

Adopted June 22, 2015

Volume II: Elements



Natural Resources & Hazard Adaptation


Certified per TCA 13-4-202 as a part of the
Nashville-Davidson County General Plan adopted
by the Metropolitan Nashville-Davidson County
Planning Commission and including all
amendments to this part as of June 22, 2015.


Executive Secretary

NASHVILLE PLANNING COMMISSION
A GREAT CITY DEPARTMENT

**METROPOLITAN PLANNING COMMISSION
OF NASHVILLE AND DAVIDSON COUNTY, TENNESSEE**

Resolution No. RS2015-256

"BE IT RESOLVED by The Metropolitan Planning Commission that NashvilleNext is approved in accordance with the staff report and recommendations in the staff report with the following amendments: 2; 3; 4; 5; 14; 15; 16; 18; 20; 22a; 22c; 23; 24; 25; 31; 32; and the deferral of 11 areas identified in the Whites Creek area until the August 13, 2015 Planning Commission meeting with the Public Hearing closed. (9-0)"

Resolution No. RS2015-256

WHEREAS, Section 13-4-203 of the Tennessee Code, Annotated, authorizes a General Plan "with the general purpose of guiding and accomplishing a coordinated, adjusted and harmonious development of the municipality which will, in accordance with existing and future needs, best promote public health, safety, morals, order, convenience, prosperity and the general welfare, as well as efficiency and economy in the process of development, and identify areas where there are inadequate or nonexistent publicly or privately owned and maintained services and facilities when the planning commission has determined the services are necessary in order for development to occur;" and

WHEREAS, Chapter 5, section 11.504 (c) of the Metro Nashville Charter gives the Metro Planning Commission the power to "Make, amend and add to the master or general plan for the physical development of the entire metropolitan government area;" and

WHEREAS, Section 18.02 of the Charter of the Metropolitan Government of Nashville and Davidson County requires that zoning regulations be enacted by the Council "only on the basis of a comprehensive plan prepared by the Metropolitan Planning Commission;" and

WHEREAS, the last General Plan, *Concept 2010, A General Plan for Nashville/Davidson County* was adopted in 1992; and

WHEREAS, Mayor Karl Dean, seeing fit to update the General Plan, announced on May 22, 2012 that the General Plan would be updated, assigning the task to the Metro Planning Department; and

WHEREAS, under the leadership of the *NashvilleNext* Steering Committee and the Community Engagement Committee, the staff of the Metropolitan Planning Commission worked with stakeholders in Nashville/Davidson County, holding over 420 public meetings and events and soliciting input through online forums, engaging over 18,500 participants in providing public input to update the General Plan;

WHEREAS, the Metropolitan Planning Commission, empowered under state statute and the Charter of the Metropolitan Government of Nashville and Davidson County to adopt master or general plans for smaller areas of the county, finds that the process followed to develop the *NashvilleNext* General Plan included diverse, widespread, and meaningful community participation and substantial research and analysis and therefore finds that replacing the *Concept 2010* General Plan with the *NashvilleNext* General Plan is warranted; and

NOW, THEREFORE, BE IT RESOLVED that the Metropolitan Planning Commission hereby ADOPTS *NashvilleNext, A General Plan for Nashville/Davidson County* in accordance with sections 11.504 (e), (j), and 18.02 of the charter of the Metropolitan Government of Nashville, and Davidson County as the basis for the Commission's development decisions in the county.


James McLean, Chairman

Adoption Date: June 22, 2015

Attest:


J. Douglas Sloan, III, Secretary and Executive Director

PARTS OF THE PLAN

Each part of the plan has a role to play. Some parts are broad and visionary, while others are specific and detailed. This section helps users of the plan understand how the parts fit together and support one another. No part of the plan is intended to stand alone; each can be understood only as working together with the rest of the plan.

I Vision, Trends & Strategy

Volume I presents the role and powers of the plan, key trends and issues that the plan addresses, a summary of the plan’s strategy and approach to the future, and implementation goals and policies.

II Elements

- » Land Use, Transportation & Infrastructure
- » Arts, Culture & Creativity
- » Economic & Workforce Development
- » Education & Youth
- » Health, Livability & the Built Environment
- » Housing
- » Natural Resources & Hazard Adaptation

III Communities

Nashville’s Community Plans provide history and context for Nashville’s 14 Community Planning Areas, along with community-specific issues, strategies, and sketches of how different places in the community could change over time. Detailed Community Character Maps link the broad, countywide Growth Concept Map to character policies that guide zoning and development decisions.

Community Character Manual

The Community Character Manual provides detailed explanations of the character policies used in the Community Character Maps.

IV Actions

Specific tasks for Metro departments and partners to undertake, within a recommended timeframe.

V Access Nashville 2040

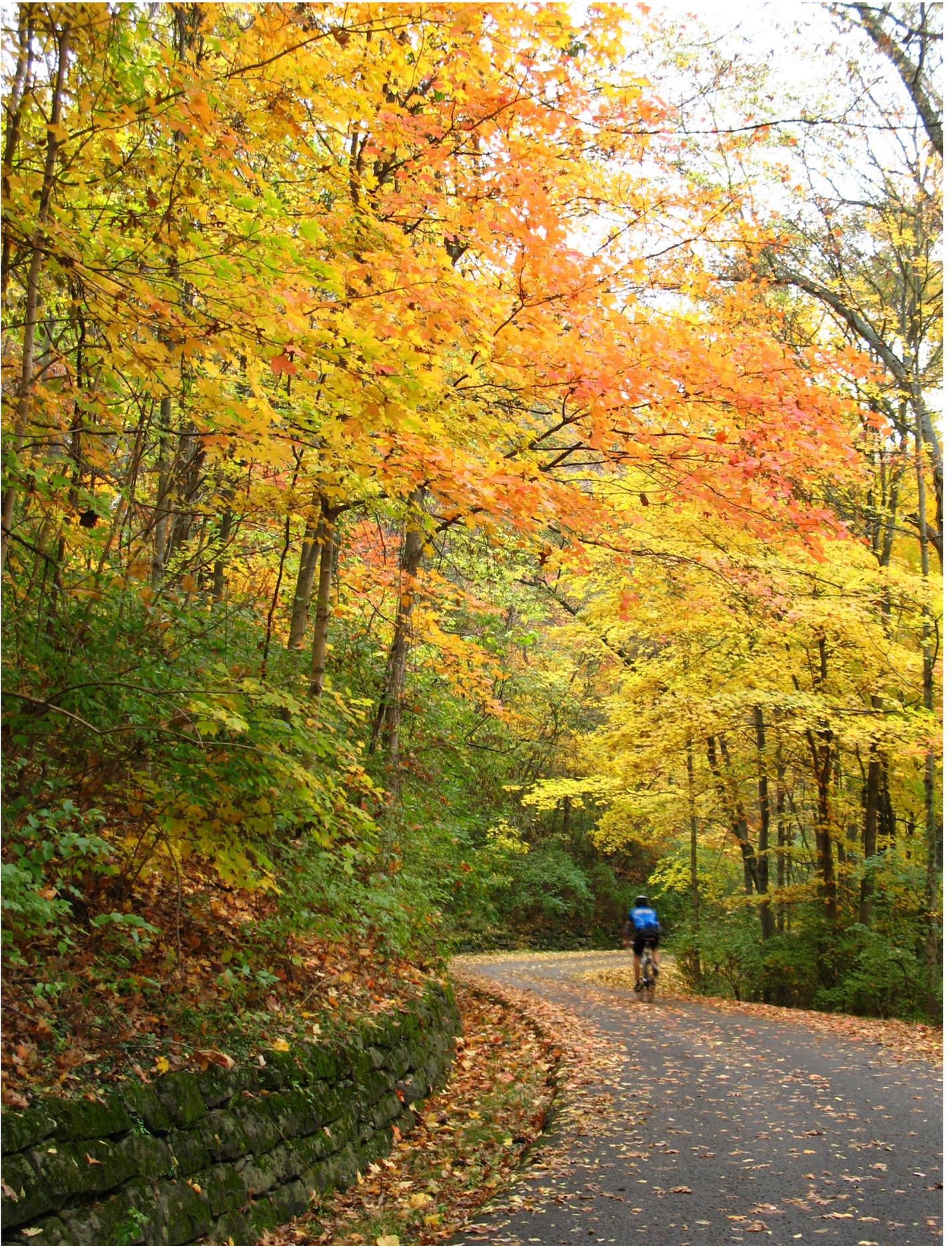
Volume V is the overarching vision of how transportation works under NashvilleNext.

Volume II

Natural Resources & Hazard Adaptation

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NATURAL RESOURCES & HAZARD ADAPTATION

Nashville is a uniquely beautiful place with a natural character distinguished by rolling hills, steep bluffs, gentle valleys, flat floodplains, thick forests, and numerous rivers and streams. Parks and lakes, both big and small, are havens for wildlife and for people looking to escape the fast pace of the city. Nashville includes over 2,500 miles of waterways, three large lakes, and over 38,000 acres of floodplains. It has 87 known caves, 30 species of breeding birds, and 108 rare terrestrial and aquatic species, including the Nashville Crayfish, an endangered species that is unique to the Mill Creek watershed. Nashville also has cedar glades that are not found anywhere else in the world. Nashvillians want to maintain and enhance the natural resources that make the region so livable.

