

# RESILIENT LONG-TERM PASSENGER RAIL INVESTMENT — Durham Transit Plan Issues

John Hodges-Copple, April 12, 2023 version

Evidence suggests that a passenger rail investment connecting West, Central and East Durham to the RTP, Western Wake County, NCSU and downtown Raleigh, *if done well*, could link lower income neighborhoods and affordable housing locations to large and growing job hubs with fast, reliable, affordable transit.

The recent GoTriangle Rail Feasibility Study identified complex and costly challenges to meaningful regional service, especially in Durham. The assumptions and compromises embedded in the study result in high costs and low ridership that make federal funding unlikely, effectively doubling the cost of any investment for local taxpayers. In short, there is likely a meaningful and cost-effective rail investment that can serve the region, but the current proposal may not be it. But regional rail is not a yes or no question; it is a question of what cost-effective actions can be taken today to ensure worthwhile regional connections can be built over time.

This overview:

- Starts with bullet points of cost-effective actions that can be taken soon (this page)
- Highlights key principles for meaningful, cost-effective rail transit that can serve Durham\*
- Notes the importance of designing for meaningful service and establishing a committed partnership\*
- Looks closer at steps that can be taken to advance cost-effective Durham investments to better connect the region, breaking them into component parts that can form an integrated whole, concluding with a concept for what might be the most important regional transit investment, which has value whether or not regional rail serves Durham

## Cost Effective Actions for the Near Term

1. Build a new regional mobility hub in the Research Triangle Park that can serve regional rail, Amtrak and bus service, including relocating the current bus center. Key point: Careful design is critical, so that meaningful regional rail service is not just possible, but guaranteed.
2. Work with the Research Triangle Park to begin levying the permitted 10-cent property tax for transit within the RTP. Key point: The tax can be levied in steps, starting now and expanding as the regional mobility hub begins construction.
3. Ensure *all* rail projects in Durham are designed and built to *easily* fit 2 regional rail priority tracks that minimize conflicts with Amtrak and freight. Key point: Already-planned rail projects like the Glover and Ellis grade separations (P-5706) need to include a four-track cross section (except through downtown Durham) and build the rail bed with regional rail prioritized on the 2 western/southern tracks.
4. Update the rail capacity study for initial Auburn – RTP service and eventual Auburn – West Durham service. Key point: Since even under ideal circumstances, meaningful Durham service is 12+ years away, ensure the updated capacity study includes the projects in #1 and #3 above; the use of shorter, faster DMUs with dedicated platforms; and minimizes the amount of track that needs to be shared with Amtrak and freight. Include as part of the analysis how many initial Auburn-RTP trains could continue to downtown Durham and West Durham on existing track north of the I-40 rail bridge if a new terminus station is built near Duke Medical Center.
5. Work with NCDOT and the railroads on eventual relocation of NorfolkSouthern's Durham Yard and acquiring CSX assets in Durham.

## What initial evidence suggests ...

- Affordable Housing. Almost 2,800 legally-binding affordable housing units in Durham – 37% of the county total – are along the rail corridor, 600 of them within walking distance of a station. New housing, such as at the Durham Transit Center and on DHA sites, will greatly increase the number
- Key Neighborhoods. A third of the 25 Durham Census Block Groups with the strongest combination of BIPOC, low-income and zero-car households are within walking distance or a short bus ride of a rail station
- Job Hubs. 8 of the 10 largest job hubs (measured as Census Block Groups) in the region lie along the rail corridor
- Future Job Growth. Durham's connection to Wake County will grow in importance: Wake County is expected to add 3 times as many jobs as Durham County in the future
- Equitable TOD. Many good locations for equitable development are along the corridor, including Duke and Durham Housing Authority land and sites owned by GoTriangle at the Ellis Road, Alston and downtown stations

## RESEARCH TRIANGLE PARK METROCENTER MOBILITY HUB AND MIXED USE DEVELOPMENT

A major challenge is that the Research Triangle Park is in the middle of everything and well-connected to nothing.

