



CONNECT Beyond

A Regional Mobility Initiative

Transit Supportive Development Strategies Briefing Guide

May 2021



Transit Supportive Development Strategies

Contents

Transit Supportive Development.....	1
What Does it Mean?.....	1
Why is it Important?.....	1
Regional Context and Indicators of Transit-Supportive Development	2
Model Strategies	6
Introduction	6
Corridors.....	6
Centers	13
Centers and Community Character Types.....	16
Sites	21
Conclusion	24

Table of Figures

Figure 1 - Downtown Gastonia.....	1
Figure 2 - Transit Improvements in Charlotte have Spurred Investment in Transit Supportive Development.....	1
Figure 3 - Downtown Salisbury has among the Region’s Highest Jobs + Population per Acre	3
Figure 4 - Jobs + Population Per Acre, 2018.	3
Figure 5 - Many of the Fastest Growing Places in the Region are Expected Along Existing and Planned Transit Lines.	4
Figure 6 - Jobs + Population Growth Per Acre Relative to Regional Average, 2018 – 2045.....	4
Figure 7 - Downtown Lincolnton's Short Blocks of 275 to 350 feet Support Good Walkability.....	5
Figure 8 - Intersection Density (Intersections per Square Mile).	5
Figure 9 - The Geographies of Transit Supportive Development Strategies.....	6
Figure 10 - Land Use Intensity Adjacent to CONNECT Beyond Corridors	9
Figure 11 - Stallings Comprehensive Plan Designates the Area Around a Future Light Rail Station as a Walkable Activity Center	11
Figure 12 - Example of Incremental Site Design	24



Transit Supportive Development

What Does it Mean?

Transit supportive development refers to compact, mixed-use, walkable development near transit. This pattern of land development, when combined with high-quality transit service, makes it convenient, safe, and attractive to get to and from daily activities without needing to use a personal vehicle. Transit supportive development strategies are most effective when applied to the 1/4- to 1/2-mile radius around a transit stop or station because that is the distance the average person can walk in about 15 minutes. Examples of transit supportive design elements include a comfortable pedestrian realm, compact and mixed-use development with many origins (homes) and destinations (shopping, work, etc.) within walking distance, buildings that front the street and have active uses (such as retail) on the ground level, and side or rear parking to make frontages more accessible to pedestrians. These approaches are not one-size-fits-all. Transit supportive development along a corridor can take on different scales to best align with the existing and desired community character. **Figure 1** illustrates an existing example in Downtown Gastonia that includes many elements of transit supportive development. This document highlights a range of existing community character types in the 12-county region and highlights some key high-level strategies to make them more transit supportive over time.



FIGURE 1 - DOWNTOWN GASTONIA

Why is it Important?

CONNECT Beyond is both a mobility and a growth strategy for the region that encourages development in areas already served by infrastructure and the expansion of transportation options. This approach provides the region with a better way to accommodate an additional 1.4 million residents and 732,000 jobs between 2015 and 2045 without exacerbating rapid land consumption, a loss of working farms, negative impacts to environmental resources, and longer commute times and worsening congestion. Advancing transit supportive development across more areas of the region and in proposed transit corridors means reinforcing more efficient patterns of growth that support long-term regional goals.



FIGURE 2 - TRANSIT IMPROVEMENTS IN CHARLOTTE HAVE SPURRED INVESTMENT IN TRANSIT SUPPORTIVE DEVELOPMENT

Features of the built environment associated with transit supportive development can also bring transportation benefits, even in the absence of transit. Multiple research studies have confirmed that connected street design and diversity of land uses contribute to less driving and more walking.¹

¹ Ewing, Reid and Robert Cervero. "Travel and the Built Environment, A Meta-Analysis." Journal of the American Planning Association. 2010.



Additionally, development that is intentionally designed in a compact form, creating centers of activity, can support a “park once” approach that allows people to arrive in a vehicle, but then access multiple destinations on foot. This in turn can reduce overall parking needs, freeing up valuable land for development, civic uses, and green open spaces that reinforce a greater sense of place. Therefore, the principles and strategies described in this briefing guide are relevant to all the CONNECT Beyond transit and mobility corridors, regardless of when transit may arrive.

Regional Context and Indicators of Transit-Supportive Development

As a regional strategy, advancing transit supportive development makes the most sense along corridors where there is already transit service or a desire to expand or enhance transit service over time. CONNECT Beyond has identified 12 candidate high-capacity transit corridors for modes such as light rail, streetcar, or bus rapid transit (BRT); seven candidate commuter rail corridors; and 20 emerging mobility corridors where additional preparation, such as enhanced transit service, starter service, or land use policy changes are warranted to position corridors for future transit investment.

These candidate corridors, and existing high-capacity transit corridors, are presented in the following map series overlaid on key indicators of development patterns most conducive to supporting transit. The following indicators were mapped for the entire 12-county region using readily available data sources.

- **Density Indicator: People + Jobs (Activity Units) Per Acre**— Higher levels of activity unit density are related to transit ridership, which makes it an important indicator of transit readiness. More than 10 activity units per acre is a general rule of thumb threshold that indicates readiness for fixed route transit. More than 60 units per acre is typically where high-capacity transit may be viable.
- **Market Indicator: People + Jobs Growth Relative to Regional Average** – Realizing the CONNECT Beyond transit vision will depend in large part on how much of the region’s anticipated growth goes into the future transit and mobility corridors. This map shows forecast growth in jobs and population per acre between 2018 and 2045 relative to a regional forecast average growth of 0.6 units per acre.² As such, this map highlights the anticipated high-growth locations.
- **Walkability Indicator: Intersection Density** – Channeling growth into walkable centers is a foundational strategy of transit supportive development. Intersection density is an indicator of walkability because places with shorter blocks and more connections have higher intersection density. The places with higher intersection density tend to have streets that provide good “bones” for walkability.

These are important indicators because they provide a sense of what is happening today along the future high-capacity transit, commuter rail, and emerging mobility corridors. The intersection of future transit and high scores on these three indicators of transit supportive development are important for supporting the region’s long-term goal of attracting development into these corridors. Successfully attracting development into nodes along these corridors rather than spreading it thinly across a large landscape, is a necessary foundation for the entire future mobility strategy articulated by CONNECT Beyond.

² Anson County data reflect a base year of 2015 and a future year of 2040.