Nashville's natural areas and green spaces provide places of scenic beauty and are important for recreation and socialization. Natural areas also provide habitat for plants and animals, help clean our air and water, provide our drinking water, slow down and absorb stormwater runoff, help decrease air temperatures on extremely hot days, grow our food, stabilize steep hillsides, and mitigate the negative effects of natural disasters and extreme weather events. In recent years, Nashville has experienced record-setting weather, which has threatened businesses, residences, and the health and well-being of our residents. These events include the record-setting rainfall that led to the 2010 flood. The damage caused to life and property by the 2010 flood and related landslides was enormous, yet the city's natural features—such as floodplains and tree cover, ensured that the damage and loss of life and property was not worse. In the aftermath of the flood, Nashville has come to value its natural areas even more for the protections they provide to the city from hazards such as extreme weather events.

On a day-to-day basis, having quality natural areas betters the quality of life for people, plants, and animals. Nashville's projected population growth could degrade the current quality of life and jeopardize Nashville's natural and built environment. In addition to the pressure of sheer growth, demographic changes—the growth of baby boomers and millennials seeking more compact, walkable communities; the increase of single-person households; among other pressures—will also drive new locations and forms of development in our communities. Climate change will impact our natural resources, and understanding our contribution to this

Nashville includes over 2,500 miles of waterways, three large lakes, and over 38,000 acres of floodplains.



Figure NR-1: Enjoying Beaman Park

change will need to be monitored through a regular greenhouse inventory. A renewed emphasis on public outreach, education, and personal responsibility will activate new stewardship to conserve energy, eliminate and reduce waste, preserve land, build high performance buildings, and create a culture of sustainability. Meanwhile, public policies, incentives, and private decision making must provide a clear direction on what to preserve and how to build and grow our city in a more sustainable fashion than we do today. This will enable us to secure the best Nashville for current and future generations.

Key ideas shaping this chapter

Water

It has been said that water is life. Rivers, streams, lakes, and wetlands are all water resources. Rivers and streams carry flowing water, while lakes and reservoirs store water. Wetlands—lands which are permanently or periodically saturated with water—hold water, assist with flood control, and help filter out pollutants. Floodways are the channels of rivers or other watercourses that carry the deepest, fastest water downstream. Floodplains are areas adjacent to rivers, creeks, lakes, streams, and other waterways where flooding is common. Floodplain and wetland areas are critical to the health of waterways and to the protection of life and property in the case of flooding.

Nashville's interconnected water network contributes to the city's clean air and water, is critical to our economy and health, and provides recreational and other social and emotional benefits. These water bodies supply our drinking water, water for agriculture, and water for industry. When looking at waterways, it is necessary to think beyond the water itself and consider areas adjacent to waterways (floodplains, wetlands, and forested areas) as well as the larger watershed area (headwater area) to protect and enhance water resources.

Rivers and creeks

Rivers and streams are natural watercourses that flow from origin (headwater) areas to meet another waterway. The Cumberland River is one of Nashville's greatest resources. It has long been critical to industry and business in Nashville, and more recently, it has become a celebrated feature to play in and around. The river, which flows for a total 688 miles, is an

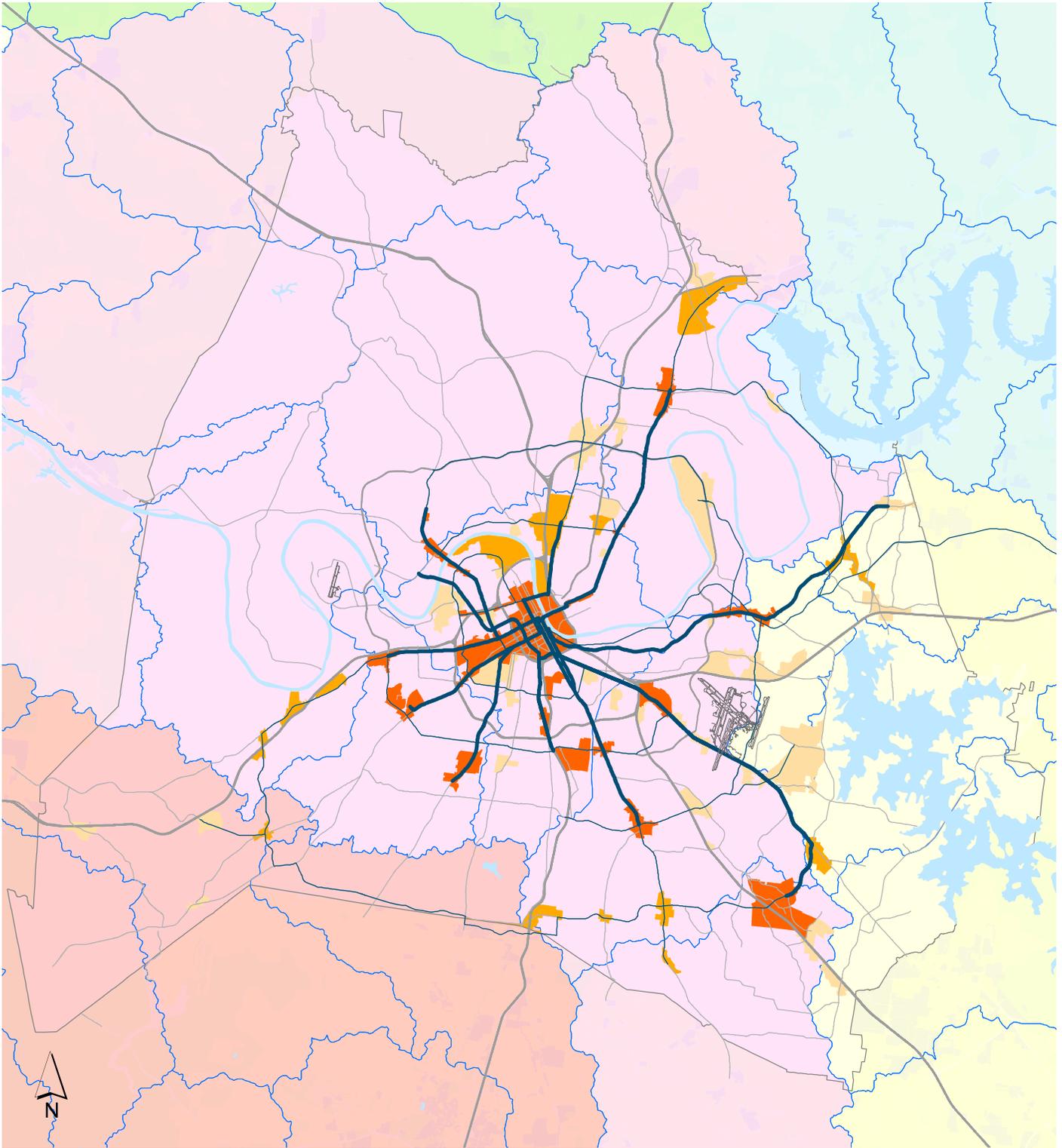
abundant source of drinking water; a destination for recreation, leisure, and entertainment; and a magnet for economic investment. Smaller rivers include the Harpeth River and Stones River. Creeks, such as Mill Creek and Browns Creek, are the principal tributary streams of rivers, and tend to be smaller in scale. Most creeks are perennial (meaning they always have water), but some are intermittent (holding water only at certain times such as during heavy rain events). Creeks have tributaries also. These smaller and often intermittent waterways are often called branches.

Watersheds, headwater areas, and impaired waterways

A watershed is an area of land that drains rain water into one location, such as a stream, lake, or wetland. Watersheds sustain life, in more ways than one. Watershed protection means protecting a lake, river, or stream and adjacent riparian buffers by managing the entire watershed that drains into it. By looking at the larger watershed area, many water quality problems can be better controlled; drinking water sources can be better protected; activities and programs can be coordinated with other agencies and jurisdictions; aquatic and wildlife habitats and forested systems can be comprehensively protected and restored; public participation opportunities can be increased; common priorities and strategies can be formulated; and success can be monitored through combined data gathering.

Protecting headwater areas—places where waterways originate, such as streams and springs that are protected by tree cover, vegetation, undisturbed soils and, in some cases, steep slopes—are essential to preserving a healthy water ecosystem and protecting vital water resources. Healthy, undisturbed headwater areas supply organic matter that contributes to the growth, productivity, and biodiversity of plants and wildlife. Forested areas protect headwaters from pollution by filtering pollutants out of the stream system and slow erosion from flooding, thereby minimizing debris and sediments in the water. Trees share nutrients in an underground system, so water absorbed by deep tree roots and stable soils enters cracks in the bedrock, slowly moves down slopes, and exits near streams and from springs. Vegetated areas along streams provide shade, which serves to benefit water quality by preventing the heating of shallow streams and related thermal impacts. Preserving and planting native vegetation plays a key role, as native plants typically have deeper roots to prevent erosion and capture contaminants.

Figure NR-2: Nashville watersheds



Protecting headwater areas can impact the location of infrastructure and the design of development. In the case of headwaters on steep slopes, roads that are built above steep slopes can contribute to landslides, by collecting water and channeling it into an already unstable hillside. Rainfall can then trigger landslides on unstable slopes that destroy houses and buildings. Additionally, buildings at the base of steep slopes can be flooded in heavy rainfall events. Instead, more appropriate building techniques can be used in some areas with sensitive natural features—since there are natural areas that should be left undisturbed—to balance development with preservation. These techniques include clustering development to fit site terrain; building roadways parallel to slope contour lines; clustering development to preserve porous soils and natural slopes; leaving undisturbed stream buffers along both sides of natural streams; avoiding mass clearing and grading; and limiting the clearing and grading of land to the minimum needed to construct development and associated infrastructure.

Water is considered “impaired” when the waterway does not support one or more of its intended uses. This can mean that the water is not suitable to drink, to swim in, or to consume the fish caught there.