Using Research Triangle Foundation land -- and paying careful attention to design details and how they affect meaningful long-term investments -- the RTP and its local, regional and state partners can create a hub that:

1. Relocates the current Regional Transit Center to a more accessible, central location;
2. Adds an Amtrak rail stop to connect the RTP to the Triad, Charlotte and cities outside NC;
3. Provides an “in-line” BRT station for Wake County’s western BRT route with service continuing to the RTP HUB mixed use development that is currently under construction at Davis Drive;
4. Provides a “future-proof” interim terminus for a Wake-Durham passenger rail service, while enabling basic levels of rail service to continue on to Durham and Duke University in the near term, if feasible;
5. Incorporates the planned Triangle Bikeway, a major facility stretching from Chapel Hill to Raleigh.

The series of images below depict a concept of how the RTP Mobility Hub could function, along with important considerations along the NCCR corridor near the site. The two parcels owned by the Research Triangle Foundation along the NCCR alignment – totaling 19 acres -- are outlined in red below. They are currently assessed for tax purposes at only \$2 million.

Figure 1. Site Context



A study on relocating the Regional Bus Transit Center identified the Park Point Site in the picture as a preferred location. Although a suitable site for a bus hub, it has challenges for a seamless integration with intercity and regional rail, including curved (and “super-elevated,” or tilted) track, private – rather than Foundation – ownership, and a Duke Power substation (shown just north of NC54 in the image) and small cemetery close to the rail corridor. The existing tracks along Park Point are close to the west edge of the corridor, making platforms for intercity and regional rail difficult to accommodate along with a “futureproof” track layout for regional rail.



## RTP METROCENTER MOBILITY HUB CONCEPT

Key Elements (**blue shading** indicates transmission line easements where no structures can be located):





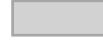

-  • Amtrak platform along existing rail track
-  • New regional passenger rail platform and new regional rail track (interim terminus)
-  • Area for relocated Regional Transit Center
-  • Triangle Bikeway (Option #1 in Bikeway Design Study)
-  • Structured parking that can be sized and shared for mixed use center and transit center
-  • Area for Mixed Use Center (remainder of site; can be co-planned with Fidelity acreage).



Figure 2. Site Concept

**Track and Platform Considerations.** The rail study identified several costly challenges, especially in Durham, for a plan that tries to combine freight, intercity passenger and regional passenger rail throughout the corridor with Amtrak and regional trains sharing platforms. The compromises needed result in ridership and cost estimates expected to preclude federal funding. As a result, initial service may be between Raleigh and the RTP, although some trains may be able to continue to the current Amtrak station in downtown Durham and a station near Duke Medical Center, on mostly existing track. If upcoming rail projects in East Durham are carefully designed, a station at Ellis may be possible. RTP might need to serve as a terminal station for many trains until there is a better Durham track plan. A key to eventual meaningful service might be to minimize interaction with freight trains, since the largest conflicts in Durham are on the east/north side of the tracks (the East Durham Yard and the nearby wye); while regional rail destinations are mostly on the west/south side of the corridor: RTP, Durham CBD, NCCU (at Alston) and Duke. The layout on the next page sets up a “futureproof” investment towards Durham by having separate Amtrak and regional rail platforms, and locating them on the west side. Using the shorter, faster Hybrid Rail trains being selected by most regions starting new service can use shorter platforms at regional rail stops, while Amtrak and freight trains can use tracks with low platforms at RTP and Durham CBD.

