

RESOURCE PLAN



CHATTANOOGA MOBILITY STUDY

CITY OF CHATTANOOGA

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Prepared by



KCI
TECHNOLOGIES



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1.0 Introduction

The purpose of this document is to review complementary best practices that can accelerate the implementation of multimodal transportation improvements identified during area planning processes and various capital needs assessments in the City of Chattanooga – regardless of whether those plans and studies use the tools developed in the *Chattanooga Mobility Study* or not. In particular, the document discusses best practices in four closely related areas:

- Capital improvement plans;
- Other funding opportunities;
- Neighborhood programs; and
- Land development regulations.

While the City of Chattanooga has already adopted many of the best practices discussed here, either in part or in whole, the *Mobility Study* tools can further support the work in each of the four areas by delivering relatively quick impact assessments of potential transportation improvements.

2.0 Capital Improvement Plans and Community Master Plans

A capital improvement plan (CIP) plan is a tool for planning near-term infrastructure and facility needs, and typically consists of a capital budget, focused on the upcoming year, and a capital program, ranging in length from five to ten years. Ideally, the CIP aligns with the city's mid- and long-range master planning documents, such as comprehensive plans, transportation plans, strategic plans, and other capital needs studies, which outline desired growth patterns and needed infrastructure. Recommended policies, programs, and projects in these plans are intended to support the implementation of the mid- to long-range goals and objectives, while the CIP provides the near-term prioritization and fiscal path for achieving the outcomes. Consistency between a community's CIP and planning documents is considered a best practice for municipalities by planning and municipal finance professionals, including the national Government Finance Officers Association (GFOA). The lack of coordination can result in several issues, such as:

- Development/redevelopment inadequately supported by infrastructure;
- Community investments made in an uncoordinated manner; and
- Impact fees or infrastructure upgrades lacking a rational nexus or definable benefit.

The variety and complexity of municipal structures, processes, plans, and political environments contribute to the challenge of close coordination between capital plans and community master plans. To help expand transportation options in Chattanooga, the city's existing CIP structure and processes are described first followed by general best practices and a case study highlighting the CIP process in Austin, Texas.

Chattanooga develops a five-year Capital Improvement Plan, providing the framework for implementing the community's long-term goals and including a detailed, comprehensive annual budget. The city uses the GFOA recommended practice known as Budgeting for Outcomes (BFO) to create its adopted annual operating budget and capital improvement plan. The financially flexible framework allows for adjustments based on financial resources and changes in other conditions. In addition, the BFO's seven-step process, listed below, encourages cross-departmental collaboration and efficiency in delivering the services that matter most to residents and businesses.

- Step 1: Determine available funding
- Step 2: Establish prioritized results
- Step 3: Allocate revenues to results areas
- Step 4: Submit offers to achieve results
- Step 5: Prioritize offers
- Step 6: Identify performance measures
- Step 7: Monitor performance and track results

In recent years, Chattanooga has organized its annual budget and CIP around five priorities known as results areas, including:

- Safer streets;
- Stronger neighborhoods;
- Growing economy;
- Smarter students and stronger families; and
- High performing government.

Numerous agencies, city staff, elected officials, decision-making bodies, and residents participate in the seven-step process. For example, public input sessions are held during step two (establish prioritized results) to gather citizen feedback on four of the five result areas. During step four (submit offers to achieve results), various municipal agencies work independently or collaboratively to make strategic “offers” for capital projects. Importantly, in step four, the leadership team encourages all offers to include the following information:

- Clear and measurable goals;
- Multi-agency and/or multi-department collaboration;
- Mechanisms for public involvement;
- Sustainable practices; and
- Research/evidence-based best practices.

During step five (prioritize offers), teams for each of the result areas review the offers and develop prioritized rankings for submittal to the leadership team and then the Mayor. Final steps in the approval process include an additional public hearing as well as input from the Chattanooga-Hamilton County Regional Planning Commission (CHCRPA) before the budget and CIP go to the City Council for formal adoption.

