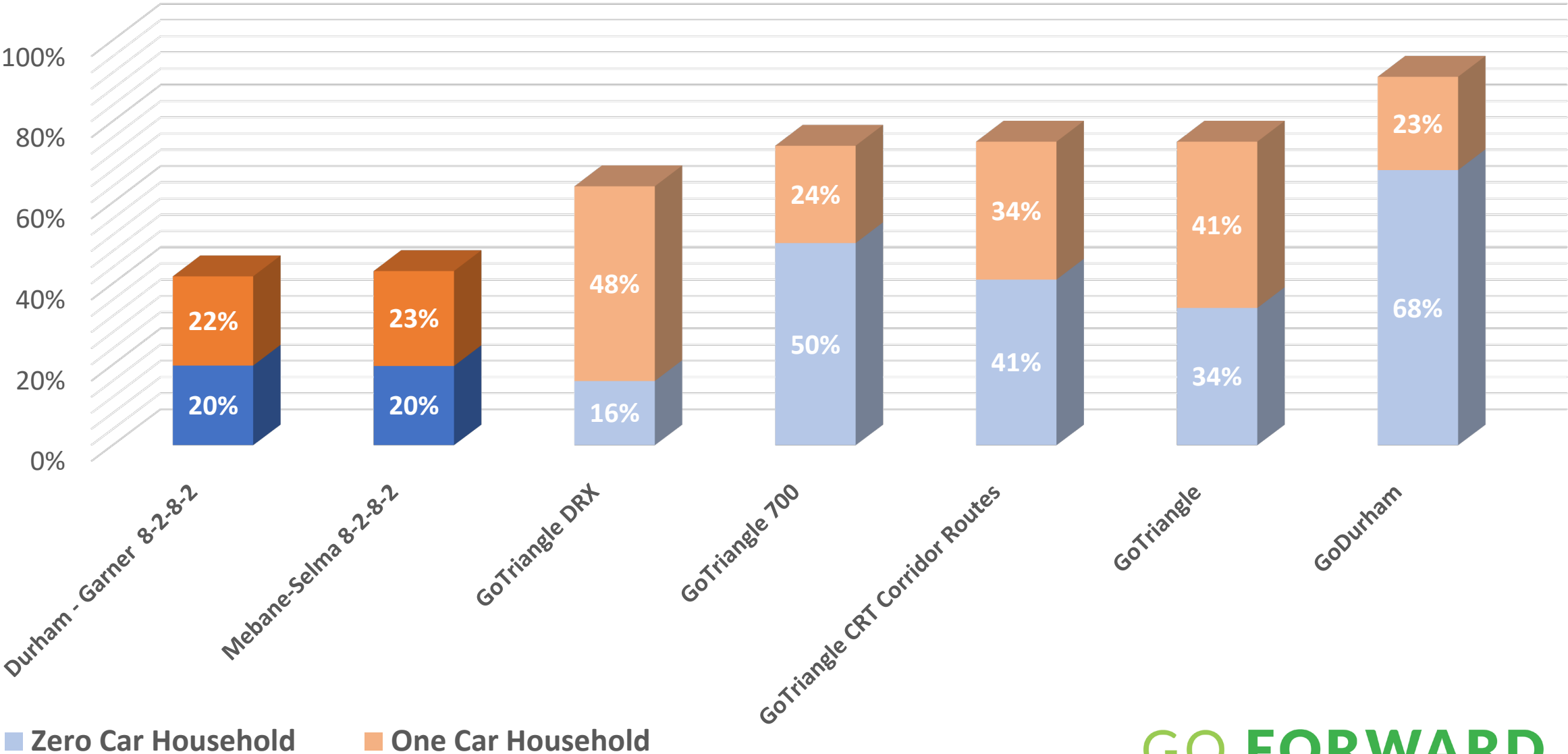
Average System Capital Cost in 2020\$ divided by total annual passenger miles traveled  
Source: NTD 2018 and 2019 CRT MIS Report.

## Operating Cost (2019) / Annual Passenger Miles Traveled (2018)



Average System Operating Cost in 2019\$ divided by total annual passenger miles traveled  
Source: NTD 2018, and GoTriangle FY19 Bus Operations Report

# Percentage of Riders from Zero Car and One Car Households



Source: 2018 GoTriangle and GoDurham onboard surveys. 2016 GoTriangle Onboard survey.