METROCENTER TRANSIT HUB CONCEPTUAL LAYOUT: EXISTING & FUTURE

(Sample location shown is looking down from above at the red arrow in photo along MetroCenter site – not to scale)

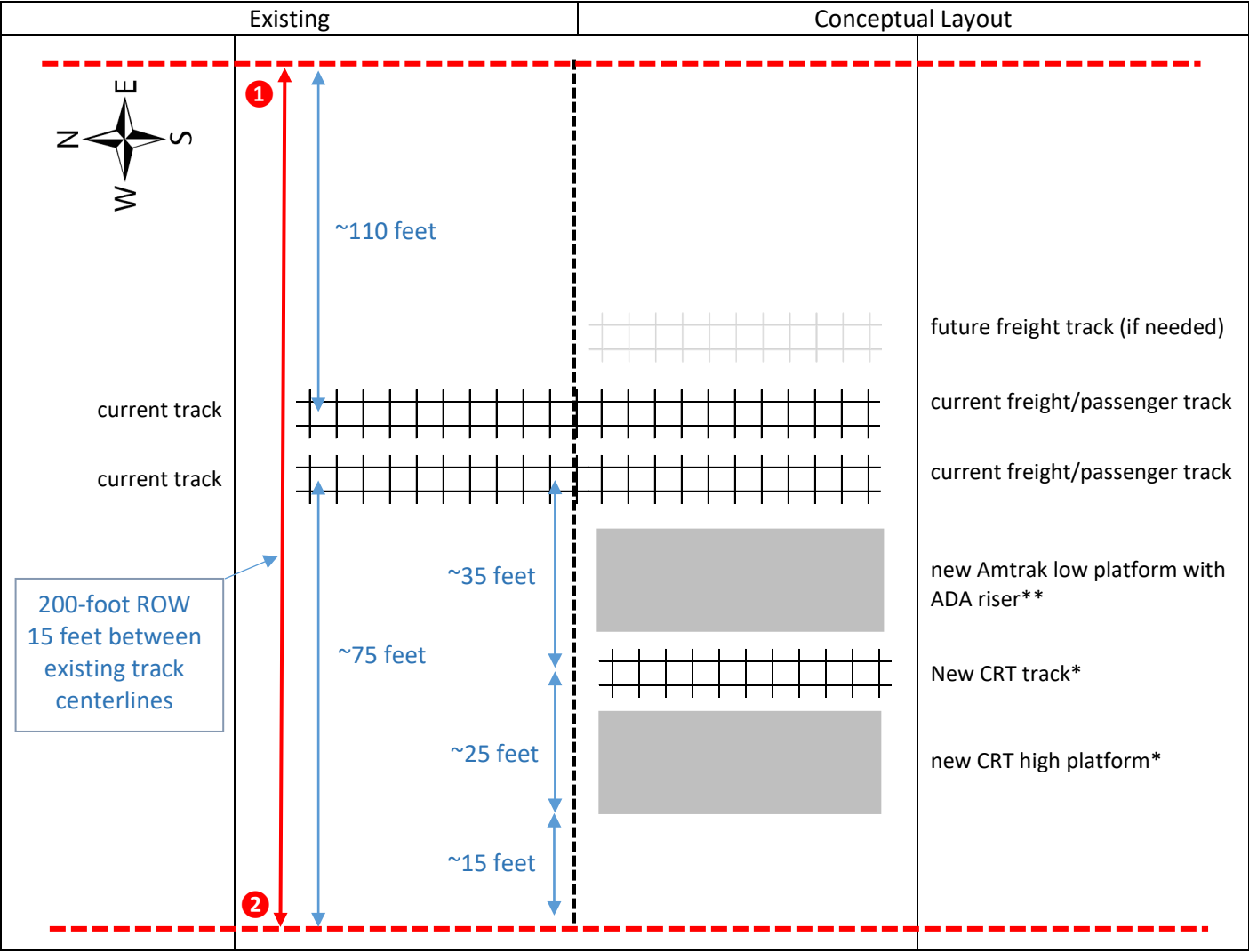


Figure 3. Sample location shown (red dotted line shows NCRR ROW depicted above)