The results teams are also referred to as the “CIP Committee,” an interdisciplinary team of department administrators and designees as described in the *2021 Comprehensive Annual Budget Report*. Review processes during the various steps do include criteria for scoring and evaluation, such as the City Council’s criteria for evaluating the relative merit of projects. A key capital budget policy in Chattanooga is that a proposed project cannot, “violate the principles and concepts of an adopted city plan.” Criteria used by the City Council to evaluate capital projects include:

- Projects that will increase property values in a neighborhood, residential or business district;
- Projects that have been identified as important by a priority board or department;
- Projects that will directly benefit a community development area;
- Projects that are part of a multi-year funding commitment;
- Projects that are an element of an approved master plan adopted by the City Council;
- Projects that result in the creation of permanent jobs or generate additional net revenue; and
- Projects specifically included in an approved replacement schedule.

Illustrating the flexibility inherent in the annual budgeting and capital planning process, during fiscal year 2021, capital projects increasing transportation options, including street reconstructions, street extensions, new sidewalks, new bikeways, and new shared use paths, were funded under three of the results areas – safer streets, stronger neighborhoods, and growing economy.

2.1 National Best Practices

While there is no one-size-fits-all approach, general best practices for coordinating CIPs and community master plans center on the need for carefully conceived project descriptions and a clear understanding of how individual projects fit in an overall community development strategy. Best practice strategies (Table 2-1) are divided into two sections – first, steps for improving mid- to long-range master plans and studies, and second, efforts to improve the processes for developing and approving CIPs.

Table 2-1. National Best Practice Strategies

Strategies for Improving Master Plans and Studies	
1.	Document status of prior master plan capital project recommendations.
2.	Ensure new master plans identify capital improvements needed to achieve goals and objectives, including project justification, project timeframe, and potential funding sources.
3.	Coordinate capital improvement strategies and potential projects closely with related city departments before finalizing new master plan recommendations.
4.	Update master plans regularly to respond to changes in needs and priorities.
Strategies for Improving CIP Development and Approval Processes	
1.	Identify the specific relationship between capital projects in the CIP and others plans as part of the CIP document.
2.	Require that the planning commission review the CIP and annual budgets in the context of mid- and long-range planning documents and document their consistency.
3.	Include plan consistency as a required criteria for selecting projects and approving the CIP.
4.	Ensure planning staff play an active role throughout the process, specifically during the review and ranking of project requests.

The national best practices align closely with Chattanooga's BFO processes – particularly in terms of project impacts and justification, multi-agency coordination and collaboration, and project review and ranking. Importantly, however, the tools developed in the *Chattanooga Mobility Study* can help advance transportation options in future Chattanooga capital improvement plans with their emphasis on measurable impacts and expanding transportation access to schools, transit, and jobs. A key next step to strengthen the connection among planning processes will be additional commitments to data-driven analysis in both master plans and capital improvement plans.

2.2 Case Study – Austin, Texas

The City of Austin, Texas undertook a significant effort in 2010 to better integrate its comprehensive plan and CIP (APA Planning Advisory Service Memo, 2018). Like many communities, Austin's Charter already required consistency between the CIP and land development regulations and directed the planning commission to provide an annual list of projects that are "necessary or desirable" for implementing the comprehensive plan as part of the annual budget's development process. Coordination between the two documents, however, remained limited.

In 2010, the Capital Planning Office (CPO) was established as an initial step for city project portfolio management purposes, which was previously split among various departments and Austin's budget office. The CPO was initially staffed by an executive-level capital planning officer and five professional staff members with expertise in capital project development, public engagement, information technology, and planning. Primary functions include leading interdepartmental coordination, assisting in the development of the CIP from an organizational perspective, development and oversight of several general obligation bond programs, and providing reports and data to the city council, city management, and the public as part of Austin's open government commitment. Finally, the CPO developed a planning model to assist in CIP project evaluation.

After several years, it was evident that an additional level of planning was needed to achieve desired results. The CPO then developed the *Long-Range CIP Strategic Plan* to better bridge the gap between the two documents. This plan consists of three major components – a comprehensive infrastructure

assessment, a rolling needs assessment (i.e., unfunded projects), and a strategic investment analysis, which identifies areas included in the rolling needs assessment that can address recommendations in the comprehensive plan and other planning documents. The strategic plan has further improved consistency between Austin’s planning documents. Table 2-2 highlights recommended strategies from Austin.