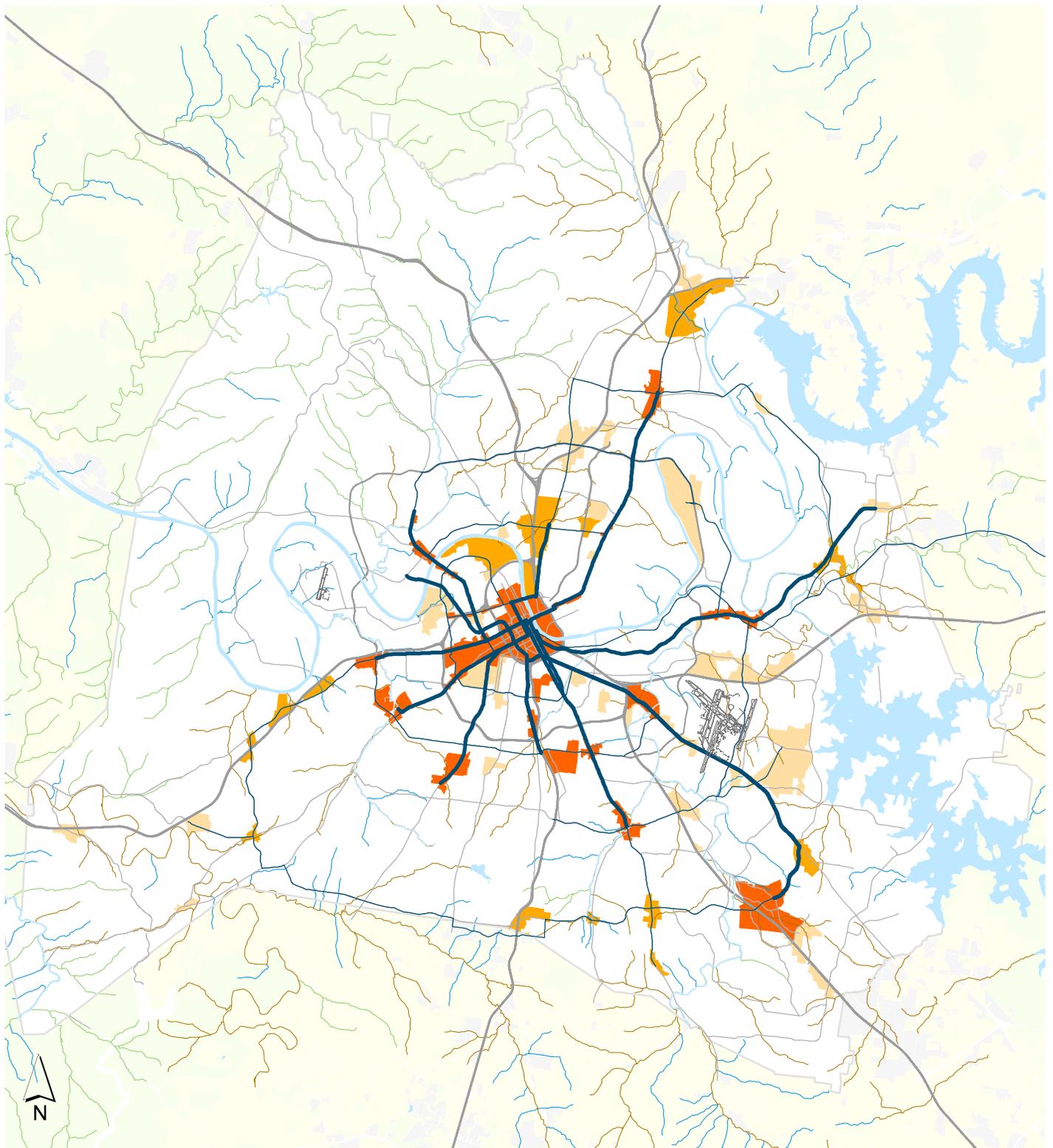
Water quality plays a critical role in the environmental and economic health of the Cumberland Region. According to the Nature Conservancy, 70 percent of the earth is covered by water. However, 40 to 50 percent of our nation’s waters are impaired or threatened.¹ Waterways are considered “impaired” when the waterway does not fully support one or more of its intended uses. This can mean that the water is not suitable to treat for drinking, to swim in, or to consume the fish caught there. It also does not support healthy fish and aquatic life. Under section 303(d) of the 1972 Clean Water Act, states are required to develop lists of impaired waterways, meaning those that are threatened or do not meet water quality standards. The standards and criteria might be numeric and specify concentration, duration, and recurrence intervals for various parameters, or they might be narrative and describe required conditions such as the absence of scum, sludge, odors, or toxic substances.

If a given waterway is determined to be a “water quality limited segment,” it is placed on the respective jurisdiction’s 303(d) list. Water quality limited segments are waters that will not meet water quality standards for a particular pollutant, even after a technology-based permit is instituted. States must develop Total Maximum Daily Loads for every water body/pollutant combination on the 303(d) list.² For each pollutant listed, the

1 *The Nature Conservancy*; <http://www.nature.org/ourinitiatives/habitats/riverslakes/threatsimpacts/>

2 *United States Environmental Protection Agency*; <http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/intro.cfm>

Figure NR-3: Nashville stream quality



state must also develop a restoration target. The Tennessee Department of Environment and Conservation (TDEC) creates and maintains the 303(d) list of impaired streams in Nashville and issues the updated list to Metro Stormwater, the public, and the U.S. Environmental Protection Agency biennially. One of the primary objectives of Metro's Stormwater Management Program is to implement specific pollution prevention programs to improve the quality of Nashville's water resources. An overall goal of the program is to improve water quality to the extent that each impaired stream will be removed from TDEC's 303(d) list. This is accomplished through programs to reduce and minimize pollutants from entering streams. There are approximately 2,500 miles of streams within the jurisdiction of Nashville, of which 330 miles have been determined impaired and placed on the Clean Water Act's 303(d) list by TDEC. Through monitoring, illicit discharge detection, and water quality protection activities, in the last few years over 90 miles of streams have shown improvement and have been in part or fully removed from the 303(d) list.

In addition to their work with impaired streams, Metro Water Services created the Low Impact Development (LID) Manual, which provides incentives for developers to use green infrastructure to meet stormwater runoff water quality requirements. The creation of the Low Impact Development (LID) Manual continues the evolution of Metro's stormwater quality program. Current development patterns and traditional stormwater management techniques have resulted in large amounts of impervious surfaces in cities across the country, including Nashville. Conventional development approaches to stormwater management often use practices to quickly and efficiently convey water away from developed areas, resulting in large volumes of runoff, and any pollutants, flowing directly to streams, rivers, and combined sewer systems. In contrast, the LID Manual is a design strategy that attempts to mimic a site's natural hydrology by managing stormwater close to its source and allowing water to infiltrate or be used onsite. This includes the preservation of the ecological functions of natural areas and green infrastructure strategies such as bioretention, green roofs, permeable paving, vegetated swales, urban forests, conservation areas, and stormwater harvesting.

LID is a departure from traditional stormwater methods. Traditional stormwater designs are highly impervious and immediately route rainwater offsite to a central location. As a result, volumes of stormwater, along with pollutants, reach streams. In contrast, LID reduces the pollutants reaching our streams by reducing the volume of water leaving a site. This also helps reduce the flooding impacts of small storms or

330 miles of Nashville's 2,500 miles of waterway are considered impaired.

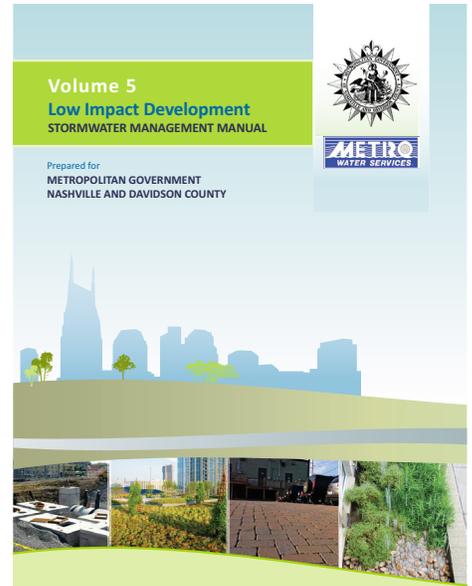


Figure NR-4: Metro's Low Impact Development Manual outlines how a development can reduce its water impacts.