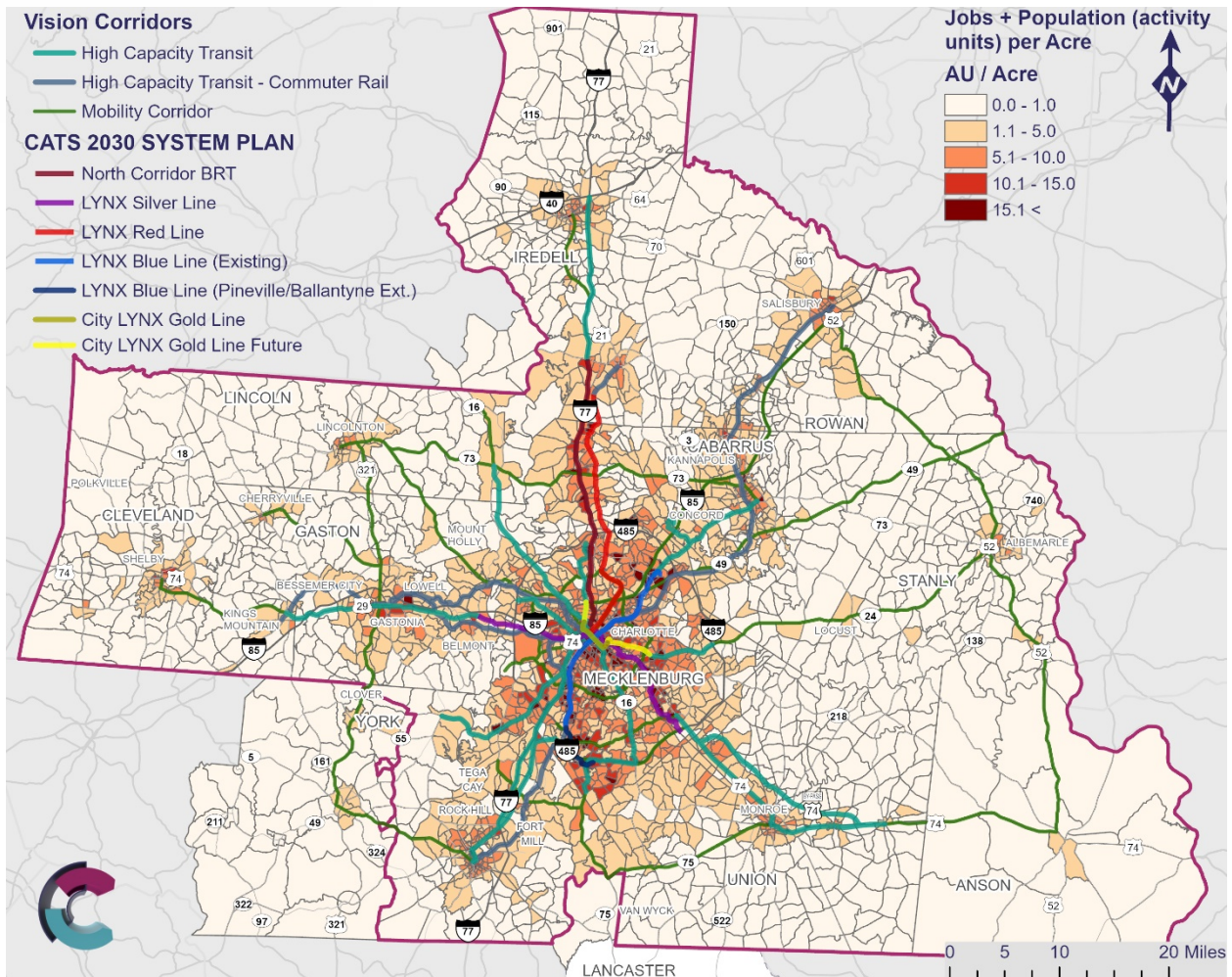


FIGURE 4 - JOBS + POPULATION PER ACRE, 2018.

Figure 4 shows the baseline jobs and population density per acre for a base year of 2018. The map shows alignment between the future transit and mobility corridors and nodes of higher density in the region. The 10 highest density nodes along the future transit and mobility corridors are in Mecklenburg County. Density in Uptown Charlotte ranges from 80 to 750 units per acre. The Carolinas Medical Center (160), Novant Health Presbyterian Medical (120), and SouthPark (82) are also among the densest nodes.

Outside of Mecklenburg County the region’s cities and towns with Main Street business districts are the most significant density nodes along the future transit and mobility corridors. Among the region’s highest density nodes are Rock Hill (29), Concord (27), Salisbury (23), Monroe (22), Statesville (19), Gastonia (17), Stallings (16), Shelby (15), Kannapolis (15), and Mooresville (14).



FIGURE 3 - DOWNTOWN SALISBURY HAS AMONG THE REGION’S HIGHEST JOBS + POPULATION PER ACRE

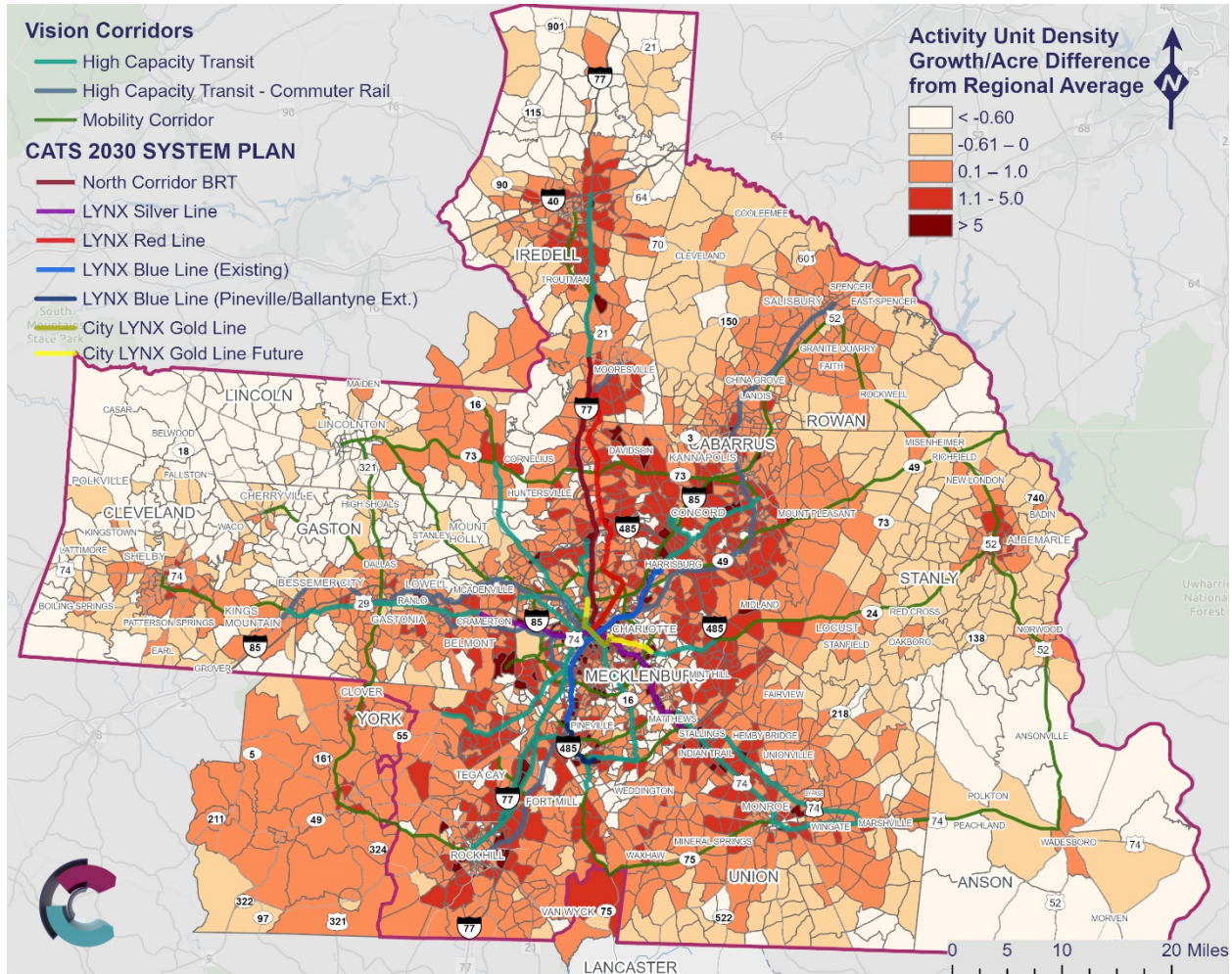


FIGURE 6 - JOBS + POPULATION GROWTH PER ACRE RELATIVE TO REGIONAL AVERAGE, 2018 – 2045.

Figure 6 shows where population plus job growth is expected to exceed (darker colors) or lag (lighter colors) the forecasted regional average of 0.6 activity units (jobs + population) per acre between 2018 and 2045. Each of the 10 zones anticipated to attract the most growth is in Uptown Charlotte. These zones are anticipated to add nearly 160,000 jobs and 25,000 residents, which reinforces the area as a fundamental driver of transit demand in the region. Other anticipated fast growing places within Charlotte include the Bojangles Arena area, SouthPark, Tyvola, North Park Mall, University City, and Dixie-Berryhill. Outside of Mecklenburg among the fastest growing places include downtown Albemarle, Stallings along the proposed Silver Line, downtown Kannapolis, Harris Square in Harrisburg, Indian Trail, and Fort Mill.



FIGURE 5 - MANY OF THE FASTEST GROWING PLACES IN THE REGION ARE EXPECTED ALONG EXISTING AND PLANNED TRANSIT LINES.