Table 2-2. Best Practice Strategies – Austin, Texas

Strategies
1. Improve planning staff understanding of budgeting and capital funding processes, as well as mechanisms for impacting those processes.
2. Use planning staff to strengthen cross-departmental coordination around important mid- and long-range plan goals and needs during CIP and project review and approval processes.
3. Establish a data-driven understanding of existing infrastructure conditions.
4. Develop a geodatabase consisting of CIP, mid-, and long-range plan recommended capital improvements to better track unfunded needs and near-term project implementation.
5. Evaluate the benefit of a potential high-level “capital planning or portfolio management office” to better link goals at the executive level and the project management of capital projects within various departments.

3.0 Other Public Funding Opportunities

Like many communities, Chattanooga's ability to improve multimodal transportation options relies on a combination of public and private investment. Traditionally, public funding – as is the case with the capital improvements plan – depends primarily on the general fund, bonds, economic development funds, and federal and state grants to support the bulk of Chattanooga's street construction and maintenance budget. This section provides a suite of options for expanding existing transportation funding sources, including:

- Federal funding;
- Tax increment financing (TIF);
- Special assessment districts;
- Grants; and
- Impact fees.

3.1 National Best Practices

Federal Funding

As a designated urbanized area, Chattanooga has a number of federal funding programs at its disposal for implementing multimodal transportation options through the Regional Transportation Plan (RTP). The RTP is a federally required planning product updated every five years by the Chattanooga-Hamilton County/North Georgia Transportation Planning Organization (TPO). Grounded in technical analysis and public input, this plan includes a list of needed multimodal projects in the region and balances the cost of those improvements against available federal transportation dollars. The RTP provides an avenue for funding all multimodal connectivity projects, but especially those that might otherwise be cost-prohibitive without federal funding. These projects can be proposed by local municipalities and evaluated against the region's goals as part of the plan development process. Once included in the RTP, capital projects can be included in the TPO's Transportation Improvement Program (TIP) whereby federal funding is programmed over a shorter horizon.

Tax Increment Financing (TIF)

Tax Increment Financing (TIF) can be a powerful tool when a city wants to spur investment in a particular area or specific project. Chattanooga has used TIF since 2013 and the City's Industrial Development Board adopted TIF policies and procedures in 2015. While the focus of TIF is on larger commercial and industrial projects that generate new jobs at above annual wages in blighted and under-utilized areas, a full range of transportation improvements can be funded with TIF, including streets, curbs, gutters, water and sanitary sewer lines, storm drainage facilities, bridges, traffic signals, sidewalks, trails, pedestrian bridges, transit infrastructure, and, in limited cases, right-of-way. In conjunction with future TIF projects, the City can use the *Mobility Study's* tools to identify important multimodal transportation improvements at the scale of a TIF district.

Special Assessment Districts

A Special Assessment District – commonly used to create the more familiar Business Improvement District (BID) – provides another targeted approach to funding. As with TIF districts, Chattanooga's experience with this funding mechanism will reduce the costs and administrative burden of implementing a new assessment district. The Cumberland Community Improvement District (CID) in the metro Atlanta area is a good example of an assessment district oriented towards infrastructure

improvements. Initially formed in 1988, the Cumberland CID created a master transportation plan that has resulted in new road and transit infrastructure improvements, streetscapes and beautification projects, bicycle and walking trails, alternate commute programs and services as well as community planning.

Grants

Whether with existing city staff or community partners and contractors, another opportunity to expand multimodal transportation funding lies with the city's grant writing and management capacity. An influx of federal transportation funding over the next few years will focus on improving the resiliency and equity of transportation systems, a policy approach that will also promote economic development in areas traditionally underserved by public investment. The recently passed federal Infrastructure Investment and Jobs Act (IIJA) or Bipartisan Infrastructure Law (BIL) includes over \$150 billion in discretionary grant programs. Programs specifically targeting multimodal transportation options include Healthy Streets (\$500 million), Reconnecting Communities (\$1 billion), Safe Streets and Roads for All (\$6 billion), and multiple transit programs (\$35 billion).