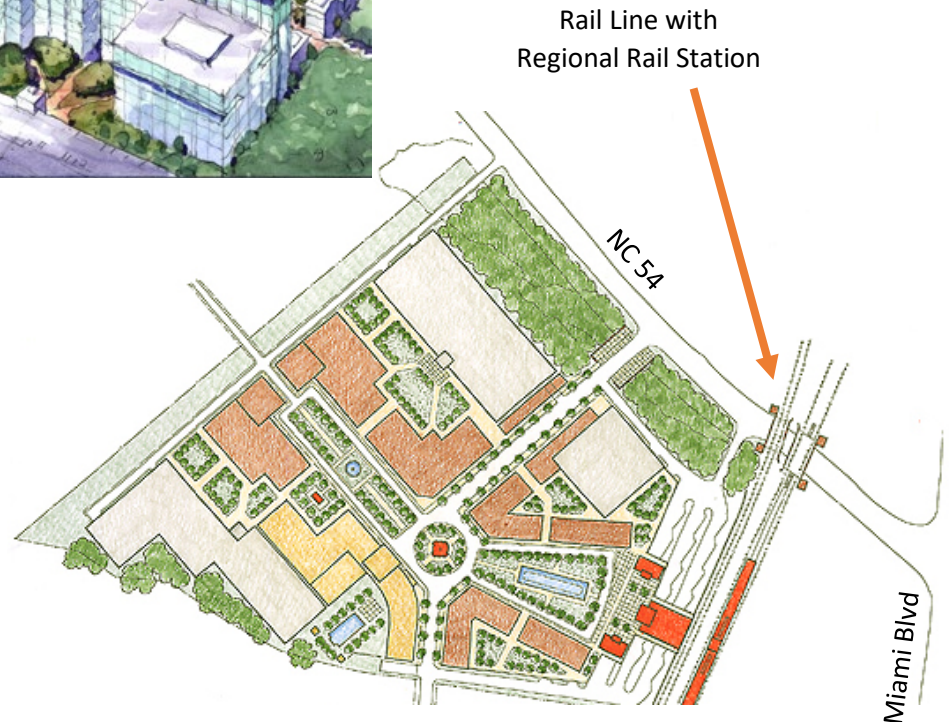
\* funded by local, regional, state and federal partners as part of regional passenger rail project, including RTP contribution.  
\*\* funded by NCDOT through inter-city passenger rail funding sources.





Figure 4. Earlier MetroCenter Concept

This concept is not new. The images below for a bus and rail mobility hub on this site linked to mixed use development are from a 2001 presentation by Research Triangle Foundation leadership. At the time, the first phase was anticipated to be completed by 2003 with full build out by the end of 2007.



### Train Considerations

The assumption that Amtrak trains and regional rail trains should share platforms results in significant design issues, especially in developed urban centers like Durham. Although all tracks can be used by all trains -- except where level-boarding platforms are used -- minimizing the interaction of passenger and freight trains, and using single low platforms for Amtrak trains as is currently done in the Durham CBD, may best serve the interests of both freight and regional rail. Shown below are the relative lengths of (i) the shared Amtrak/regional rail platform from the feasibility study, (ii) a typical locomotive-and-coach train assumed for regional rail, and (iii) an FRA-compliant Hybrid Rail train used in recent rail projects in Fort Worth, Dallas and San Bernadino. By using a low platform with a riser for ADA access for the Amtrak stop at RTP along the existing track, freight trains can continue to use both existing tracks. Using a separate regional rail level-boarding (high) platform, especially if the shorter, faster Hybrid Rail trains are used, can provide more flexibility in track design and allow intercity and regional rail trains to use a common station at the same time, making scheduling easier and more flexible.

(i) Shared Intercity and Regional Rail Platform from Feasibility Study – 600 feet



(ii) Siemens Charger Locomotive & Venture Coaches (with cab car) – 412 feet



(iii) Stadler FLIRT Hybrid Rail Unit (with center power module) – 266 feet