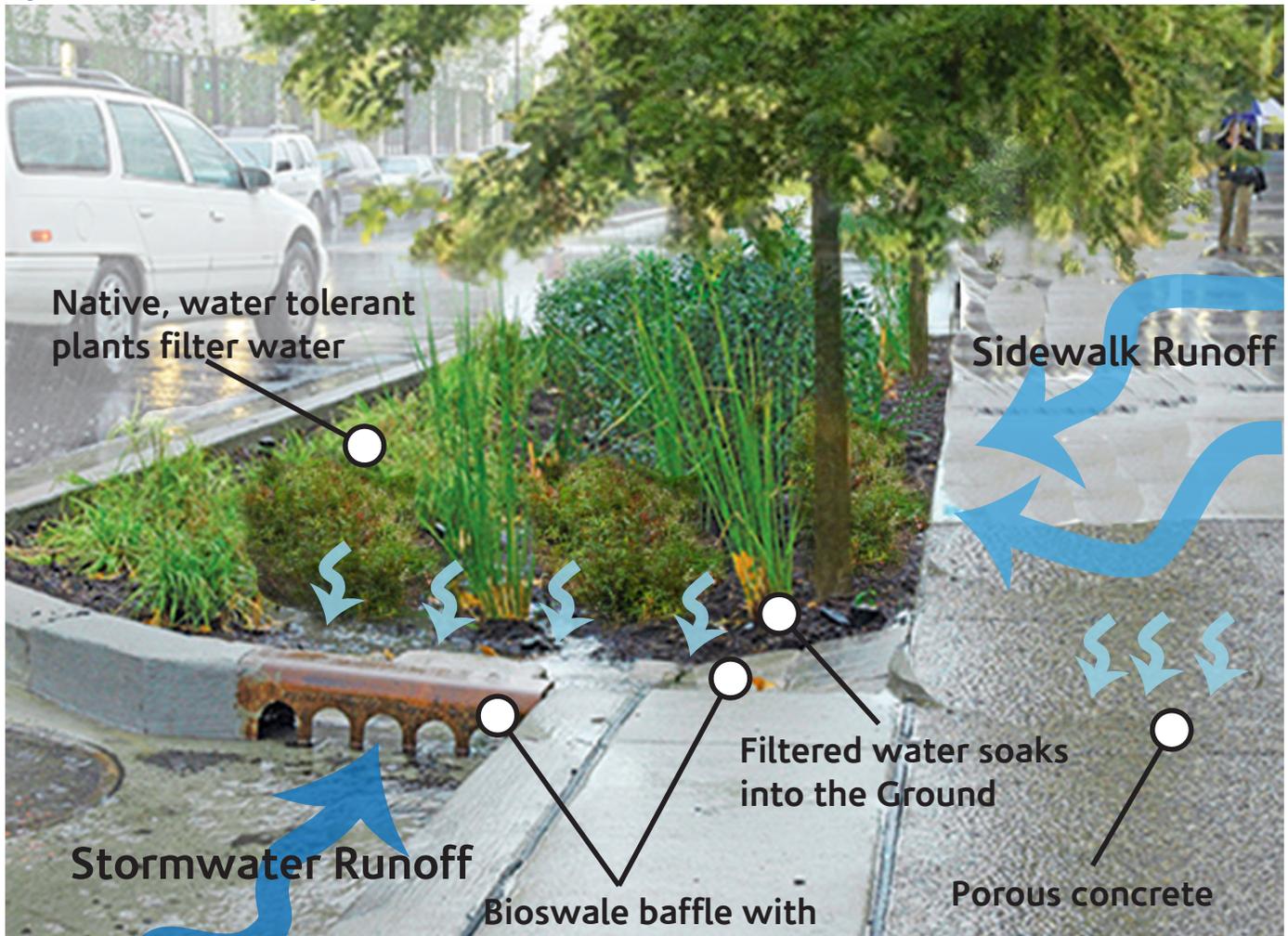
Figure NR-5: Green roof at the Pinnacle at Symphony Place enables rainfall infiltration



Figure NR-6: Deaderick Street utilizes landscaped stormwater planters to capture and infiltrate runoff.

the amount of water entering the combined sewer and contributing to overflows. Metro is currently offering incentives to encourage the utilization of LID with development. Incentives include the waiver of plan review fees, the reduction of stormwater fees, the application of runoff reduction credits, and the application of bonus green roof credits. It is expected that new federal and state requirements will require LID techniques, and using the LID Manual will become mandatory in 2016. Metro also recently instituted additional requirements for residential infill developments which requires the treatment of the first inch of rain and preserving trees. In addition, the Metro Water Services Department, through creative partnering with area nonprofits, works to keep existing waterways free of debris that could exacerbate flooding. This includes holding cleanup events in area waterways.

Figure NR-7: Illustration of green street water filtration and treatment



Wetlands help reduce flooding by storing water and maintaining other water flow in drier times.

Floodways, floodplains, and wetlands

Floodways are the channels of rivers or other watercourses that carry the deepest, fastest water downstream. Floodplains are areas adjacent to rivers, creeks, lakes, streams, and other waterways that are subject to flooding when there are significant rainfall events. Floodplains play a multifaceted role in providing beneficial functions to waterways, especially when they are undisturbed or have been restored to a natural state. These benefits include providing open space, filtering impurities from water runoff, providing flood and erosion control, recharging groundwater, creating/enhancing wildlife habitat areas, providing agricultural lands with rich soil, protecting urban forests, and preserving archeological sites. Floodplains require careful management in order to preserve their value as scenic resources and also to prevent damage that results from water overflow.

Land preservation along rivers and streams has been identified as the least costly and most effective way to improve water quality. The Cumberland River was a key waterway in the flooding events of May 2010. This river and many of its tributaries overflowed into downtown Nashville and impacted Nashville’s neighborhoods. Conserved floodplains can provide significant areas of open space, such as greenways, and perform certain invaluable ecological functions. Floodplain areas provide productive and critical habitat for a variety of wildlife and plant species.

Figure NR-8: Characteristics of a Floodplain

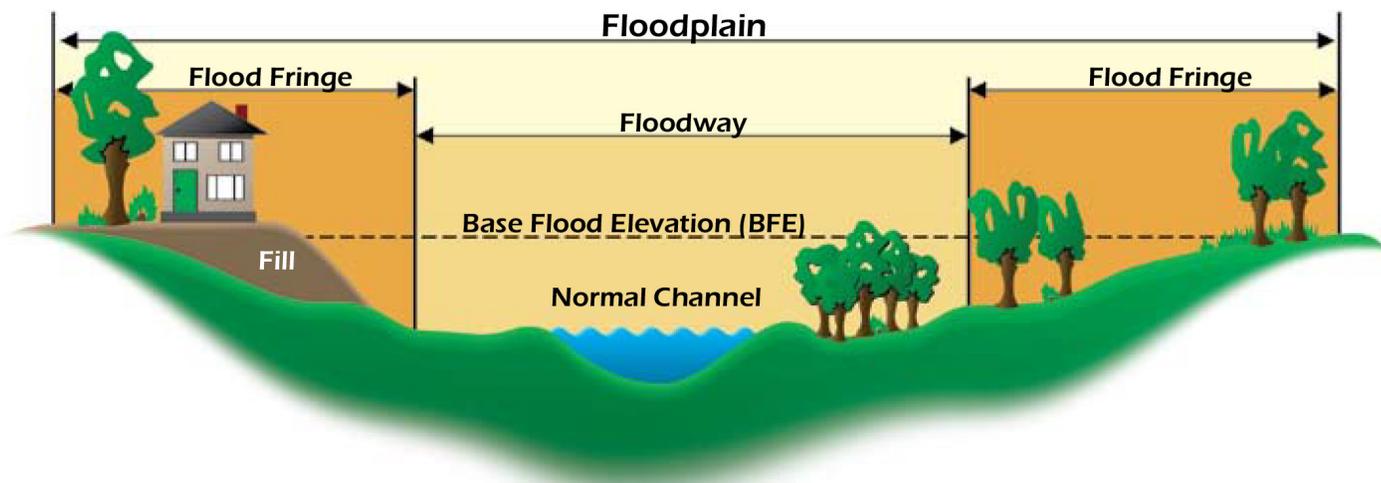




Figure NR-9: The Beech Bend area during the May 2010 flood



Figure NR-10: Downtown Nashville as viewed from the John Seigenthaler Pedestrian Bridge, after the rain stopped in May, 2010.

Source: Nashville Civic Design Center

On the other hand, floodplains appear to be prime lands for development because they are generally flat. The risk of periodical flooding, however, poses a constant threat to development. At the same time, development can increase the frequency and intensity of flooding elsewhere. Buildings and pavement can obstruct the flow of water, especially stormwater. Development in floodplains and/or in the watersheds above them can also increase the magnitude and frequency of floods and the size of the area inundated.

Wetlands, lands which are permanently or periodically saturated with water, contain plants and animals specifically adapted for life in these conditions. Wetlands were once viewed by many as wasted areas that limited development. However, today their benefits are recognized, and development pressures have only increased. Wetlands help reduce flooding by storing water and help maintain other water flow in drier times. In addition, wetlands help to filter pollution and reduce erosion. These areas are some of the most productive wildlife and forested habitats and are important to outdoor enthusiasts, including hunters and birdwatchers.

The Nashville 2010 flood further emphasized the need for natural infrastructure. Floodplains have little water storage capacity below the surface due to the proximity of the underground water table. Most of the water storage capacity available below the surface occurs in the driest and widest portions of hillsides, typically occupied by forests. Wetlands, natural vegetation buffers and urban trees, and floodplains (not just floodways) are critical for above-surface water storage and are also the last line of defense from storm event hazards.

Since 1998, Metro Government has required water quality buffers on streams, ponds, lakes, and wetlands in or adjacent to development. Buffers extend along floodways (channels of waterways that carry the deepest, fastest water downstream), which also serve to protect much of the floodplain (areas adjacent to waterways that are subject to flooding). The application of the buffer on redevelopment sites helps to re-establish wetlands and natural vegetation areas that were lost during the early development of Nashville. As we move toward the future, Metro needs not only to reclaim lost buffer areas, but will need to restore these areas with native vegetation. Special attention should also be given to the preservation of headwater streams. Some of these waterways flow intermittently and are not always protected during development. The

combination of protecting existing vegetation, restoring degraded riparian areas, and preserving the source of surface waters will protect and improve water quality in Metro into the future.

Metro first started controlling stormwater runoff from development sites as a means to mitigate flooding. The current program ensures that the rate that water flows off a development site is the same before and after development. In 2000, this program expanded to include requiring post-construction water quality measures. This has resulted in cleaner water leaving impervious surfaces and entering the stormwater system. Metro's construction oversight also includes preventing soil loss from sites during the construction process. For years, Nashville's streams were choked with sediment generated from soil exposed during construction. Now, these aquatic habitats are getting the chance to recover and developments are benefiting from the retention of topsoil. The final piece of development oversight follows projects into the future to make sure their water quality controls continue to work. These strategies have resulted in cleaner water leaving all stages of development.