Impact Fees

Impact fees provide a funding mechanism to support infrastructure improvements near where development occurs. When an impact fee is established, developers pay to partially cover the increased public infrastructure needs and service burdens anticipated by the development. Impact fees are often more widely supported than other revenue-raising options since current residents do not pay for the impacts of development through increased taxes.

In addition to state-enabling legislation, impact fees must pass the dual rational nexus test to withstand legal challenges. This test includes demonstrating that the fee is, first, not greater than the cost of infrastructure needs attributed to the development and, second, that the capital improvements implemented by the fee benefit the development on which the fee was exacted. One major advantage of these fees over negotiated extractions is they are predictable and based on a set schedule instead of negotiations with uncertain outcomes for the developer and the city.

In Tennessee, the City of Franklin's road impact fee for new developments, for example, funds the construction or improvement of arterials and collectors serving the developments on which the fees are collected. The fee is charged per residential unit or per 1,000 feet of non-residential square footage and weighted based on the projected increase in vehicle miles traveled (VMT) for the land use type of the development. Outside of Franklin, many cities and counties throughout Tennessee charge impact fees or an adequate facility tax, which is another privilege tax.

3.2 Case Study – Pasco County, Florida

Impact fees can be structured, however, to support multiple goals, including compact development patterns, active transportation improvements, and affordable housing. Pasco County, Florida, home to about 500,000 people on the north end of the Tampa Bay-St. Petersburg metro area, established a mobility fee in 2011 balancing community goals and economic development objectives. Like the City of Franklin, discussed above, Pasco County uses projected VMT attributed to developments in their fee calculation. The incremental cost of new infrastructure is multiplied by VMT as the basis for the fee. Unlike Franklin, however, the fee goes to more than expanding arterial and collector streets, with funds appropriated to active transportation improvements. Pasco's fee also incentivizes more

compact development patterns through several mechanisms. A development receives a multiplier based on its geographic location in the county – with the county divided into urban, suburban, and rural zones and urban zones assigned the lowest fees. Consequently, traditional neighborhood developments, transit-oriented developments, and projects incorporating mixed-use trip reduction measures have lower fees. Lastly, infill projects are given additional fee reductions. Layered together, these incentives can result in deep discounts for pedestrian-friendly developments. In 2020, the County collected over \$22 million through the program and anticipates generating over \$600 million between 2025 and 2045.

Both Franklin and Pasco County follow a consumption-based approach to development impacts, with fees based on the projected total use of the transportation system. The consumption-based approach contrasts with the more conventional project-based approach, where traffic impacts are analyzed on the adjacent street network. Conventional traffic impact analysis incentivizes new development in low density areas resulting in higher public infrastructure costs over time.

4.0 Neighborhood Programs

Community participation in transportation projects and programs helps build partnerships among public agencies, community organizations, businesses, and residents, generate new ideas to strengthen neighborhoods, and establish clear support for transportation investments. Chattanooga has a number of programs currently in place for community-driven improvements. Chattanooga's existing Traffic Management Program (2016) and Art in Neighborhoods Program (2015) are two important resources available to make walking and bicycling safer and more comfortable in neighborhoods around the city. The City's Neighborhood Reinvestment Fund also supports smaller scale projects including recommended improvements in area plans.

4.1 National Best Practices

Complementing citywide capital improvement plans and other potential funding sources, several communities in Tennessee and around the country have also developed neighborhood-based transportation programs to identify, prioritize, and support smaller strategic investments ranging from spot improvements and tactical urbanism to placemaking and community economic development. Underpinning many of these programs is a core set of strategies aimed at solidifying community participation and leadership. Emphasizing a comprehensive and collaborative approach, the following strategies are organized around engineering, education, and encouragement and intended to complement one another.

