

CONCERNS

Each of the investigated centers has a unique nature and a unique set of related concerns. However, certain concerns are seen as universal to the project and therefore cross over from one center to another. These concerns - mobility, health, environment, and community - are seen as fundamental to the creation of vital urban places in the 21st century. Thus, they must be addressed in any successful design for the future of urban centers in Knoxville.

Mobility is central to the success of the proposal. If we are to imagine a Knoxville that is less reliant on single-occupancy vehicles, it must be one that provides convenient, reliable, efficient, and affordable mobility. Without addressing this concern, a growing Knoxville will only become more dependent on single-occupancy vehicles and be forced to deal with the myriad problems that such dependency brings with it.

Each day we are becoming more aware of the link between our **health** and our built environment. By proposing designs that bolster residents' well being while eliminating stress on human health, we cannot only make for a more efficient and productive city but also significantly improve citizens' quality of life.

For too long the city has been seen as the antithesis of the natural world. Rather, the two must exist in a cooperative relationship with each other. Designing cities that foster the protection and regeneration of the natural **environment** benefits the region's ecological health while also providing amenities for residents in the form of easily accessible wild and natural places.

Any proposal for the future of Knoxville must emphasize and reinforce a distinct sense of **community**. This is true not only with regard to the city as a whole, but also with regard to each of the smaller centers. For example, a resident of Burlington

must be integrally connected to both Burlington and the city of Knoxville. Such connections are critical if neighborhoods and cities are to attract and retain an active, engaged citizenry.

Far from being completely discrete, each concern interacts with and reinforces the others in multiple ways. It is nearly impossible, for example, to consider human health without considering the health of the environment. Likewise, it is difficult to imagine how one might build strong community in a center that is not well connected to other centers and the city at large.

This chapter describes each of these overarching concerns in more detail.

A fundamental goal of this proposal is to reduce reliance on single occupancy vehicles. Doing so would positively affect all four of our major concerns - mobility, health, environment, and community - as discussed here and on the following pages. Therefore, this is a critical goal addressed through multiple means. This proposal employs a hierarchy of mobility options with the pedestrian occupying the top of the list as the most desirable form of mobility, then on down through human-powered vehicles, mass transit, high-occupancy vehicles, and finally single-occupancy vehicles as the least desirable option.

In many ways, mobility is the central issue of this document. Within Knoxville the centers proposed by PlanET are to be linked with both local BRT and regional express bus lines. To propose developing the centers without this important new method of moving between them would only add to the traffic pressures along the city's major arterials and highways. However, the tactics that form a comprehensive mobility strategy range from the scale of the regional transportation systems down to the sidewalk. It is only when all of these scales are working together that the overall mobility system can truly begin to function efficiently.

At the largest scale, *Centers and Corridors* looks to the long term when regional passenger trains again serve Knoxville and the Southern Depot area is the hub of such rail transportation. That hub, in turn, serves as a connection point where buses and trolleys can reach the Duncan Transit Center where the express buses and bus rapid transit system vehicles arrive and depart. Knoxville passenger rail would most likely connect to the proposed national high-speed rail system at either Louisville, Atlanta, Charlotte, or Greenville.¹

¹ United States. Department of Transportation / Federal Railroad Administration. *Vision for High-Speed Rail in America*. 2009. <<http://www.fra.dot.gov/eLib/Details/L02833>>.

CONCERN: MOBILITY

At the regional scale, this proposal makes no recommendations regarding the expansion or modification of the regional transportation system, as this was well outside the scope of the work. However, it is very easy to imagine that, were the recommendations of PlanET and the Knoxville Regional Transportation Planning Organization to be taken up in the coming decades, extensions would be in order. Perhaps the most desirable extension would be to the Great Smoky Mountains National Park, the nation's most visited.

Centers and Corridors proposes to extend the local BRT system to all of the centers. This requires extending the Kingston Pike line westward to the new Pellissippi regional center and creating some link from the East Town community center to either the Broadway local BRT, the Magnolia local BRT, or both. Without these connections, the proposed centers will not be fully viable. The most effective way of reducing the use of automobiles is to create places where residents can perform most or all of their daily tasks within close proximity to their homes, altogether alleviating the need to use one's car. Coupling such design with a robust transit system, as is proposed here, is called Transit Oriented Development (TOD), which is a hallmark of many American cities. This concept permeates both the corridors and centers in the proposal.