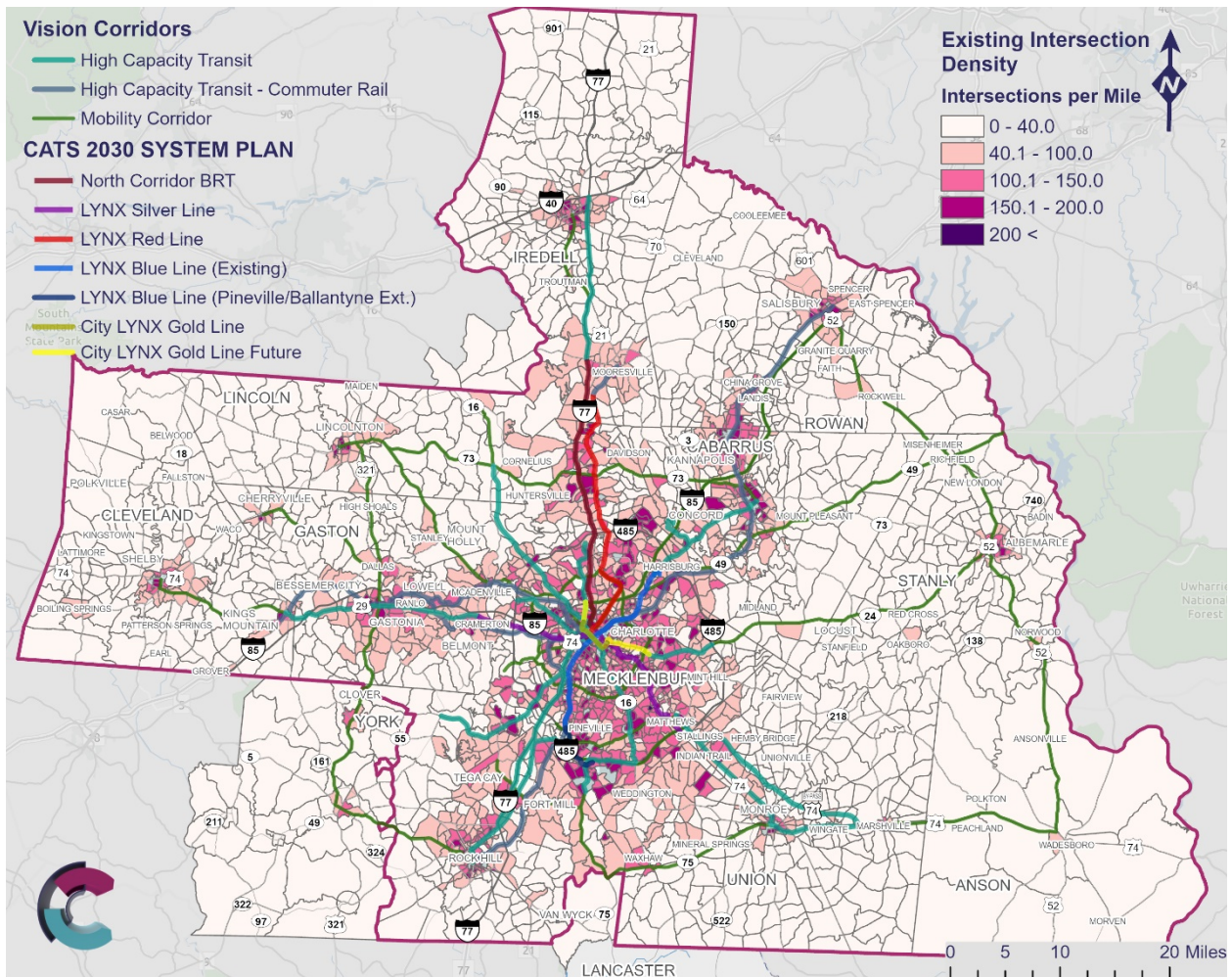


FIGURE 8 - INTERSECTION DENSITY (INTERSECTIONS PER SQUARE MILE).

Intersection density follows a slightly different pattern from land use intensity. Here the places with the highest scores are smaller cities and towns. A place such as downtown Lincolnton, shown in **Figure 7**, has very high intersection density of about 400 intersections per square mile, created by its short block lengths of between 275 and 350 feet in the downtown area.

Other places in the region with high intersection density include Rock Hill (420 to 675), Monroe (390), Uptown Charlotte (360 to 385), Mint Hill (350), Marshville (320), Ballantyne (315), Concord (285), Shelby (275), Monroe (265), Kings Mountain (260), Kannapolis (245), Statesville (235), and Gastonia (225).



FIGURE 7 - DOWNTOWN LINCOLNTON'S SHORT BLOCKS OF 275 TO 350 FEET SUPPORT GOOD WALKABILITY.



Model Strategies

Introduction

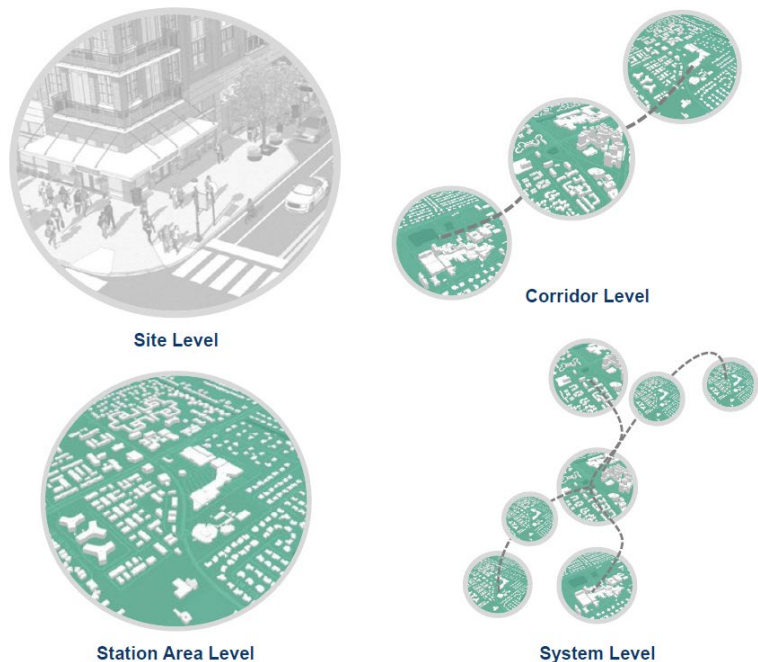
There are three important scales to consider when planning for the creation of more transit supportive places over time: corridors, centers, and sites. CONNECT Beyond has identified several multimodal corridors where the overarching goal is to provide a range of transportation options. Therefore, planning for transit supportive development at the corridor scale means continuing to coordinate regionally on land use, housing, and economic development policies and strategies to attract more jobs and households to these corridors. As more people and jobs are targeted to the corridors, there is an opportunity for local governments to establish policies to support the creation of transit supported centers. Centers are places where the goal is to create a mix of activity in compact, walkable, and nodal patterns within the ¼ to ½ mile radius of the corridor. These are places where existing or future transit stops, stations, mobility hubs, or park and ride facilities would ideally be located. Finally, within the centers, creating transit supportive conditions at the site scale means having good site design requirements to orient individual parcel level development to the walkable and transit supportive scales. Figure 9 depicts and describes these different scales.

Site level: Building form, streetscapes, stormwater and parking a focus

Station area level: One-quarter to one-half mile station area where total density and mix of uses a focus

Corridor level: Multiple station areas where total number of jobs and housing a focus

System level: Multiple corridors where intermodal connectivity and different travel sheds a focus



Corridors

Corridor-level planning and strategy is needed to realize the growth vision of CONNECT Our Future and the mobility vision of CONNECT Beyond. The prevailing development pattern outside of the region's urban core is marked by low density and a separation of land uses. Several notable exceptions exist, such as the traditional town and city centers and newer development that reflects traditional neighborhood



design principles, such as Birkdale Village in Huntersville. The key overarching strategy at the corridor level is to attract as much development as possible into existing and future centers located along the high-capacity transit and commuter rail corridors. Encouraging the growth of walkable centers along emerging mobility corridors is also important, as this will support people walking, bicycling, and using local fixed route transit services to access destinations.

Key Considerations at the Corridor Scale

Corridors can encompass a range of transit technologies and contexts.

- The location and right of way for transit so development can be encouraged in centers along it.
- The potential transit technology and target operating speed so the form and intensity of centers can support it.
- The spacing between existing and future centers and stations, which will vary by transit technology but for high-capacity transit tend to be about one mile.
- The corridor end points and length (typically about 15 miles, but increasing to 25 miles for commuter rail)

Corridor Types

While the 12-county region lacks examples of full-fledged transit-oriented development outside of Mecklenburg County, several places along the proposed future transit and mobility corridors possess the key ingredient of a walkable street grid. Additionally, the region's growth means many new developments will appear in coming decades and each is an opportunity for transit supportive development. There are several key metrics the region can use to track the progress of the CONNECT Beyond corridors towards supporting transit.

Research conducted on more than 250 transit corridors across the United States demonstrates that the more a corridor increases its level on the metrics listed in **Table 1**, the more likely people are to walk, bike, or use transit for trips within the corridor. While there is not a perfect way to assess a corridor for transit supportiveness, the metrics below can be helpful for sorting corridors into one of three categories, which also provide planners, local government officials, and the public with a sense of the type of transit they are prepared to support, and the improvements and strategies needed to become more supportive of transit over time. The general characteristics of the corridor types are also described in a qualitative manner below.