- Engineering – walking and bicycling infrastructure improvements involve many departments, agencies, and organizations (e.g., neighborhood associations, business groups, schools, bike/ped advocates, and health professionals) and all should participate in the planning, design, and funding decision making processes. Example improvements include:
 - Bikeways
 - Curb extensions
 - Midblock crossings with pedestrian beacons
 - Neighborhood traffic circles
 - Pedestrian plazas
 - Road diets
 - Sidewalks
 - Traffic calming
 - Transit stops
 - Street lighting
 - Wayfinding/signage
- Education – education and public awareness initiatives must be sustained, concentrated efforts that target a specific community issue. Example strategies include:
 - Neighborhood meetings and workshops
 - Yard sign campaigns
 - Sidewalk cleanup programs
 - Safety programs in schools and at community centers
- Engagement – encouraging walking and bicycling can generate support for additional improvements. Example strategies include:
 - Bike/scooter share programs
 - Car free days

- Bike to work days or weeks
- Walk/Bike to school days
- Park(ing) days
- Open streets
- Group bike rides
- Historic walking/bicycling tours

4.2 Case Study – Tennessee Communities

A number of cities in Tennessee have introduced neighborhood transportation programs over the past decade, including Knoxville, Nashville, and Spring Hill. Since 2015, the City of Knoxville’s Neighborhood Small Grants Program has supported a range of community-based initiatives through grants and technical assistance to neighborhood groups. Groups that qualify include homeowner or neighborhood associations, tenant associations, and neighborhood watch groups. These groups must match the grant dollar-for-dollar through either with volunteer labor, donated goods or services, or cash. Awards for a single neighborhood range from \$500 to \$3,000 and are recommended by a citizen committee to the City Council. Past transportation projects have included wayfinding signage, trail improvements, and intersection safety and placemaking designs.

The Metropolitan Government of Nashville-Davidson County operates a Neighborhood Traffic Calming Program, which seeks to improve neighborhood streets for all users through a bi-annual application process. In addition to traditional traffic calming techniques, the Nashville Department of Transportation and Multimodal Infrastructure has incorporated safe walking and bicycling spaces along key neighborhood streets by restriping pavement space – helping also to reduce vehicle speeds. Many Nashville neighborhoods do not have sidewalks and will likely not for many years. The traffic calming program has become an important resource for neighborhoods to implement interim solutions. One recent example provides a half-mile walking and bicycling lane protected by rubber curbing that connects a neighborhood to the local elementary school.

The City of Spring Hill’s Neighborhood Sidewalk Program (NSP) provides neighborhood associations, neighborhood groups, or individuals the opportunity to request a new sidewalk connection in their neighborhood annually. Requests are prioritized based on safety, nearby destinations, land use, constructability, and the amount of cost-share offered by the group or individual. Final approval is based on project justification and funding availability for the NSP and determined by the Board of Mayor and Alderman.

4.3 Case Study – Equity

As cities across the nation work to promote greater equity, a number of communities have either introduced or repositioned neighborhood grant programs to increase opportunities for participation by all residents. Pittsburg, Pennsylvania and Lansing, Michigan are two cities actively combining transportation and equity at the neighborhood scale.

Pittsburg’s program gives priority to “Avenues of Hope,” historically underserved business corridors designated as redevelopment priority areas for equitable and inclusive growth. The City’s Neighborhoods Initiative Fund program assists nonprofits and community groups in completing grassroots neighborhood business district revitalization efforts, including infrastructure

improvements. Smaller grants between \$20,000 and \$30,000 do not require a match, while larger awards between \$30,000 and \$100,000 require a 2:1 match. Operated by the Urban Redevelopment Authority, the City's economic development agency, funds come through the City of Pittsburgh, the U.S. Department of Housing and Urban Development's Community Development Block Grants (CDBG), and other sources. Eligible grant uses and activities include:

- Conceptual design and engineering;
- Land remediation;
- Vacant property activation;
- Historic preservation;
- Commercial district revitalization; and/or
- Public realm improvements, including, but not limited to:
 - Streetscape improvements;
 - Transit and transportation-related improvements;
 - Parks and open space improvements;
 - Green infrastructure; and/or
 - Public art.