Over the years, Metro Water Services Stormwater Division's floodplain buyout program has worked to purchase structures constructed in the floodplain, as well as to restore floodplain areas and riparian habitat in various watersheds within the county. Since the department began participating in the Federal Emergency Management Agency's (FEMA) home buyout program, Metro has purchased more than 300 properties in the floodplain. On those purchased properties, any buildings and impervious surfaces, such as driveways, have been removed, and Metro has ceased mowing areas adjacent to streams allowing buffers to naturally re-establish. The Stormwater Division has also coordinated, along with other Metro departments and area nonprofits, the planting of hundreds of native trees and shrubs within many of these floodplain properties. Many of the buyout sites adjoin parcels within the same floodplain, resulting in the restoration of large contiguous tracks of floodplain areas. Many of these floodplain properties also provide recreation opportunities as part of the city's park and greenway system.

Land and green spaces

Nashville and the surrounding region boast a variety of public lands, including state and local parks, greenways, state natural areas, and wildlife management areas, as well as public and private forests with

Figure NR-11: Progress toward open space goals

The 2011 Open Space Master Plan set ambitious goals for conservation, parkland, and greenways. Metro is already pursuing those goals.



numerous species of trees, shrubs, and plants that showcase the diversity of Tennessee’s natural resources. These areas protect natural resources and sensitive environmental areas; provide recreation opportunities that promote healthy, active lifestyles for people of all ages; and clean our air and water. In addition to preserving natural features and other environmental benefits, natural areas can provide economic benefits as well. Many people are interested in living or working near places where they can exercise or enjoy outdoor activities and scenic beauty. Several studies have shown that land values close to open space—parks, natural land, farms, and land protected by conservation easements—tend to be higher than average. One study in suburban Dallas, Texas, found that homes facing parks were worth 22 percent more than homes located a half-mile away from parks.³ Land in a more rural setting may simply need to be set aside for conservation, while land in downtown can be utilized for gathering spaces around plazas, green spaces, fountains, and other similar amenities.

Parks and greenways

Nashville/Davidson County’s park system was established in 1901 and has a long history of providing recreational and cultural activities. The Metro Parks and Recreation Department offers a variety of facilities and programs throughout Nashville. Currently, there are over 14,000 acres of

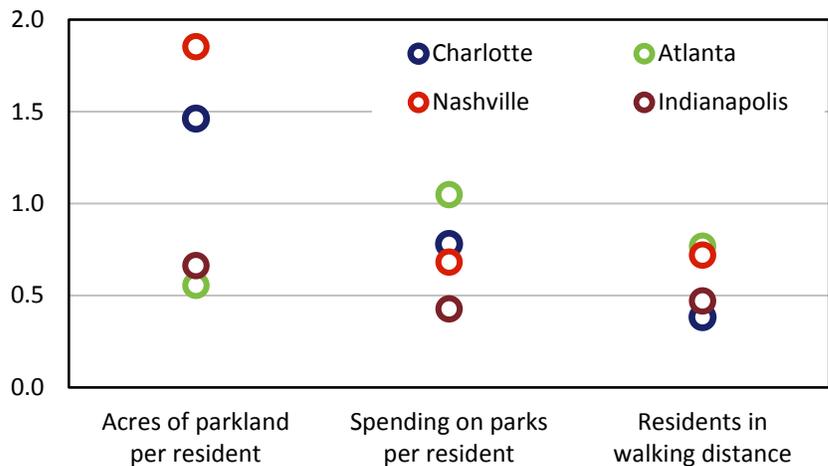


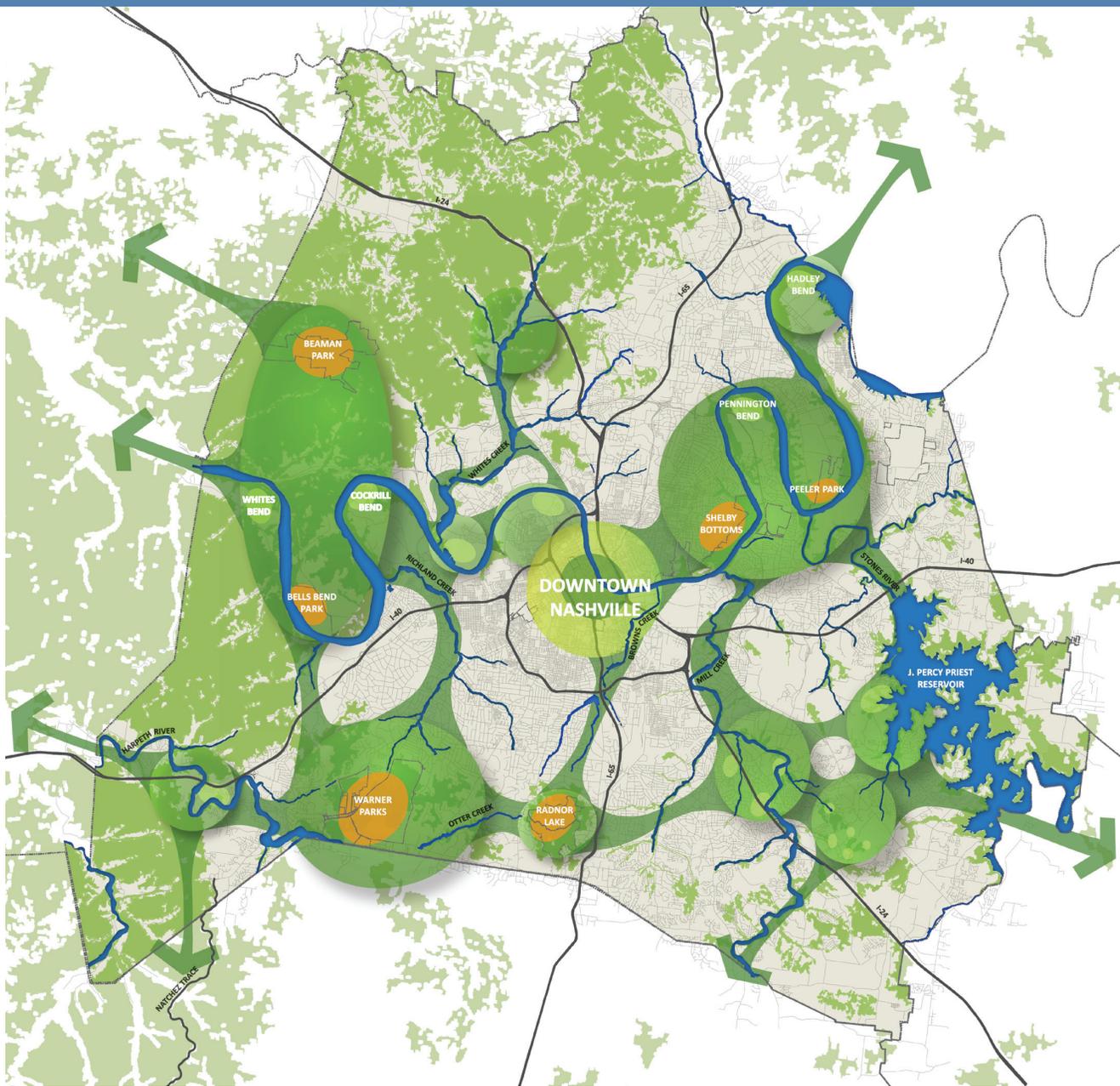
Figure NR-12: Nashville parkland compared with peer cities and the national average

Source: Trust for Public Land, ParkScore Report (2012)

³ Land Trust Alliance; <http://www.landtrustalliance.org/conservation/documents/the-economic-and-tax-base-benefits-of-land-conservation>

Figure NR-13: Nashville Open Space Plan Vision

OPEN SPACE VISION



LEGEND

- Green Infrastructure Network
- Open Water
- Interstate
- Existing Open Space Anchor
- Potential Open Space Anchor
- Open Space Network Vision

The conceptual map above illustrates Nashville's open space vision. It represents public priorities expressed during public forums, and is based on the latest peer-reviewed science, GIS research and analysis.

park land, including 122 parks. This excludes state, federal, and private conservation lands. In addition to traditional parks, Metro Parks offers a popular and expanding greenway system. To broaden their appeal, park facilities include passive and active recreation activities as well as community centers and nature centers. The Parks Department also offers senior programs, special population programs, cultural arts classes, dog parks, trails, nature programs, sports leagues, waterway events, and art galleries. Parks range from regional natural areas such as Beaman Park, to regional parks with trail systems such as Warner Parks, to community parks such as Coleman Park and Hadley Park, to smaller neighborhood parks, such as Richland Park, Red Caboose Park, and Watkins Park.

The *Nashville Open Space Plan, April 2011*, focuses on protecting various types of open space throughout Nashville and adding to the overall open space network. The Open Space Plan contains four main themes: connect wildlife and water networks; connect people to the green infrastructure network; support urban and rural farming; and preserve historic and iconic resources. The plan provides a roadmap for the strategic conservation and creation of parks and green spaces, by both the public and private sectors. The plan recommends new opportunities for parks and open space in urban areas such as the creation of neighborhood parks and gardens as well as opportunities outside of the urban core such as conserving farms and forests and protecting river corridors. Goals focus on acquiring park space and protecting green space during the next 10 years. Nashville's Open Space Plan has set a goal of acquiring an additional 6,000 acres of parkland by 2035. For comparison, the Trust for Public Land's *2012 City Parks Facts Report* shows that Nashville has 38 acres of parkland per 1,000 residents compared with 37 acres for Austin, Texas, and 20 acres for Charlotte, North Carolina. Priorities for acquiring additional park land include an open space anchor in the southeast quadrant of the county, creating additional neighborhood-scale parks, and acquiring parks within each of the city's growth centers.