TABLE 1 - KEY CORRIDOR MEASURES. SOURCE: TCRP RESEARCH REPORT 197: LIVABLE TRANSIT CORRIDORS (2016)³

Corridor Type	Population per Acre	Employment per Acre	Transit Employment Accessibility ⁴	Walkability (Intersections per Square Mile)	Pedestrian Safety (Collisions per 100,00 residents)
Emerging	10	4	8,512	85	13
Transitioning	20	9	23,547	116	8
Integrated	40	29	48,471	168	5

Emerging Corridor

This corridor type is lower-density with large blocks of land dedicated to a single land use (such as residential or commercial). These corridors are more auto-oriented, which means higher speed highways and roads are the tool for providing mobility. Transit services are typically limited, and the combination of density and form means they are not ready for high-capacity transit. As a rule of thumb, fixed route bus service tends to become viable at 10 activity units (population + jobs) per acre.

Transitioning Corridor

These corridors are evolving from lower density, single land use areas to being more transit supportive through the development of transit-accessible destinations, which are compact, mixed use, and walkable centers. These centers may emerge on undeveloped greenfield sites or through infill development and redevelopment within existing places. These corridors may not be ready to provide the ridership necessary to justify investment in a fixed-route transit service, but they are on their way.

Integrated Corridor

These corridors are highly transit supportive. They serve compact centers with a rich mix of land uses, and offer fairly direct pedestrian routes. They contain a high amount of jobs and housing. High-capacity transit services, such as light rail and bus rapid transit, are viable alongside local fixed route bus services. As a rule of thumb, it takes about 60 to 100 activity units (jobs + people) per acre to support high-capacity transit services.

Figure 10 indicates where the CONNECT Beyond corridors are presently relative to the average activity unit density that is associated with the three corridor types. Many corridors inside Interstate 485 on this single measure would fall within the transitioning and integrated corridor types. Outside of Mecklenburg County the activity density would place most corridors in the emerging category. However, there are nodes that fall within the transitioning category. This map is not intended to classify corridors into a single type. The purpose is to illuminate where the corridors are on their journey to being more transit supportive from a land use density perspective. The map also highlights existing nodes that may be ready to support more transit now or represent places that may be ripe to become more transit supportive in the near-term through the application of strategies outlined in the following sections.

³ [TCRP Research Report 187, Livable Transit Corridors: Methods, Metrics, and Strategies.](#)

⁴ Jobs within a 45-minute transit commute, distance decay weighted.

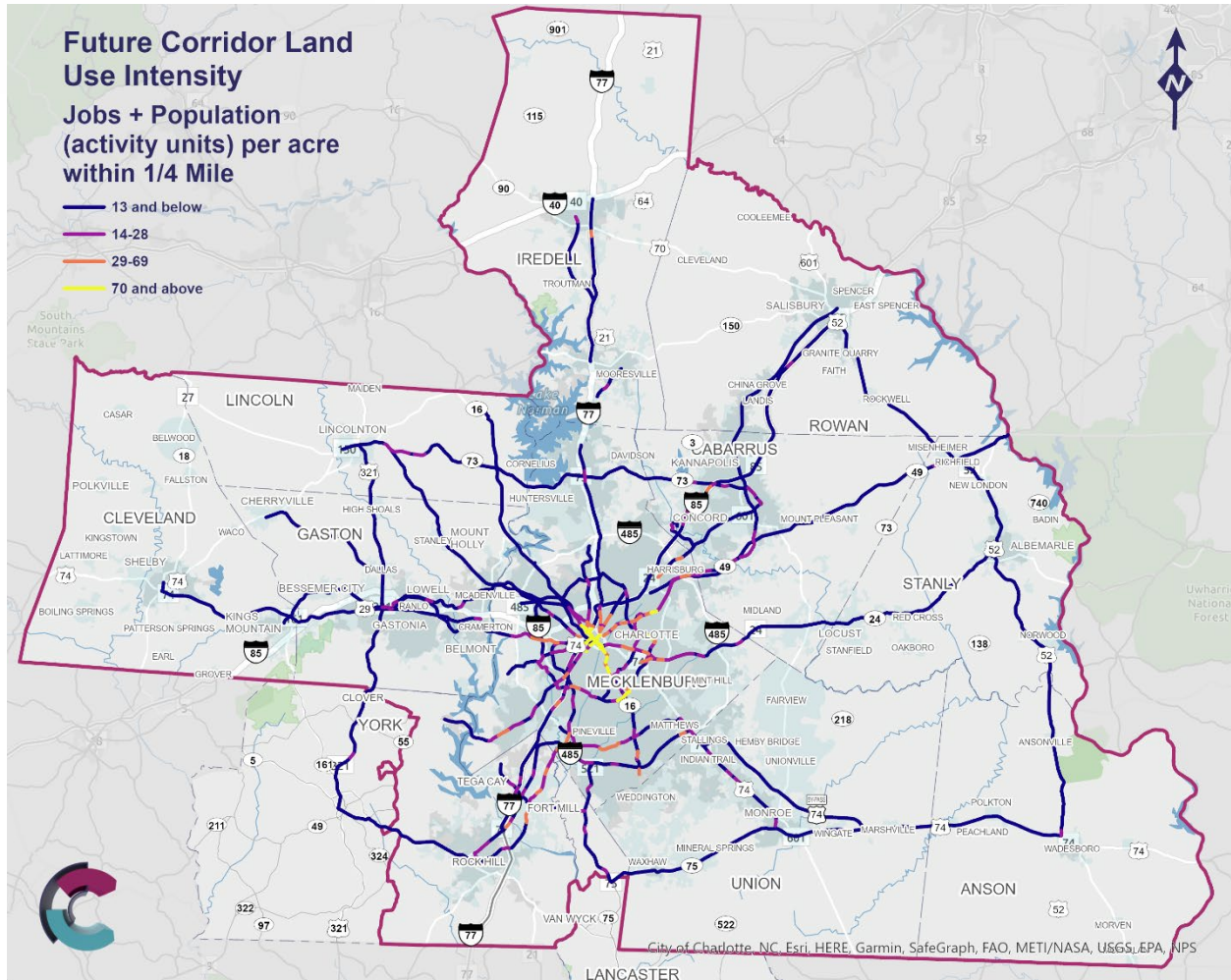


FIGURE 10 - LAND USE INTENSITY ADJACENT TO CONNECT BEYOND CORRIDORS

Corridor Strategies

Jurisdictional and interdisciplinary challenges are common to corridor planning efforts. Jurisdictional challenges occur because corridors cross the boundaries of many local governments, each of which has jurisdiction over land use decisions. Successful corridor planning and moving towards regional goals for growth and development relies on coordination and collaboration among the jurisdictions.

Interdisciplinary challenges arise because many stakeholders with differing perspectives and priorities must collaborate in corridor planning. For example, transportation and land use planners may have competing priorities. Regional leadership is important for helping establish a corridor vision that can bring together and harmonize the interests of multiple jurisdictions and disciplines. The following strategies aim to address these two key overarching challenges and encourage more development within centers along future transit corridors.



CONNECT Beyond

A Regional Mobility Initiative

Incentivize Local Planning Consistent with the Regional Vision

This strategy entails Centralina Regional Council and/or the region's MPOs providing planning assistance to local governments interested in aligning their plans and development codes with the CONNECT Our Future regional vision. This program would support key steps in the process of creating places that support transit, such as identifying growth areas and conducting small area planning to achieve the intensity of development, diversity of land uses, and connected walkable streets needed to support transit.

Strategy Example – Northeast Ohio (Cleveland) Areawide Coordinating Agency's Transportation for Livable Communities Initiative (TLCI)

The TLCI program advances the goals of NOACA's Regional Strategic Plan. Planning awards can be used for activities that specifically facilitate and promote sustainable development, multimodal transportation, and complete and green streets. Examples include but are not limited to:

- Transportation plans supporting redevelopment
- Bicycle and pedestrian network/complete streets implementation plans
- Transit-oriented development plans
- Neighborhood traffic calming plans

NOACA makes awards for up to 80% of the total project cost. The 2019 Planning Study awardees received between \$37,000 and \$120,000 each. The program also includes implementation awards that start at a \$100,000 minimum. The TLCI program is federally funded and is a line item in the MPO's Unified Planning Work Program. Since its inception in 2006 NOACA has supported more than 130 planning studies with about \$9.3 million in funding.