The City of Lansing provides small neighborhood grants, typically, no more than \$5,000, for a range of public realm improvements, including for walkways and bikeways. In 2018, the City revamped the program to encourage participation from a range of neighborhoods beyond those that typically participated, which tended to be white, higher income, and homeowners. The City expanded the types of groups that could apply from neighborhood associations to civic organizations, a broad encompassing term that now includes housing complexes, nonprofits, "friends of" groups, faith-based organizations, and even parent-teacher associations. Additionally, the application was simplified (i.e., the terminology used and questions asked) and provided online to lower the burden of participation. Similar to Pittsburgh, the program scores applications higher that are located in "Neighborhoods of Focus," as designated by the City.

5.0 Land Development Regulations

The Chattanooga-Hamilton County Regional Planning Agency’s (RPA) 2018 study, *People, Places, Paths*, underscored the need for greater transportation options highlighted in the RPA’s comprehensive plan, *Renewing Our Vision* (2016). Two key takeaways from *People, Places, Paths* focused on the opportunity to advance transportation options and connectivity through the land development process.

- Staff reports for rezoning and subdivision cases could incorporate information from the study and recommend whether a new connection could help improve access to different community resources; and
- The study could also inform zoning code and subdivision regulation updates.

The RPA’s subsequent biennial review of its comprehensive plan, the *Multimodal Potential Report* (2020), reported that, “relevant information from the study (*People, Places, Paths*) is now included in staff reports on zoning cases.” This section of the Resource Plan discusses opportunities to strengthen transportation options and connectivity in future zoning code and subdivision regulation updates.

Importantly, *People, Places, Paths* used three metrics (Table 5-1) to evaluate current levels of connectivity in Hamilton County and set the stage for locating potential multimodal transportation improvements. Both *People, Places, Paths* and extensive research on the relationship between transportation options and network connectivity recognize certain limitations with each metric. For example neither the link-node ratio nor connected node ratio reflect block lengths, an important consideration when deciding whether to walk to a destination. Nevertheless, a number of communities have adopted related standards in their zoning codes or subdivision regulations.

Table 5-1. Connectivity Metrics (*People, Places, Paths*, 2018)

Metric	Description
Block Length	Spacing between parallel streets to provide for regular and dense intersections
Link-Node Ratio	Ratio between “links,” street segments between intersections or the endpoint of a dead end street, and “nodes,” the number of intersections or endpoints of a dead end street
Connected Node Ratio	Ratio of intersections to intersections plus the endpoints of dead end streets

Similar to the previous best practices in this document, the *Mobility Study* tools can help locate and quantify the benefits of potential multimodal transportation improvements in greater detail – and potentially support adding the connectivity metrics to Chattanooga’s land development regulations.

Of course, the City of Chattanooga has a strong tradition of promoting and building pedestrian-oriented mixed-use centers and neighborhoods. Existing land development regulatory tools developed over the past 20 years that expand greater transportation options include:

- Complete Streets ordinance (Chapter 32, Article 14);
- Downtown Form-Based Code (Chapter 39, Article 16); and
- Other zoning districts and regulations (e.g., Brainerd overlay zone, open space subdivision design option, mixed use zone, urban infill lot compatibility option, and off-street parking discounts).

5.1 National Best Practices

Table 5-2 summarizes examples of land development regulations that support multimodal transportation options and increased connectivity. In most instances, national best practices and the examples included in Table 5-2 build on a set of common principles.

- Transportation options vary by context and standards should balance local and regional needs;
- Closer transportation system spacing – or how close streets, walkways, bikeways, and transit are to one another – generally results in more transportation options through more direct paths and route choices and safer and more comfortable facilities for people of all ages and abilities; and
- New required or optional transportation connectivity standards are often complemented by incentives or bonuses to offset real or perceived costs to developers.