Along the corridors, each stop of the local BRT functions as a secondary center. Accordingly, it will be important to develop methods of incentivizing multi-use (commercial, residential, and civic) development within a 5 to 10 minute (¼ to ½ mile) walk of each station. This will energize the corridor and eventually link the centers with a continuous, diverse fabric. Density of use is intensified within the centers with a diverse mix of commercial, business, civic, and residential uses located within the 10 minute walking radius. Such design is intended to maximize the most basic of mobilities - simply walking a short distance to a desired amenity.

The proposals in *Centers and Corridors* seek to improve Knoxville residents' health in many ways both directly and indirectly. A healthy citizenry is essential both for establishing a high quality of life and increasing Knoxville's competitiveness on the national and international stages.

As stated previously in the mobility section, a fundamental goal of *Centers and Corridors* is to reduce the use of single-occupancy vehicles. This is achieved primarily by creating compact multi-use centers and connecting them with effective BRT and a robust bicycle infrastructure. If this strategy is successful in reducing the number of cars on the road it would directly improve residents' health. While it has long been understood that air pollution from vehicles has negative impacts on respiratory health, the World Health Organization recently published findings classifying air pollution as a carcinogen in humans.²

Furthermore, the design of compact, multi-use centers connected to parks and serviced by strong pedestrian and bicycle linkages creates the framework for what is called an active living neighborhood.³ In such places, residents are much more likely to regularly get recommended amounts of exercise. This exercise comes in the form of walking or biking to conduct one's daily activities as well as participating in

2. Friedman, MS, KE Powell, L Hutwagner, et al. "Impact of changes in transportation and commuting behaviors during the 1996 Summer Olympic games in Atlanta on air quality and childhood asthma." *Journal of the American Medical Association*. 285. (2001): 897-90.

Straif, Kurt, Aaron Cohen, and Jonathan Samet. *IARC Scientific Publication No. 161: Air Pollution and Cancer*. World Health Organization, 2013.

3. For detailed information on active living neighborhoods see <http://activelivingresearch.org>.

CONCERN: HEALTH

formal and informal recreational activities. Both are made possible by the close proximities created by the relatively dense designs in *Centers and Corridors*. All six centers have densities that provide residents with recreational, retail, commercial, and civic spaces within walkable and bikeable distances. Consideration is also given to how each center will link to larger systems such as urban wildernesses, greenways, and bicycle trails.

Another health benefit of the proposal relates to the provision of healthy food options. Concentrating development into relatively dense centers as proposed in *Centers and Corridors* makes it easier to address concerns about access to high-quality affordable food. Of the six centers in the study, all but Bearden are classified by the US Department of Agriculture as food deserts in that they are areas in which either 5,000 people or 33% of the population live more than a half mile from a supermarket.⁴ Four centers – Downtown, East Town, Burlington, and West Town – are also in areas considered to be low income, further exacerbating the problem of food access. By creating livable centers that can attract a concentration of residents *Centers and Corridors* incentivizes businesses such as supermarkets to locate within the centers, putting such amenities just a few steps away from where residents live and work and, in the case of food, providing critical access.

While much of human health is dependent on personal actions and choices, each day we learn more about how the built environment can either encourage or discourage such positive choices.

4. See the USDA Food Access Research Atlas at <http://www.ers.usda.gov/data-products/food-access-research-atlas>

CONCERN: ENVIRONMENT

The Knoxville region is known for its iconic landscapes - forested ridges and fertile valleys, mountain streams and scenic rivers and reservoirs. These environmental resources are one of the region's greatest assets, in terms of beauty, biological diversity, and tourism dollars. However, in many of Knoxville's developed areas, human activities and land use patterns are degrading these resources at an accelerating rate. Given the PlanET Region's anticipated 43% population increase over the next three decades it is clear that a successful approach to urban planning must address environmental concerns.

Common environmental concerns in the region include poor air and water quality. Poor air quality is attributed to many factors, including valley topography and pollution from neighboring areas, but two factors that may be addressed within the region are reducing vehicle emissions and increasing urban tree canopy. As noted in the section on mobility, a fundamental goal of this study is to reduce reliance of single occupancy vehicles. This is accomplished through better options for public transportation but may also be supported by increasing options, such as greenways, for non-motorized transportation.

East Tennesseans rely on both surface and ground water supplies for uses including recreation, agricultural and industrial supply, and, most importantly, for drinking water. The region also supports many rare aquatic habitats that are highly sensitive to water quality. Regional water quality is variable, with the majority of high-quality waters found in undeveloped and protected areas such as the Great Smoky Mountains National Park.