In addition to park spaces, Nashville has a popular, expanding greenway system, which provides a network of trails linking activity centers such as neighborhoods, schools, parks and commercial areas. Nashville's envisioned greenway system is based largely on locating greenways along existing networks of rivers, lakes, and streams. By locating greenway corridors along these water features—generally in floodplains—communities utilize land that would otherwise be unused because of

flooding hazards. Greenways provide a vegetative buffer that protects water quality and conserves open space and, in many cases, creates wildlife habitat, urban forests, and corridors. The increased networks of greenways in Nashville also offer both recreational and transportation opportunities by providing bicycle and pedestrian friendly routes between schools, homes, shopping, employment, and other destinations. Adding greenways or other trails can improve an area's quality of life as residential, commercial, employment, and recreational uses develop. Greenways add value to a neighborhood by providing residents with alternative transportation and recreational options, as greenways encourage healthier and more active lifestyles. Often, greenways are viewed as solely recreational, but greenways can also serve a transportation function as more direct connections between places.

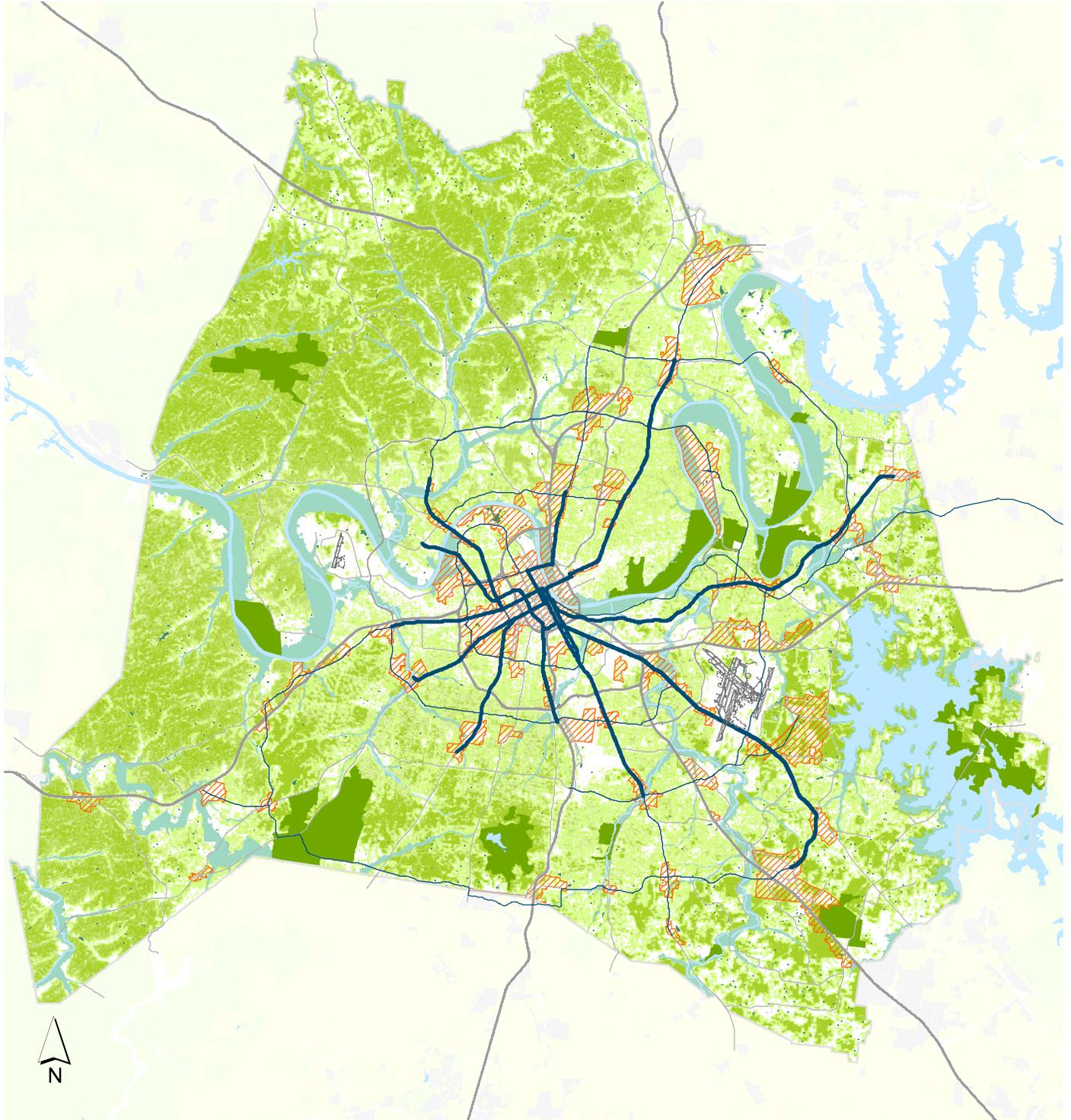
Trees, woodlands, and habitat

Tree covered areas provide key corridors for wildlife and recreation as well as areas of scenic beauty. Air quality is improved and air temperatures are moderated by forest cover. Nashville's ecological landscape is home to mature urban and traditional forests, ridgetops covered in a variety of trees and shrubs, and five kinds of forest habitat, including rocky cedar glades (unique to Middle Tennessee and found nowhere else in the world), river marshes, and the extensive river and stream network. The western part of Davidson County currently contains large forest areas that provide excellent plant and animal habitat, provide income to landowners who manage forests for timber, and clean the surrounding air and water. The southeastern portion of the county contains unique cedar glades. Other areas of trees, including street trees, private gardens, and woodlands, are found throughout the city's urban, suburban, and rural areas.

Woodlands play a key role in watershed health as previously discussed, serving as headwater areas that are protected by tree cover, vegetation, and undisturbed soils. Native plants possess coping mechanisms shaped by time that are unique to Nashville's climate, soils, pests, diseases, predators, and other hazards and threats. Headwater areas, especially due to deep tree roots, absorb water, slow water runoff, and filter water, thereby providing both water quality and quantity services. Even if every roof, parking surface, yard, and gutter could store runoff, it would still approximate only 60 to 70 percent of the water runoff removal provided by native forests.⁴ This reinforces the approach of many communities who are adamant about preserving and restoring native landscapes and making every roof space

⁴ *United States Department of Agriculture Forest Service; <http://www.fs.fed.us/publications/policy-analysis/water.pdf>*

Figure NR-14: Nashville's urban forest



Tree Canopy Legend



green or parking space porous. The basic nature of water dictates that natural infrastructure is critical to a truly resilient community.

Woodlands also play a key role in protecting air quality. Trees and other plants utilize carbon dioxide in the atmosphere and in the process release oxygen for us to breathe. Loss of trees anywhere leads to increases in local temperatures, energy use, and the volume of rainwater runoff. Forests also provide habitats for plants and wildlife. As more development occurs, forest fragmentation and the fragmentation of wildlife habitat is a serious issue. As forests, especially ecologically mature forests, are changed by human activities, such as construction and development, plants and animals are harmed, scattered, or destroyed.

As Davidson County's population has grown, its tree canopy has given way to development. The recommended average tree canopy for urban areas is 40 to 50 percent per the American Forests group.⁵ The rural northwest and southwest portions of Davidson County currently have healthy tree coverage, but face population growth and development pressure. Meanwhile, in 2013, Nashville's urban areas averaged 30 percent tree canopy coverage, while downtown had only 5 percent coverage. In 2010, Nashville completed its first assessment of the city's tree canopy, which included both an understanding of where trees exist and recommendations on where trees could be planted. This was followed in 2012 by the creation of the Metro Landscape Coordination program, which is managed by a city horticulturist. The program works to preserve, expand, and enhance Nashville's natural beauty by supporting ongoing and future projects, ranging from tree plantings to community beautification events. A preliminary assessment several years ago that used the American Forests' Rapid Ecosystems Analysis indicates that the value of Nashville's trees may be as much as \$3.6 billion a year.⁶