Establish a Shared Corridor Vision & Goals

This strategy supports multi-jurisdictional planning and collaboration to create a shared vision and goals for a particular corridor. The vision should articulate the transit technology, location and spacing of centers, and land uses within and between centers. Scenario planning can be a useful tool to support the development of a corridor vision. Ideally the outcome is policy alignment among local governments (horizontal) and between local governments and the regional vision (vertical).

Strategy Example – Silver Line Transit-Oriented Development Study

Through this study the Charlotte Area Transit System is working with Gastonia, Belmont, Matthews, Stallings, and Indian Trail to develop station area plans, outline infrastructure investments, assess TOD market readiness, and perform an affordable housing evaluation for areas along the proposed Silver Line light rail corridor. This is a key step for helping align local land use policies and regulations with an impending transit corridor investment.



Align Local Growth Areas with Corridors

Transit supportive development strategies depend on local government support. Local governments can take steps immediately to designate target growth areas in their comprehensive plans, which many North Carolina communities will be updating before July 1, 2022 to comply with Chapter 160D of the North Carolina General Statutes. Working with Centralina Regional Council and their local transit provider, the local government can align growth areas with proposed transit corridors, identify opportunity sites within the growth areas, and develop small area plans that encourage the development of walkable, compact, and mixed use centers. If specific alignments and station areas are known, these centers can be designed as transit-oriented development. **Figure 11** shows the future land use map from Stalling’s Comprehensive Plan, which is a local example of this strategy (see).

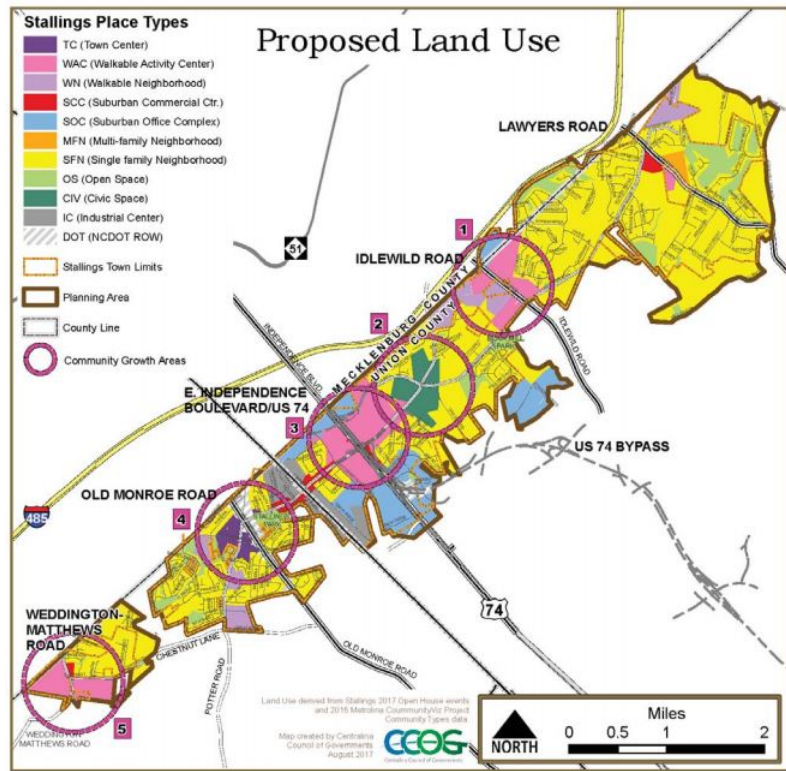


FIGURE 11 - STALLINGS COMPREHENSIVE PLAN DESIGNATES THE AREA AROUND A FUTURE LIGHT RAIL STATION AS A WALKABLE ACTIVITY CENTER

Strategy Example - Stallings Comprehensive Plan Community Growth Areas

The Town of Stallings is anticipating the arrival of the Silver Line light rail by coordinating its “community growth areas” planning approach with the corridor planning of CATS. The Town has designated the approximately ½ mile radius around the future transit station at Independence Boulevard and Stallings Road as a “walkable activity center” in its future land use plan. This designation allows for transit supportive development intensity (up to 30 dwelling units per acre and five story buildings) and form (connected streets fronted by buildings). The comprehensive plan calls for the development of a small area plan for the node and all other community growth areas.

Coordinate NC DOT Plans and Projects with CONNECT Beyond and Local Visions

Walkability is a fundamental aspect of transit supportive development. However, many streets, particularly in suburban areas, have been designed to emphasize vehicles and therefore support high vehicle speeds to provide access to destinations. A viable alternative approach is to bring people



physically closer to destinations by increasing land use intensity and mix and providing a robust network of streets where walking, bicycling, and transit can provide access. These competing approaches often underlie tension between regional or statewide transportation goals and local goals for development,

Strategy Example - Florida DOT Context Classification

The Florida DOT designates “context classification” for all non-limited-access state roadways. The context classification system considers the land use characteristics, development patterns, and street connectivity for the areas traversed by a roadway. Based on this information, FDOT assigns a context classification to roadway segments ranging from C-1 (natural) to C6 (urban core). The context classification guides the identification of design users, speed, and vehicles, which ultimately informs the cross section and multimodal features included in design. The state assigns context classification based on existing and desired future conditions. Context classification supplements, rather than replaces, the more traditional functional classification. This context sensitive approach to street design is managed by the state’s Complete Streets Program Manager. It is applicable to CONNECT Beyond because better alignment of state roadway design with local and regional visions for multimodal centers and transit corridors will support the realization of the CONNECT Beyond vision.

land use, and transportation. A solution is to allow for flexibility in roadway and street design that reflects the local context - both existing and the future desired form of development. This strategy can allow for “through corridors” with higher speeds to connect nodes of development in the region, and “placemaking corridors” where speeds are lower and the emphasis is on other modes of transportation and the land use mix and development form.

Support Local Development Review

The incremental nature of local development is another challenge to achieving a regional vision. Providing regional land use and transit planning staff from Centralina Regional Council, CATS, and other transit agencies to participate in local development reviews for major projects is one strategy for addressing this challenge. This approach, if supported by the local government, helps ensure consideration of future transit needs. Staff can share their input on where right of way preservation may be needed for corridors or station areas, where transit shelters would be most suitable, and needed walkways between development and transit services.

Strategy Example – Pace Suburban Bus Design Review Assistance for Transit (DRAFT) Program

Pace provides transit services to the Chicago region’s suburban communities. Through this program, Pace offers complementary in-house technical review of local development proposals to promote the incorporation of transit-supportive development features in suburban developments. The Pace Transportation Engineer administers the program. Pace has also developed Transit Supportive Guidelines that local governments can use and can support Pace’s design reviews.



Centers

As existing and emerging areas of activity are identified along the proposed transit and mobility corridors, it is important to define the centers of activity (“centers”) and the ½ mile walkshed around existing or future transit stops or stations, mobility hubs, or park and ride areas. This empowers local jurisdictions and decisions makers to organize where targeted growth will be located. Walkable design, diversity of land use, and public gathering spaces all combine to create a sense of place in these centers.

Key Considerations at the Center Scale

Centers can encompass a range of places from walkable mixed use centers served by fixed route transit to high intensity transit-oriented developments along high-capacity transit corridors.

- Identify potential station areas and center types based on the desired balance of jobs and housing, development densities, and the design elements and parameters
- A TOD readiness assessment for centers along high-capacity and commuter rail transit corridors, which considers the following indicators of TOD readiness and assesses gaps:
 - o Existing jobs and housing balance
 - o Existing activity unit density (jobs + housing)
 - o Existing street networks
 - o Regulatory framework
 - o Market demand for TOD

Regardless of the scale (downtown to main street) there are some universal design principles that apply to the creation of transit supportive centers as described below.

Gridded Street Network, Walkable Block Sizes, and a Hierarchy of Street Types

A gridded street network with walkable block sizes creates optimal conditions for walkability and more compact patterns of development. Grid patterns also benefit slower moving auto traffic, pedestrians, and bicyclists by providing multiple pathways to reach destinations. Within centers, the gridded patterns can also be assigned a street hierarchy to further prioritize streets where high levels of pedestrian activity is desired (e.g. main streets with retail frontage) and to accommodate corridors where higher speed autos or transit vehicles may need to pass through. The street types can then help identify priority areas for infrastructure and operational and public realm improvements to reinforce the priority modes of transportation by street type modal emphasis.