5.2 Case Study – Metro Portland, Oregon

For more than 40 years, Metro has served as the directly elected regional government for a three-county area in the Portland metropolitan region. In its planning and policy making role, Metro establishes standards and provides guidance for 24 cities and the unincorporated parts of three counties. Among the standards and guidance is the transportation system’s design found in the *Regional Functional Transportation Plan*. The transportation system design element of the functional plan is, in turn, a combination of enabling policies – in effect, expanding on state transportation policies – and requirements for jurisdictions in the region, and include:

- Policies
 - Complete street design;
 - Green street design;
 - Transit supportive street design;
 - Minimum pavement widths;
 - Minimum sidewalk widths and buffers; and
 - Traffic calming devices.
- Standards
 - Arteria and collector street spacing;
 - Conceptual map of new streets for all contiguous areas of vacant and re-developable parcels of five more acres;
 - Street connection spacing of no more than 530 feet and bicycle and pedestrian accessways of no more than 330 feet;
 - Cul-de-sac limits; and
 - Access management in interchange areas.

Table 5-2. Expanding Transportation Options: Potential Land Development Standards

Standards	Current Chattanooga Regulation	National Best Practices	Example	Recommended Practices
Maximum Block Length or Local Street Spacing	<ul style="list-style-type: none"> 400 feet (Downtown Form-Based Code) Smaller blocks (Urban Infill Lot Compatibility Option) 	<ul style="list-style-type: none"> 300-600 feet 	<p>Nashville (TN) Subdivision Regulations, Section 5-5; Austin (TX) Land Development Ordinance, Titles 25 and 30</p>	<p>Expand requirements to include all zoning districts; adjust spacing requirements in suburban and rural areas</p>
Minimum Connectivity Index	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> 1.5 link-to-node ratio 	<p>Durham (NC) Unified Development Ordinance, 13.6; Orlando (FL) Code of Ordinances, Section 68.404</p>	<p>If greater flexibility than a block length requirement is desired, consider requiring or incentivizing development to achieve a minimum connectivity metric, such as a link-to-node ratio</p>
Street Stubs	<ul style="list-style-type: none"> Development shall provide for continuation with existing, proposed, or platted streets in adjoining areas, where feasible (Sub. Regs. 401.1.4) 	<ul style="list-style-type: none"> Yes 	<p>Fort Collins (CO) Land Use Code, Section 3.6.3</p>	<p>Require stub-outs at least every 660 feet along each development plan boundary</p>
Cul-de-Sacs	<ul style="list-style-type: none"> Cul-de-sacs are limited in Subdivision Regulations (600 feet maximum length), Downtown Form-Based Code, and R-1 districts 	<ul style="list-style-type: none"> Prohibited with exceptions (e.g., physical constraints) 200-300 feet maximum length Sidewalk or multi-use path connections 	<p>Madison (WI) Code of Ordinance, Section 16.23.8; Indianapolis (IN) Subdivision Regulations</p>	<p>Prohibit cul-de-sacs except where physical constraints preclude street connections; require pedestrian and bicycling connections when cul-de-sacs are allowed by exception</p>

Table 5-2. Expanding Transportation Options: Potential Land Development Standards (cont.)

Standards	Current Chattanooga Regulation	National Best Practices	Example	Recommended Practices
Maximum Spacing Between Bike/Ped Connections	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • 300-700 feet 	Portland (OR) City Code, Chapter 33.654	Recommend pedestrian connections provided no more than 330 feet apart
Right-of-Way for Local Streets	<ul style="list-style-type: none"> • Minimum 50 feet ROW (Sub. Regs. 401.1.2) 	<ul style="list-style-type: none"> • Maximum 18-28 feet pavement width 	Metro Portland (OR) Code, Section 3.08.110	Allow narrower streets to offset connectivity requirements, reducing development costs and limiting traffic volumes and speeds

6.0 Key Findings

Each of the four best practice areas discussed in this document – capital improvement plans, other public funding options, neighborhood programs, and land development regulations – offers new opportunities and strategies to expand transportation options in Chattanooga. Significantly, the city already employs many of the best practices, and the ability to improve transportation options lies primarily either in expanding current practices or selectively adding new tools. Moreover, the analyses developed in the *Chattanooga Mobility Study* can help augment the best practices, providing detailed infrastructure recommendations and reporting specific benefits. Key findings from each of the four best practice areas follow.