## Remaining Study Effort

- Refine ridership and travel demand modeling
- Additional funding capacity analysis for Durham and Wake
- Discuss initial risk assessment with GoTriangle Board

# Types of Risks

- **Requirements Risk:**
  - Difficulty of succinctly and fully developing project requirements
  - Differences in project stakeholder goals
- **Design Risk:**
  - Design-related assumptions change
  - Situations where unknown factors cause designs to change
- **Market Risk:**
  - Open market pricing and/or contract packaging strategies
- **Construction Risk:**
  - Site activities
  - Coordination of contractors

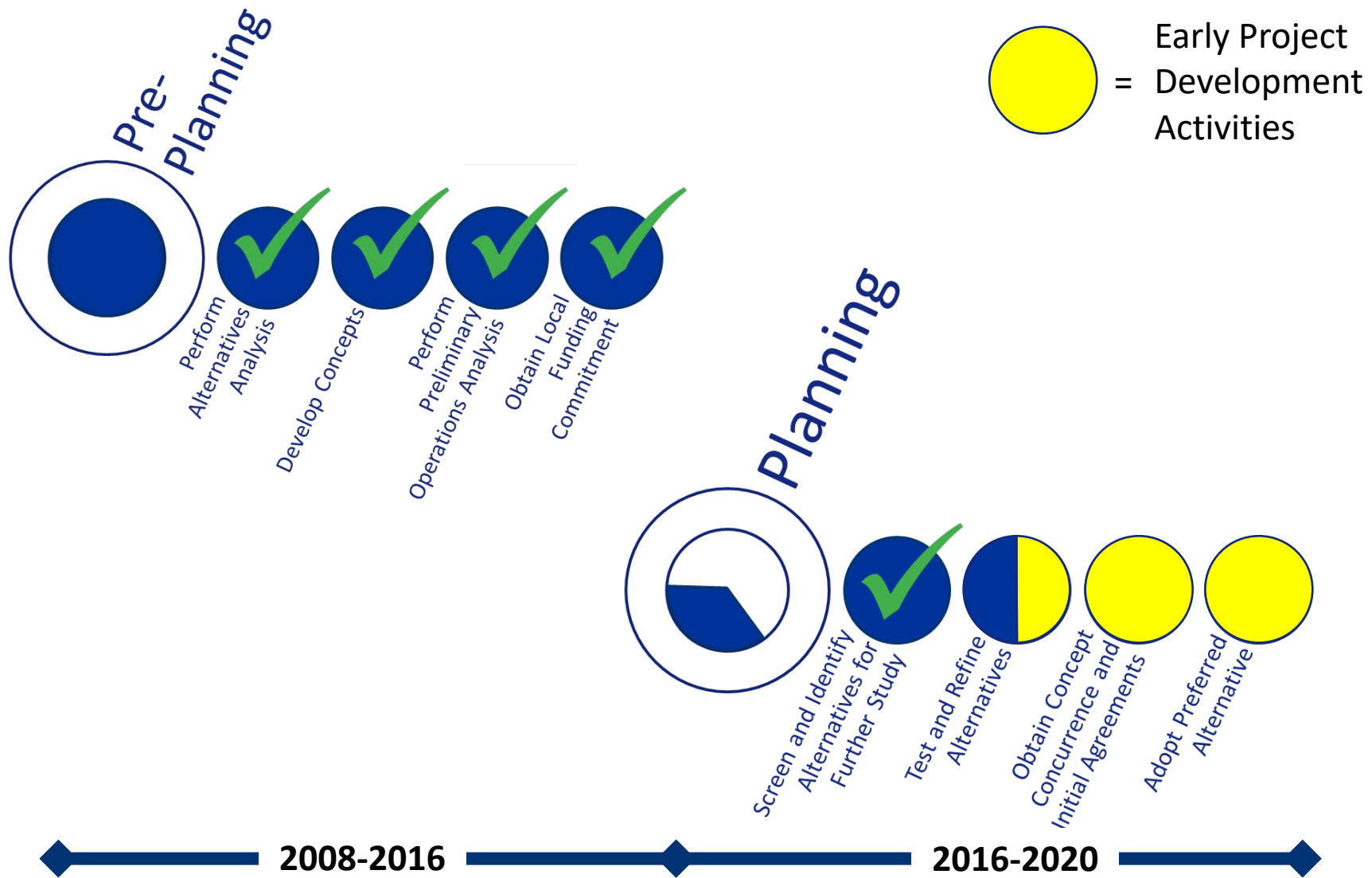
# Upcoming Decision to Undertake Additional CRT Study