Example Strategies

- Assess and fill in street network gaps, aiming for block lengths of 250 to 500 feet.
- Conduct walk and bike safety audits within the ½ mile walkshed of desired transit supportive centers to identify needed infrastructure improvements.
- Identify primary walk streets or pedestrian streets within centers where additional traffic calming measures such as narrowed lanes, crosswalk improvements, speed tables, and pedestrian-activated rapid flashing beacons at mid-block crossings may be needed.

Pedestrian Oriented, Street-Fronting Buildings

Building entrances oriented toward the street are more inviting to pedestrian traffic than a blank wall or an entrance set back by a vast parking lot. This aspect of form helps create a lively pedestrian realm that increases walking and people's sense of security.

Example Strategies

- Require new buildings to be oriented toward streets with minimal setbacks, permeable first floors and no parking between the curb and building frontage.
- Create a highly walkable public realm by transition from a use-based to a form-based code that uses physical form as the primary organizing element. Form-based codes regulate form elements such as height, mass, and orientation to the street while providing more flexibility on uses.
- Locate parking in the rear, on the side of buildings, or in multi-level structured parking to minimize the distances pedestrians have to walk between destinations.

Mix of Uses and Compact Design

Mixed-use development places origins and destination close together. Compact, higher density development located within walking distance of transit means more of the region's people and jobs are located in places where they have options to walk, bike, take transit, or access multiple daily destinations through less or shorter car trips. The mix of land uses should complement one another and be based on the character of the area. For example, neighborhood-scale retail and food shops complement residential uses, while major entertainment venues complement intensely developed urban centers.

Example Strategies

- Aim for transit-supportive densities within centers, such as about 10 people + jobs per acre for fixed-route transit and 60 or more per acre for high-capacity transit, such as light rail.
- Set minimum building height targets within the first ¼ mile of high-capacity transit stations.
- Create mixed use zoning districts that encourage vertical or horizontal mixed use within ½ mile of existing or proposed transit stops or stations.
- Set mixed use targets within transit supportive centers to monitor the balance of housing (origins) and jobs (destinations)

Mixed-Income Housing Near Transit

Combined housing and transportation costs represent a significant share of a household's budget. People who live in walkable, transit served areas can live a car-lite or car-free lifestyle and therefore spend less



money on transportation. Providing housing for all income levels near transit ensures that the transportation network is effectively serving all users. Well-connected and walkable neighborhoods have become a sought-after amenity in the housing market. This tends to increase property values in areas with these characteristics, which can cause long-term residents to be pushed out by rising rents. Often the people displaced are those that stand to benefit most from the improved transit service. Thus, it is important to have proactive strategies for equitable access to transit.

Example Strategies

- Enable a range of higher density housing (small lot single family, townhomes, mid-size and high rise multifamily) within ¼ to ½ mile of transit stops within centers
- Advance the preservation and creation of affordable housing within transit supportive centers
- Leverage financing resources like Low-Income Housing Tax Credits.
- Offer developer incentives such as density bonuses for providing affordable housing near transit.
- Reduce per unit parking requirements for affordable housing units near transit.
- Pursue joint development agreements to use transit-agency owned property to provide housing.
- Partner with community land trusts to obtain land near future transit stations and build housing.
- Create a regional TOD fund to provide low cost financing for housing development near transit.

Manage Parking Efficiently

It is important to provide needed vehicular parking in centers, however not at the expense of maximizing development potential within ¼ to ½ mile radius of a transit station or the pedestrian experience. Large areas of surface parking are not the best and highest use adjacent to stations; rather this land is best positioned for housing, retail, offices, civic uses, and public spaces. Parking should not be placed between the curb and building frontage; rather it should be placed behind buildings, under or over an active ground floor use (such as retail), and otherwise dispersed throughout the area with on-site and street parking options.

Example Strategies

- Conduct a parking audit to understand and better align parking supply and demand.
- Allow complementary uses with different peak demand periods to share parking (e.g. office parking with high daytime peak needs and restaurants with high evening peak needs).
- Consider setting a parking maximum instead of a parking minimum, reducing it near transit.
- Meet parking demand through central facilities that support a “park-once” district.⁵
- Provide bike and pedestrian infrastructure and make direct connections to transit stops and incorporate emerging mobility features such as scooters and bike share to close last mile gaps.

Stormwater Management and Open Space

Stormwater management and the provision of open space are key needs within transit supportive centers. They require careful planning so they contribute to the sense of place and can serve multiple purposes. Poorly planned stormwater facilities and open spaces can become unproductive land that

⁵ <https://www.mapc.org/resource-library/creating-a-park-once-district/>



neither contributes to land uses that support transit nor provides green infrastructure services (such as absorbing stormwater) or providing respite and nurturing social connection. One key strategy is to plan for these critical elements of place at a district level, in the small area planning process, and to fund them through pooled resources rather than requiring them on a one-off, site by site basis.

Example Strategies⁶

- Identify public green spaces within a comfortable walking distance for everyone in the center.
- Co-located stormwater treatment facilities with green open spaces and pocket parks to maximize the uses and benefits of undeveloped areas within the center.
- Consider a stormwater fund within a transit-supportive district for developers to contribute towards a district wide, connected stormwater system in exchange for a density bonus.

Community Character and Placemaking

The physical design of centers along a transit corridor should complement the existing character of the surrounding area. Placemaking refers to a planning process that views individual sites as parts of a whole public space; the elements of each site are planned in light of the function that the community wants that public space to serve. Placemaking focuses not just on how a place looks, but how it feels and functions.

Example Strategies

- Provide open space for recreation within a short walking distance of housing.
- Incorporate local public art on building facades, transit shelters, and public buildings.
- Expand existing cultural venues along corridor into unused spaces to activate them.
- Connect people to destinations with wayfinding signage that reflects a place's character.

Centers and Community Character Types

There are many places across the region that already have some of the key design features of transit supportive development. Those places are logical locations for continued emphasis on creating transit supportive patterns. The following table presents a series of community character types that build on existing features to create a template for more transit supportive conditions in the future. Community character types provide local governments and the private sector with a range of options for achieving transit-supportive conditions over time.


The community character types are organized in the table below by their typical development intensity and walkability. City infill represents the densest community character type; most of these places are found in Charlotte along existing or proposed high-capacity transit lines. Main Street communities are naturally walkable and developed in a moderately intense manner; they are well situated for transit because many were developed to be walkable. Suburban retrofit is a community character type that is commonly found across the country along major roadways outside of the compact and dense urban core. The word "retrofit" implies that significant investments are needed to build a more connected street network and reconfigure land uses to be ready to support transit. Rural crossroads are smaller communities scattered across the region, but mostly towards the periphery. Their form and intensity of




⁶ [U.S. EPA's Using Smart Growth Techniques as Stormwater Best Management Practices.](#)



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Beyond**
A Regional Mobility Initiative

development is not able to support traditional fixed route or high-capacity transit, but there is a great need for transportation options, especially to serve lower income and aging residents.

CHARACTER TYPE	DESCRIPTION OF EXISTING FORM	GENERAL STRATEGY FOR TRANSIT SUPPORTIVE DEVELOPMENT
 <p>City Infill <i>Examples: Uptown Charlotte, SouthPark, light rail station areas</i></p>	<ul style="list-style-type: none"> • Medium to High Intensity: 25 to 750 jobs + population per acre • Grid pattern of streets • Mix of uses • Buildings 5 stories and taller • Buildings front the street • Structured parking 	<ul style="list-style-type: none"> • Infill vacant and underutilized lots • Reinforce the street grid pattern by connecting streets, adding new streets, and connecting existing pedestrian paths • Identify the station location and emphasize highest intensity and mix of uses in the first ¼ mile • Plan corridor alignment to maximize development potential within the first ¼ mile of a stop
 <p>Main Street – Regional <i>Examples: Statesville, Salisbury, Monroe, Rock Hill, Albemarle, and Gastonia</i></p>	<ul style="list-style-type: none"> • Medium intensity: 10 to 25 jobs + population per acre. • Medium intensity • Traditional downtown, grid of streets • Offices and housing above retail • Buildings 5 stories or less • Density tapers within ½ mile or less • Surface & structured parking 	<ul style="list-style-type: none"> • Identify a jobs + housing intensity that (1) supports the desired transit and (2) fits within existing context • Implement policy that enables the appropriate increase in intensity • Repurpose older buildings that have outlived their original use to increase jobs and population near transit while respecting character • Encourage housing in upper stories and on vacant lots • Invest in small scale walkability improvements to increase pedestrian safety and reduce the level of traffic stress for pedestrian and bicyclists (such as raised crosswalks, curb bump outs, street trees, landscape buffers, etc.) • Create a “park once” district with central parking facilities rather than scattershot parking supply that exceeds parking demand • Emphasize siting of cultural facilities and employment as regional Main Street communities are typically economic centers for a sub-region
 <p>Main Street – Town <i>Examples: York, Kings Mountain, Davidson, Lincolnton, and Wadesboro</i></p>	<ul style="list-style-type: none"> • Low intensity: 5 to 10 jobs + population per acre • Traditional downtown, street grid • Retail with some vertical mixed use • Buildings typically 1 or 2 stories • Density tapers within ¼ mile or less • Surface parking 	<ul style="list-style-type: none"> • Same as Main Street Regional, but tailored to respect the existing context, which tends to be of a lesser intensity and height. • Intensity of development may not support high transit ridership on its own; site park-and-ride lot facilities strategically to preserve high value lots closest to a stop/station for active uses.