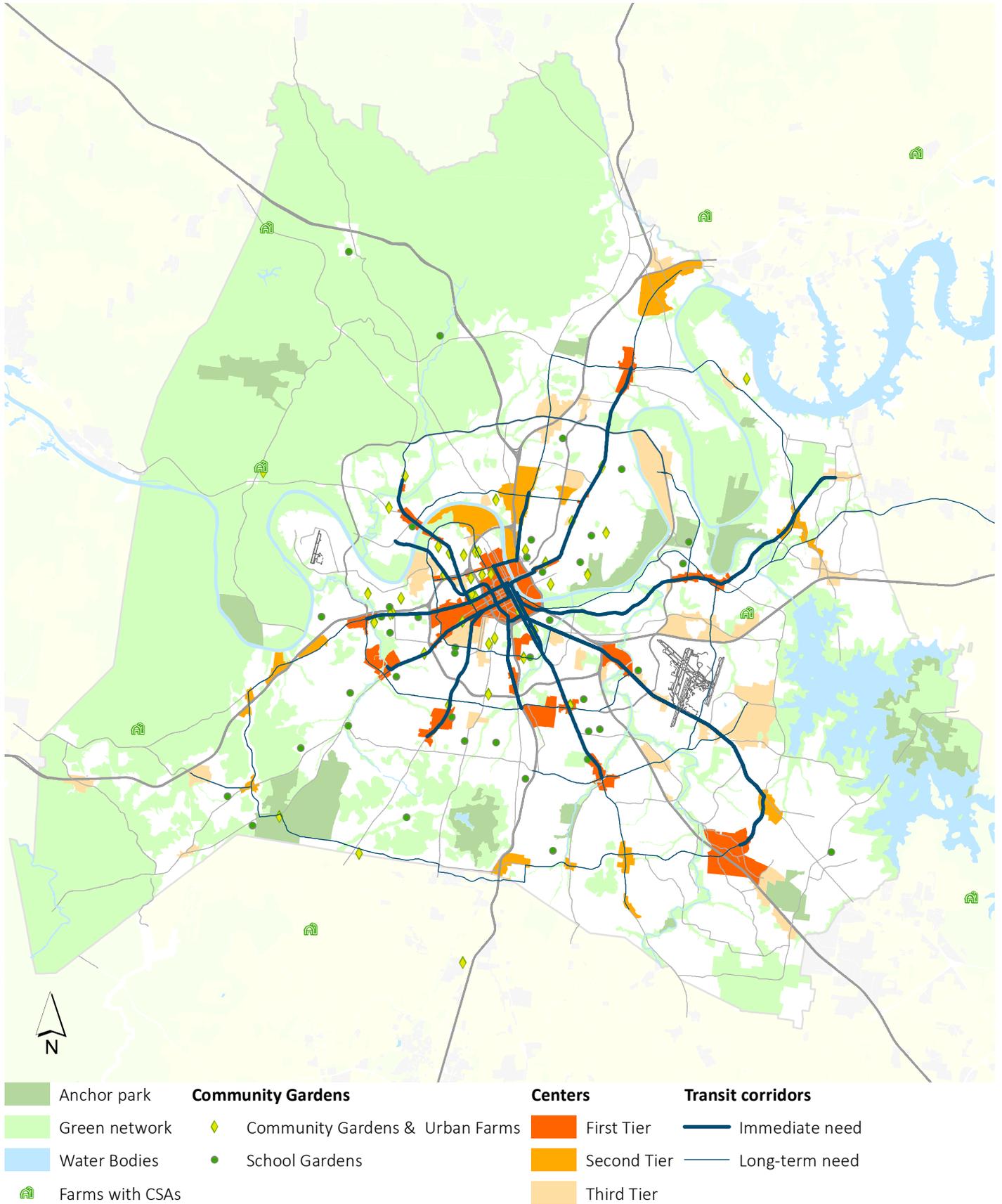
Agriculture and farmland

Agriculture occurs throughout Tennessee, but Nashville is the commercial and infrastructural hub of Middle Tennessee's food economy. This is due to the city's geographically central location, the confluences of major interstates and rail lines, and its status as the region's largest population center. Food processing, consumption, and transportation are important components of Nashville's economy and cultural identity, and those industries help to define the city's relationship with the larger region

⁵ <http://www.americanforests.org/>

⁶ *Managing Nashville's Urban Forest Report*, http://www.treesnashville.org/pdfs/MTACProposal_091708.pdf

Figure NR-15: Farms, gardens, and community-supported agriculture



around it. Of course, that relationship of food supply and demand travels both ways—into and out of Nashville—and, like all food, it begins in the ground. Agricultural production in our region and across the nation faces several critical issues: loss of farmland, increasingly concentrated operations, economic vulnerability, limited water supplies, and environmental degradation.

Davidson County, like many Middle Tennessee counties, has a strong history of farming. The Cumberland River’s bends and other waterways provide fertile bottomland soil excellent for crop production. However, the prime agricultural lands nearest the city have mostly been developed for housing, industrial production, or commercial purposes. Despite the increased urbanization and suburbanization of land, Nashville still has a number of farms, many of them small farms, and is seeing an increase in urban farming. With over half of Davidson County already developed, farming in Nashville is threatened by growth, particularly in southeast Davidson County.

However, there are small but effective examples of local food trends that increase and protect our farms and community resiliency. Community Supported Agriculture (CSAs) allows residents to have access to high quality locally grown produce. CSA members purchase a share of vegetables from a local CSA farm, often with weekly or biweekly produce drop-offs or pickups.⁷ Through upfront individual purchase of shares, the shareholders gain fresh produce, while the CSA farmer gains greater income security in lean seasons. Such farms bolster the local economy and help knit together their communities. In fact, interest in the local food has grown so much that local governments now encourage chickens, honey production and bees, and vegetable production in urban and suburban locations.

The development of a locally based, sustainable food system promotes environmental consciousness and fosters a local economy through the purchase of locally grown foods. Because local food does not travel as far from farm to table when compared to traditional food shipments, subsequent air pollution is also decreased. Consequently, local production allows local restaurants, grocery stores, and consumers to lessen their respective carbon footprints.

Local Food

Consumer preferences have increased toward the production, marketing, and consumption of locally produced food. The proportion of local food sales is small but growing in the United States. Locally marketed food is more likely to occur on farms located in or near cities with regional farmers’ markets and direct from farm sales resurging among consumers.

⁷ *Just Food*: <http://www.justfood.org/csa>

Air resources, air quality, and climate change

Conventional air pollutants

The major sources of air pollution in Nashville and the region are not industrial smokestacks, but “mobile sources,” i.e. the engines found in our automobiles, trucks, motorcycles, boats, and lawnmowers.

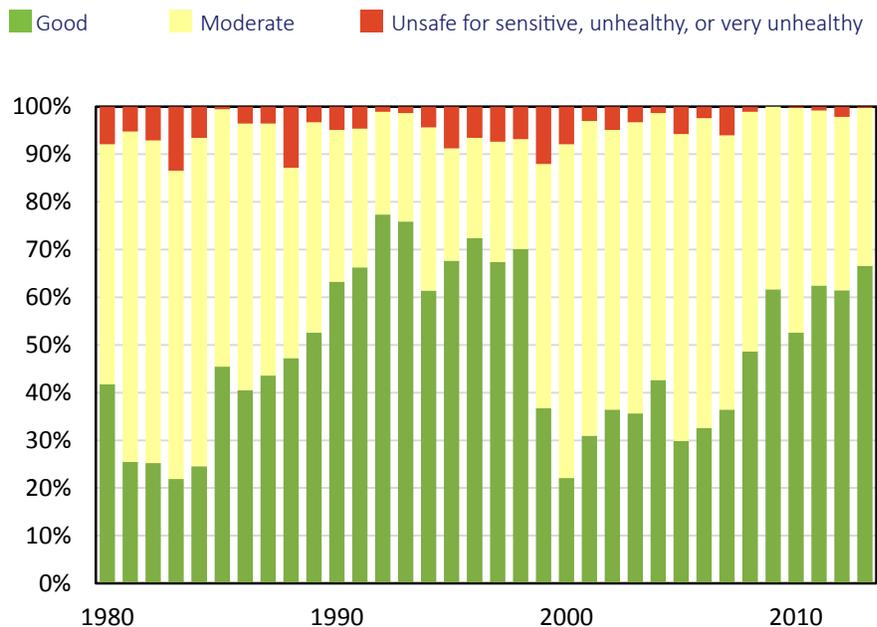
With Nashville and Davidson County’s years of poor air quality—and “non-attainment” of air quality standards—largely behind the city, it is easy to underestimate the importance of continuous vigilance about air quality. The quality of air varies from locality to locality. The differences in air quality depend on the location’s population, activity of the people, activities in the neighboring regions, local weather patterns, and geographical features. In the United States, air quality is driven by six main pollutants: lead, carbon monoxide, ozone, sulfur dioxide, nitrogen oxide, and small particulates. Within Middle Tennessee, ozone and fine particulates are of most concern. The good news is that concentrations of these pollutants have fallen over the past two decades, due largely to the 1990 Clean Air Act Amendments that reduced industry emissions. Pollution reductions from mobile sources have also been substantially reduced, but the city and region must still work at maintaining and improving air quality.

Non-Attainment

Non-attainment is the designation given to a region when its air quality is worse than the National Ambient Air Quality Standards. There are increased costs to businesses and consumers due to special requirements for vehicles, fuels sold in the area, and for commercial and consumer products. As of 2014, the Nashville area is considered in compliance with the standards. If the standards are strengthened by EPA, it is likely the Nashville area may fall out of compliance.

Figure NR-16: Air Quality Index, 1980 - 2013

Percent of days each year with good, fair, and poor air quality.



Source: Environmental Protection Agency, Air Quality System

The major sources of air pollution in Nashville and the region are not industrial smokestacks, but “mobile sources,” like the engines found in our automobiles, trucks, motorcycles, boats, and lawnmowers. Transportation is a major contributor to air pollution, especially greenhouse gas emissions. Added to that is the city’s geographic location. Nashville is situated in a basin with hills to the south, west, and north, forming an amphitheater around the city that can trap poor quality air. Nashville and regional decision makers need to be aware of the effect that transportation has on air quality and other environmental systems and cultivate strategies for mitigating those negative effects.

The amount of pollution caused by transportation is directly related to the city’s and region’s patterns of growth and development. The increase in suburban neighborhoods at farther and farther distances from city centers, which necessitate more driving, has dictated the construction of ever-increasing numbers and capacities of roadways. In the Nashville area, an excess of 18,652,000 gallons of fuel was consumed in 2012 because of congestion-related delays. In that same year, Nashville ranked seventh worst in the nation in the amount of carbon dioxide produced because of congestion-related delays. Urban sprawl has led to longer commute distances, making cars the most practical means of transportation. Statistics show that drivers log over 34 million miles in and through Davidson County each day. In 2012, Nashville’s daily average of 47 vehicle miles driven per person was the seventh highest in the nation.⁸

Episodes of extreme heat and drought adversely affect air quality. Very simply, ozone is created by a chemical reaction that is facilitated by high temperatures and low humidity. Most of the ozone problems result from a mix of motor vehicle exhaust and summer weather, and if summers get hotter, air quality suffers even more. To maintain Nashville’s and the region’s air quality, continuing to enforce controls on motor vehicles and other sources of pollution is critical. Replacing older, dirtier vehicles with newer, cleaner vehicles will help Nashville’s air quality. But to really achieve cleaner and healthier air, Nashvillians and Middle Tennessee residents must pay attention to how we get around and find additional strategies that reduce the burden of vehicle exhaust in the region.