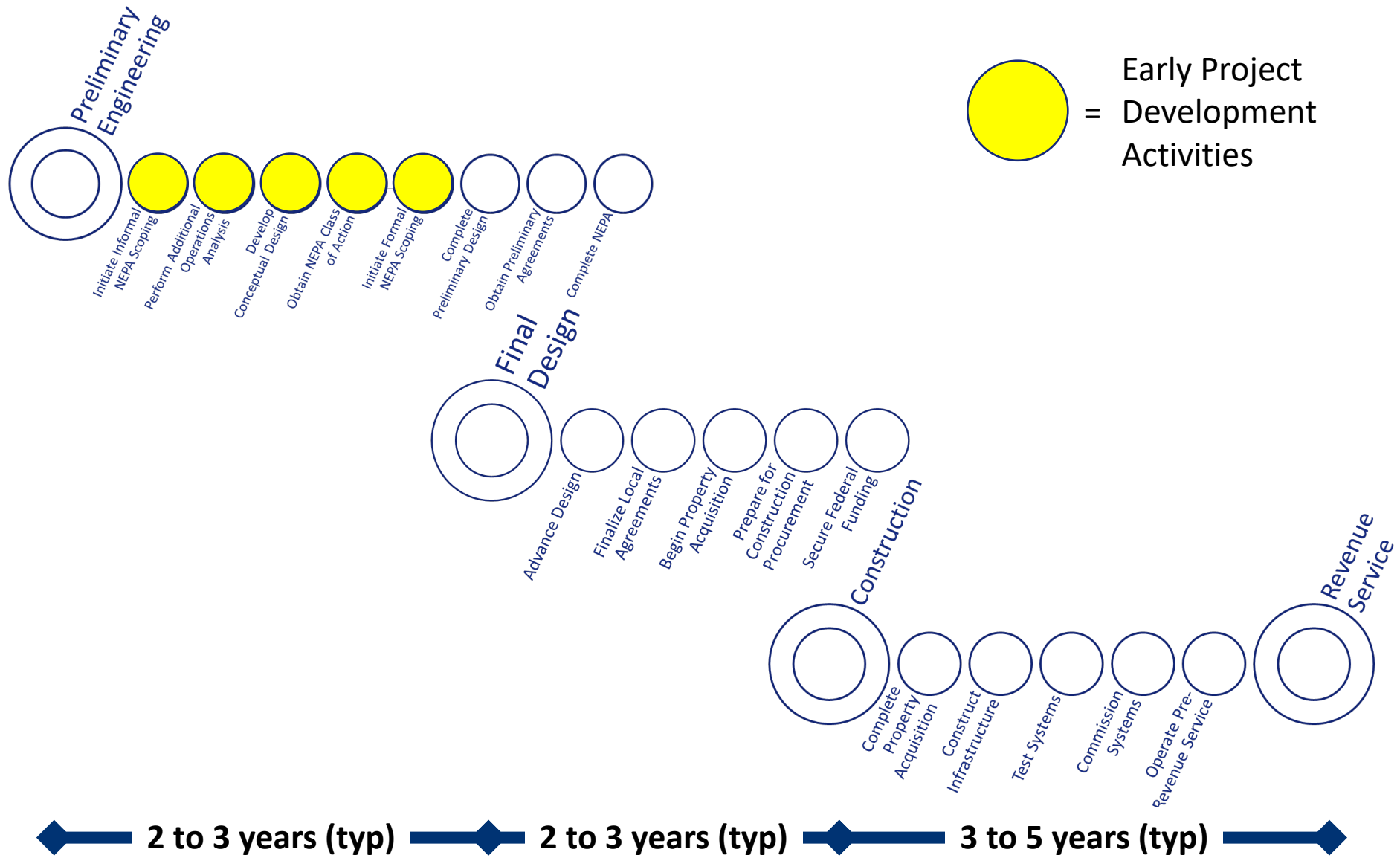
## Timeline

- Brief Durham CRT partners:
  - Durham BOCC: Jan 6
  - DCHC MPO board: Today
  - Joint MPO boards: Jan 30
- *\*Possible Durham Decision Dates\*:*
  - Durham BOCC: Feb 10
  - DCHC MPO: Feb 12
  - GoTriangle board: Feb 22

## “Early Project Development Activities”

- Rail Traffic Controller (RTC) model
- Preliminary engineering to evaluate critical risks only (e.g. Downtown Durham grade crossings)
- Additional ridership modeling
- Public engagement, integrated with local plan updates
- Agreements with funding partners, municipalities, and railroads





# Next Steps

- Present updated results and metrics
- Present risk assessment - GoTriangle board workshop on Jan. 22
  - Primer on risk for transit capital projects
  - Walk-through of initial risk assessment findings
- Consider pursuing early project development activities necessary prior to initiating project design and implementation
- Consider adopting memorandum of understanding among project management partners for early project development activities
  - Roles, responsibilities, and goals of the project management partners, municipalities, and other stakeholders if moving forward



# Risk Assessment



- Public Participation Process
  - Equitable Community Engagement Blueprint
  - Seek Resident Input Before Options Are Limited
- Inclusion of Municipal Governments as Partners
  - City of Durham
  - City of Raleigh
  - Other cities and towns in the five counties along the potential alignment
- Roadway Interfaces
  - Grade Crossings
  - Bridge Clearances
- Apportioning Capital and Operating Costs



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Questions