6.1 Capital Improvement Plans

Reviewing and discussing best practices with all stakeholders on a regular basis is a critical first step in any effort to strengthen coordination between capital improvement plans and community master plans. The national best practices align closely with Chattanooga’s existing Budgeting for Outcomes (BFO) processes – particularly in terms of project impacts and justification, multi-agency coordination and collaboration, and project review and ranking. Importantly, however, the tools developed in the *Chattanooga Mobility Study* can help advance transportation options in future Chattanooga capital improvement plans with their emphasis on measurable impacts and expanding transportation access to schools, transit, and jobs. A key next step to strengthen the connection among planning processes will be additional commitments to data-driven analysis – similar to the *Chattanooga Mobility Study* – in both master plans and capital improvement plans.

6.2 Other Public Funding Options

Like many communities, Chattanooga’s ability to develop a well-connected transportation system depends on diversifying funding streams. Options for increasing funding for transportation system improvements include TIF districts, special assessment districts, grants, and impact fees. Impact fees, in particular, target specific infrastructure needs and minimize the burden on existing residents. If Chattanooga pursues new or additional impact fees, recommended strategies include:

- Create a stakeholder committee to develop a framework for the fee and its implementation;
- Link any impact fee program to the city’s comprehensive plan
 - What areas are designated for growth?
 - Where is infrastructure needed and how much will it cost?
- Establish clear goals and objectives for the program – impact fees can be structured to support multiple goals including compact development patterns, active transportation improvements, and affordable housing;
- Assume the impact fee program will be flexible and respond to different concerns, conditions, and contexts, for example, incentivizing more compact development patterns by applying a multiplier based on geographic location (urban, suburban, and rural zones) with urban zones assigned the lowest fees; and
- Utilize a consumption-based approach to development impacts, with fees based on the projected total use of the transportation system. A consumption-based approach contrasts with a more conventional project-based approach, where traffic impacts are analyzed only on the adjacent street network. Conventional traffic impact analysis incentivizes new development in low density areas resulting in higher public infrastructure costs over time.

6.3 Neighborhood Programs

Like Chattanooga, communities in Tennessee and around the country have developed neighborhood-based transportation programs to identify, prioritize, and support smaller strategic investments ranging from spot improvements and tactical urbanism to placemaking and community economic development. Emphasizing a comprehensive approach organized around engineering, education, and encouragement, some of the more innovative programs are increasingly focusing on equity and targeting improvements in traditionally underserved communities. Keys to success in these programs include identifying priority areas for equitable and inclusive growth and expanding the types of groups that can apply for grants – from neighborhood associations and civic organizations to housing complexes, nonprofits, “friends of” groups, faith-based organizations, and even parent-teacher associations.

6.4 Land Development Regulations

Multimodal transportation systems that provide access for people of all ages and abilities and a variety of businesses require strong policies and standards. In the absence of such policies and standards, many communities find themselves constantly trying to retrofit and fund infrastructure that addresses safety, congestion, and accessibility issues. Establishing a core set of transportation accessibility or connectivity policies and standards in land development regulations allows public and private investment to incrementally build a complete transportation system with confidence. Following are key elements in developing land development regulations that support multimodal transportation.

- Identify strong local leadership and champions
- Establish the community’s vision in a comprehensive plan or subarea plan
 - Clarify purpose and intent to provide the basis for future decisions
- Provide education and engagement opportunities
 - Work closely with elected officials, neighborhoods, businesses, and other stakeholders
 - Discuss issues in terms decision makers understand – cost and quality of services
 - Use examples of desirable places that have connected transportation networks
- Collaborate with planning partners
 - Create a unified approach with state, regional, and local agencies around issues such as the role of arterial and local streets, access management, and walking, bicycling, and transit
- Develop and adopt policies and standards
 - Emphasize clear requirements and a context-based approach (e.g., urban, suburban, and rural development)
 - Allow flexibility or options to achieve policy objectives and standards (e.g., working with environmental conditions and physical constraints)
 - Include incentives (e.g., density bonuses, cluster lots, reduced impact fees) and document benefits (e.g., building narrower streets that lower infrastructure costs and make streets safer)
- Provide clear processes for exceptions and variances
 - Expand city engineer’s authority as needed