CHARACTER TYPE	DESCRIPTION OF EXISTING FORM	GENERAL STRATEGY FOR TRANSIT SUPPORTIVE DEVELOPMENT
 <p>Suburban Retrofit</p> <p><i>Examples: Northlake Charlotte, Carolina Mall Concord, Indian Trail, Lake Wylie</i></p>	<ul style="list-style-type: none"> • Intensity varies: Typically, 10 to 25 jobs + population per acre • Higher speed/capacity roads • Single use and strip development • Buildings typically 1 story • Buildings front parking • Surface parking 	<ul style="list-style-type: none"> • Focus on creating a connected network of streets. Fill in gaps in the network and require short block lengths for new development or redevelopment. • Reform development codes so that future buildings front the street and include a mix of uses at greater intensities. • Prioritize walkability over high vehicle speeds in street design. • Plan corridor alignment to maximize development potential within the first ¼ mile of a stop.
 <p>New Community</p> <p><i>Examples: Dixie/Berryhill and Old Coliseum (Charlotte), Rocky River (Cabarrus)</i></p>	<ul style="list-style-type: none"> • Intensity should be planned with the desired transit service in mind. • Greenfields with transportation access • Often large sites • Largely a blank canvas • Residential only to planned mixed use • Opportunity to plan for transit 	<ul style="list-style-type: none"> • Plan with transit in mind from the beginning. Dedicate land for the transit corridor and station before development. • Place the highest intensity development within the first ¼ mile of the station area; emphasize higher density housing and a mix of uses, including civic uses, in this area. Parking is minimal within the first 1/8 mile. • Build a network of connected and walkable streets • Create a network of civic squares and green spaces
 <p>Rural Crossroads</p> <p><i>Examples: Richfield, Locust, Iron Station, Midland, and High Shoals</i></p>	<ul style="list-style-type: none"> • Low intensity: 1 job + population per acre • Scattershot development near major road junction • Range of uses including industrial and agricultural • Building 1 to 2 stories • Buildings set back from streets 	<ul style="list-style-type: none"> • Consider the economic future of the place in planning for transit. Places wanting to retain a rural character will need to contribute transit ridership through means other than development, such as demand-response services, trails, and park and ride lots. • Places that wish to support transit service may want to consider creating a small area plan. This plan should identify the location and form of future development and coordinate with plans for transit. In these areas the strategies for Main Street communities may apply.



CONNECT Beyond

A Regional Mobility Initiative

General Process Considerations

This section outlines several key steps in the process of planning for transit supportive development within a center. Other steps should be included as needed to respond to unique local circumstances. While a large, one-developer catalyst project can be ideal to jump start transit supportive development, an incremental design approach to multi-parcel, multi-owner land areas is more common. The following general process considerations can apply in either situation.

- 1. Define Center and Half-Mile Walkshed:** Transit supportive centers should be areas where there is already a baseline level of jobs and employment activity to support transit, or areas that are desired to accommodate additional development over time. Establish boundaries about $\frac{1}{2}$ mile from the center that intersects with the existing or future transit corridor, or a central district that will be supported by a transit circulator that respect natural features, barriers to connectivity (such as highways), adjacent land uses and development potential.
- 2. Identify Station Locations:** Identify the specific location of a future transit stop or station because it should guide the height, intensity, and mix of uses within the center. The most intense development in transit supportive design should occur within the first $\frac{1}{8}$ mile of the station and step down from the center to the edge.
- 3. Create a Small Area Plan:** Develop a small area plan for the center that establishes policy for land use, community design, street types and connectivity, and green infrastructure. Consider if the plan needs to serve as a regulating plan for a form-based code, as this must shape what is included in the analysis and plan. Incorporate outcomes from the following steps into the plan.
- 4. Define the “Green Infrastructure”:** Identify wetlands, streams and daylighting opportunities, riparian buffers, and other environmental features to preserve or restore. These landscape features constitute “green infrastructure” that contributes to a sense of place, provides open spaces for gathering or relaxing, and accommodates stormwater management needs.
- 5. Conduct a Market Assessment:** Plans and policies should reflect local market conditions and accommodate anticipated demand for various land uses within the center. A thorough market assessment also supports collaboration between public and private stakeholders.
- 6. Analyze Street Grid, Path, and Block Design:** Assess the existing street network to identify opportunities to create or enhance the street grid. Special attention should be paid to parcel delineations and drive aisles in commercial development when looking for opportunities to make new connections. A block design of 250 x 250 to 500 x 500 feet with safe street crossings creates a comfortable walk experience that encourages walking and biking in the center.
- 7. Analyze Multimodal Connectivity:** Overlay existing and proposed transit, bicycle, and pedestrian networks to identify gaps in the multimodal network and provide an opportunity to plan future streets and paths with the intent of creating a more connected system. Identify the appropriate location for a mobility hub and include the appropriate modes necessary to address last mile connections and provide for easy access between the station area and destinations in the center.
- 8. Consider Infrastructure Design:** Identify the needed stormwater, parking, and open space infrastructure and plan for providing it at a district level rather than the traditional approach of requiring it on a site-by-site- basis. This approach allows for systems to be shared and distributed on a larger scale to serve multiple sites.
- 9. Seek Implementation Partners:** Establish partnerships with anchor institutions - such as hospitals, colleges and universities, and museums – that can potentially support a community’s goals for transit supportive development by placing their facilities near future transit corridors and stations. This can serve as a catalyst for other development, which ultimately increases transit demand and ridership. It is also important to seek out developers that support the vision and know how to deliver a transit supportive product.
- 10. Update the Code:** Amend the development code, as needed, to support the adopted plan and policies for transit supportive development. Options include amending the base zoning districts and developments standards, creating an overlay district, or creating a form-based code.



Sites

The site scale refers to a development parcel or cluster of connected parcels typically under one owner or ownership group. Transit supportive site design clusters development into compact, building massing of vertical and horizontal mixed use that orients as many front doors as possible to streets within the one-quarter to one-half mile walkshed. Well-designed buildings oriented to connect people to future transit, jobs, and housing are integral to transit supportive development.

Key Considerations at the Site Scale

The site could encompass a single parcel in an existing community that a developer plans to redevelop or repurpose to a large master planned community on a parcel several acres in size under one owner.

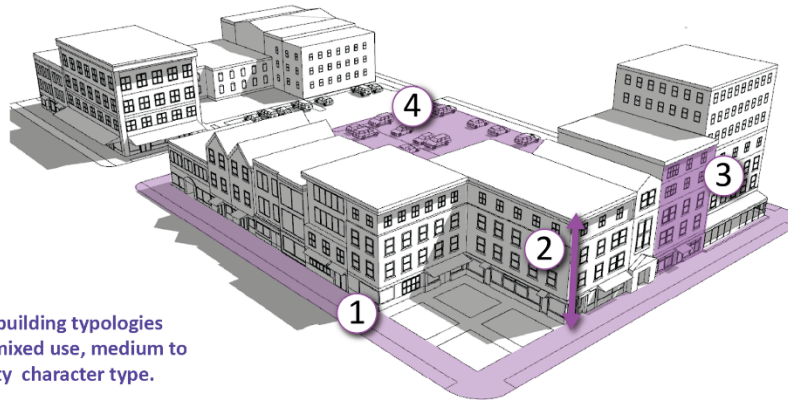
- Environmental features to protect sensitive features and identify open spaces.
- Street design and block dimensions, which should be focused on encouraging walking.
- Connections among transportation modes, which are facilitated via mobility hubs.
- Infrastructure design including parking, stormwater management, and open space.
- Building height, lot coverage, and mass to allow for the development intensity to support the planned transit type while respecting the context and form of existing development as possible.