Surface water moves through the region in topographically-defined land areas known as watersheds. Watersheds are a series of basins linked by a single point of reference where water flows from one watershed into the next downstream

watershed. For example, all surface water in the Lower French Broad watershed collects in the French Broad River before flowing downstream into the Fort Loudoun Lake Watershed. Because water constantly moves downstream, it is of primary concern to treat water quality issues, such as non-point source pollution, where they occur to prevent accumulation downstream.

Stormwater entering regional surface waters is also of concern. Stormwater affects water quality by transporting contaminants such as hydrocarbons, pathogens, and sediment into surface waters. Large quantities of stormwater are generated from vast areas of impervious surfaces, such as parking lots and compacted lawns, which are often numerous in developed areas. These influxes of stormwater erode stream banks and damage aquatic habitat, lead to flash flooding, and transport contaminated surface water to areas where it may infiltrate into groundwater—a source many rely on for drinking water.

A goal of *Centers and Corridors* is to incorporate environmental best management practices at both the scale of the proposed community centers and throughout the larger proposed corridor to address the issues outlined above. Each community center proposal employs practices such as providing and protecting open space, minimizing impervious surfaces, integrating vegetative stormwater management facilities, and providing ample urban tree canopy. These practices enhance the community from a recreational and aesthetic perspective while generating good air and water quality, regulating ambient temperatures, and fostering habitat.

An additional environmental goal of this study is to integrate systemic ecological functioning within the larger corridor. This approach, known as green infrastructure, "refers to a system of interconnected landscapes distributed throughout

a watershed that provide ecosystem services, stormwater management opportunities, and other benefits, such as recreational amenities and protection for environmentally sensitive landscapes.” These large-scale implementations provide regional habitat corridors that may also house inter-community greenway trails.

Open spaces are integral to the health of a community’s residents and they provide an environment for community events, recreation, and alternative transportation routes such as greenway trails. Additionally, ecologically functioning landscapes support ecosystems that provide the region with essential amenities such as clean air and water.

As already stated, it is not a goal of *Centers and Corridors* simply to add density to Knoxville. While density comes with many benefits, it is not a worthy goal in its own right. Rather, the proposal seeks to enhance, through sensitive design, the unique qualities of each center while imagining how each can grow into a larger and more vibrant neighborhood that is an integral part of the wider city. This is accomplished through several means.

The compact centers proposed in this study provide an ideal opportunity to leverage civic infrastructure to reinforce community. Concentrations of residents and businesses in multi-use connected neighborhoods provide a large bang for the city's civic buck. Centers would be attractive locations for everything from streetscape improvements to branch libraries and community centers, all of which foster interaction among residents and connection to place.

We might even imagine a rethinking of something as central to community as schools. A city that is not spread thinly across the landscape but rather concentrated in neighborhoods of various sizes that could support smaller schools based in those neighborhoods. Many students could walk to school (or, if older, ride on the BRT) and the regular interactions of parents, students, and teachers would closely link people in the surrounding community. Such small schools could provide significant incentive for residents to settle in the centers, particularly if they produced the educational outcomes shown in some studies.⁵ The school grounds could also serve as places for community gardens and other civic activities.

Where significant community and/or cultural resources exist *Centers and Corridors* identifies and reinforces them. They

5. There are many sources for additional information on the small schools movement. See for instance <http://smallschoolscoalition.com/>

CONCERN: COMMUNITY

are critical ties to the city's past that provide continuity to each place. For example, in Burlington the proposal is to revitalize the historic commercial center of the neighborhood, connect Chilhowee Park more closely to the daily life of the community while maintaining its role for special events, and link a vibrant Magnolia Avenue to the unique "Racetrack Neighborhood".

In other instances the study proposes civic amenities that would bring people together both literally and figuratively. These include a new outdoor amphitheater at East Town, the reintroduction of a minor league baseball stadium to downtown, and new greenways and/or park spaces in every center. Such gathering places are vital to forging a collective sense of association in addition to providing attractive recreational opportunities.

Throughout the proposal a series of housing types is explored. Though often not permitted under current zoning regulations, these housing types demonstrate methods of creatively introducing housing into communities of various densities. Housing and the full-time residents that it represents are the life blood of any community. It will be essential for Knoxville to move beyond typical housing models in order to support dense and vital community centers.

As residents' living becomes more neighborhood-based, we are likely to see new models of workspace arise such as co-working spaces. In co-working spaces workers use telecommunication technology to work near or at home rather than travel to a common office space. As a result, one regularly works alongside one's neighbors, further cementing the bonds of community.

Only through fostering a sense of community do we create the types of places that people love and in which, therefore, they want to invest their time, energy, and money.