Transit supportive building standards or guidelines encourage developers to build human scale, walkable environments, and concentrate on the interface between the private and public realms. While design will vary greatly between community character type and context, building use, desired aesthetic, and intensity, building design guidelines usually focus on the general categories of building orientation and setbacks, building height, architectural and landscape standards, and parking location and standards. Some key considerations for these elements of site design are described below.



CONNECT Beyond

A Regional Mobility Initiative



Example of building typologies found in a mixed use, medium to high intensity character type.

1 Building Orientation and Setbacks

A building's location on the parcel should be oriented to walkable, primary streets where land uses can engage with an activated street front. Zero lot line setbacks allow for a pedestrian zone between the back of curb and building frontage with no separation. Design elements and amenities can include wide sidewalks, landscape buffers and trees, space for outdoor eating and seating, lighting, public art, trash receptacles, and other pedestrian amenities. Pedestrian zone dimensions range from a preferred 8' minimum for wide sidewalk to 20+ feet for cafe seating and other amenities.



2 Building Height

Building height should be appropriate for the desired place type character density and sensitive to adjacent uses. Building height greatly influences the pedestrian experience. Design character of the ground level floor is key and should emphasize pedestrian scale. Design elements such as awnings and material variation create a comfortable environment and activate the streetscape. Building setbacks can be used to create proportion between the building height and street width for a more comfortable pedestrian experience.



3 Architectural and Landscape Standards

A uniform, aesthetically pleasing building front engages the streetscape and creates a welcoming pedestrian experience. A set of building facade standards fosters predictable built results. Building design elements such as materiality, transparency minimums, lighting, signage, awnings, planters, shade trees, low impact development, etc. should be considered when developing facade standards. Facade standards should reflect the preferred place type and the values and culture of a unique place where appropriate.



4 Parking Location and Standards

Transit supporting parking standards and policy will vary greatly between place type. In general, parking should be shared-use and may take the form of underground, structured off-site parking, surface shared lots, and on-street parking. Shared-use lots should be located in the rear on the buildings to maximize street frontage. Parking policies should be evaluated for land use efficiency.





Other Transit Supportive Site Design Considerations

Curbside Management Strategies

The curbside has become highly sought-after real estate. Curbside management seeks to balance the needs of all roadway users including bicycles and pedestrians, transit and transit infrastructure, delivery vehicles, emergency vehicles, and taxis and transportation network companies (TNCs) like Uber and Lyft. With the growth of TNCs and online shopping demand for curbside pickups, drop-offs and dwell times are growing dramatically. Jurisdictions across the United States are recognizing the value of their curbsides as flexible zones and are adopting and acting on policies that prioritize reliable transit and safe bicycling infrastructure first, followed by other important uses of the curb like deliveries, passenger pick-ups, green stormwater infrastructure, small public spaces, and managed parking. The following are a couple of key resources on the topic of curbside management strategies:

- [NACTO's "Curb Appeal: Curbside Management Strategies for Improving Transit Reliability."](#)
- [ITE's Curbside Management Resources](#)

On Site Transit Accommodations

Transit stations and shelters are where users first encounter the transit system. Proper location and design of transit accommodations, as well as service frequency and convenience, greatly influence ridership. Transit accommodations can be integrated into public spaces near jobs, housing, restaurants, and shopping to create vibrant, safe environments that promote walking and biking. However, local government development review and requirements have traditionally focused on mitigating impacts on roadway performance for automobiles. Some strategies for including transit accommodations in development review and mitigation include the following:

- Include opportunities for transit stops and safe access to them in site plan review. Transit agency staff can also be required to participate in these reviews for developments in transit corridors.
- Expand the menu of options for mitigating transportation impacts beyond improvements that benefit automobiles. While it is a special case authorized by state enabling legislation, Chapel Hill has taken a large leap towards obtaining transit improvements through development by allowing developers to make payments in support of the public transportation infrastructure – such as buses and shelters - in lieu of making traditional auto- focused transportation improvements.⁷
- Tie density bonuses to the provision of transit infrastructure. Density bonuses are also an option for obtaining commitments for long-term affordable housing near transit stations.

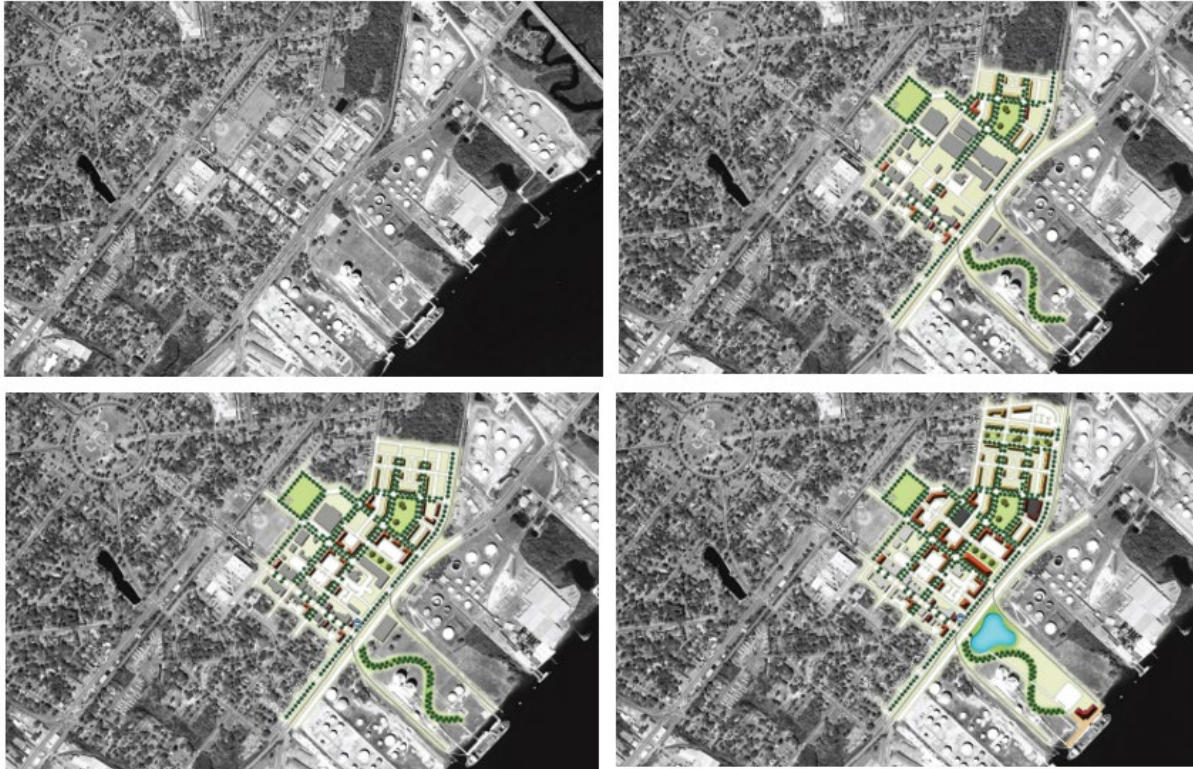
Incremental Site Design

Whether big or small projects, incremental design can employ these process and design considerations and guide design decision making when implementing transit supportive development. The example in **Figure 12** below shows a proposed larger, transit supportive infill project. A transit supportive street grid and open space plan were overlaid onto the existing site respecting existing buildings (in grey). As

⁷ Chapel Hill Code of Ordinances. Subpart A. Article 7 – Impact Fees. Section 5.43, Public transit system payments.



redevelopment opportunities occur, the parcels are incrementally developed in phases organized by the open space and street framework until the master plan is realized.



Images showing potential evolution of the Olde North Charleston neighborhood center district.
Source: Partnership for Prosperity

FIGURE 12 - EXAMPLE OF INCREMENTAL SITE DESIGN

Conclusion

Transit supportive development strategies are not one size fits all. However, some key principles apply regardless of the context. These strategies make places highly walkable, concentrate people and jobs close to transit, and to include a robust mix of uses and housing types for people at all income levels. The high-level strategies outlined in this section of CONNECT Beyond will take on more detail when they are applied in specific places. However, they get applied, they all should aim to provide enough people, jobs, and destinations within walking distance of transit to support the desired mode.