The Environmental Protection Agency (EPA) develops National Ambient Air Quality Standards based on known and measurable health hazards from carbon monoxide, sulfur dioxide, nitrogen dioxide, particles, and

⁸ 2012 Urban Mobility Report Powered by INRIX Traffic Data. <http://mobility.tamu.edu>

ozone. Nashville's success in achieving clean air is measured by the number of days in the year that the air here meets these National Standards. In 2013, Davidson County had good air quality on 243 days, moderate quality on 121 days, and unhealthy for sensitive groups on one day.⁹ The Metro Health Department works with other agencies to maintain standards and address problems.

The EPA last updated the air quality standards for ozone in 2008 and has proposed strengthening the air quality standards for ground-level ozone which will expand the ozone monitoring season and will update the Air Quality Index to ensure people are notified when air quality is unhealthy. The new eight-hour standards will be set within a range of 65 to 70 parts per billion (ppb). EPA is seeking comment for setting the health standard as low as 60 ppb.

Making a city more walkable is good for the health of its citizens and their quality of life. It is also good for improving air quality. Historically, Nashville's approach to transportation, like most cities, revolved around automobiles. However, transportation is about more than streets and highways. In 2010, Mayor Dean signed a Complete Streets Executive Order, to help make Nashville's streets safer and more comfortable for all users. Nashville's goal is to create and sustain active, pedestrian-oriented, mixed use streets that address the needs of walkers, cyclists, and transit riders in addition to drivers. This strategy, in turn, helps maintain good air quality.

Building compactly and open space preservation also help improve air quality. In evaluation of the environmental benefits of infill versus greenfield development, siting new development in an existing neighborhood instead of an undeveloped green space on the suburban edge, can reduce miles driven by as much as 58 percent. Communities that make it easy for people to choose to walk, bicycle, or take transit can also reduce air pollution by reducing automobile mileage and smog-forming emissions.¹⁰

Climate change

The Earth's natural greenhouse system keeps the planet warm and habitable; without it, the earth's surface would be about 60 degrees

⁹ United States Environmental Protection Agency: <http://www.epa.gov/airdata/>

¹⁰ United States Environmental Protection Agency: <http://www.epa.gov/smartgrowth/topics/eb.htm>

Fahrenheit colder on average.¹¹ Since the average temperature of the Earth is about 45 degrees Fahrenheit, the natural greenhouse effect is clearly a good thing. However, scientists refer to what has been happening in the Earth's atmosphere over the past century as the "enhanced greenhouse effect"—meaning that even more of the sun's heat has been trapped, causing global temperatures to rise. By pumping man-made greenhouse gases into the atmosphere, humans are altering the process by which naturally occurring greenhouse gases trap the sun's heat before it can be released back into space. This is attributable to climate change.

Since the beginning of the industrial revolution, atmospheric concentrations of carbon dioxide have increased nearly 30 percent, methane concentrations have more than doubled, and nitrous oxide concentrations have risen by about 15 percent.¹² These increases have enhanced the heat-trapping capability of the Earth's atmosphere, which has led to a decrease in the polar ice caps and an increase in sea levels. Such trends have increased the frequency of severe storms, heavy rain events, and long periods of drought in the country and around the world.

Just as large corporations have recognized and are planning for a world in which carbon emissions are more expensive, Nashville needs to plan as well. Nashville needs both to mitigate, or reduce, its contributions and to adapt, or be resilient, to climate change. Businesses, government, and individuals can take measures to reduce their impacts through driving more fuel efficient vehicles, minimizing water use, expanding mass transit, improving the energy efficiency of buildings, planting urban street trees, and investing in renewable energy sources. Denser, built-up areas, such as Nashville's downtown core, also have higher temperatures compared to the surrounding more rural landscapes. Incorporating best practices through redevelopment is key to reducing the urban heat island effect in Nashville/Davidson County. The city has also taken steps developing a preliminary greenhouse gas inventory and expanding the city's involvement in sustainability projects such as utilizing pervious pavements, meeting LEED standards with new buildings, prohibiting vehicle idling, and purchasing fuel-efficient and electric vehicles for city fleets. The city will need to continue to lead by regularly updating a greenhouse inventory and formalizing a climate action plan.

¹¹ *Earth's Climate System*; http://earthguide.ucsd.edu/virtualmuseum/climatechange1/02_1.shtml

¹² *U.S. Department of Transportation*; <http://climate.dot.gov/about/overview/science.html>

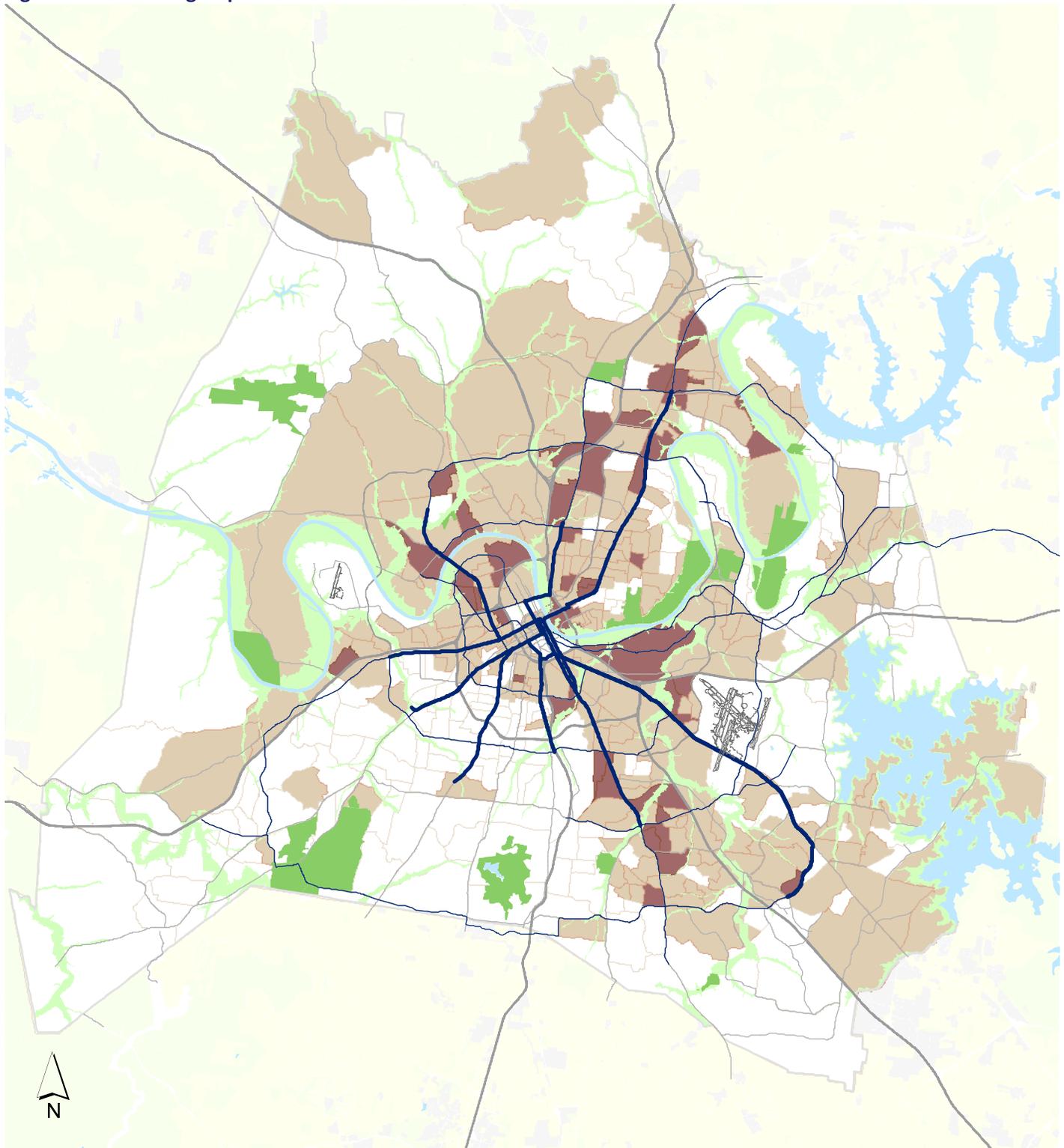
Environmental justice and equity

All cities have major thoroughfares and noxious or undesirable facilities such as landfills, asphalt plants, and/or prisons. Many cities are also home to significant heavy industry. While these land uses are necessary to the overall function of the community, they place a heavy burden on nearby residents and neighborhoods. Historically, low income and minority communities have been disproportionately impacted by noxious facilities and physically fractured by interstate highways and sewer treatment facilities in Nashville. The locations of these facilities have impacted the health of communities and torn apart some neighborhoods. Meanwhile, some communities have not had access to some of the more desirable land uses, such as parks and Nashville's rich environmental resources. These land use decisions can have environmental justice implications.

The EPA defines environmental justice as “the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.” Fair treatment means that no group of people should bear a disproportionate share of the negative environmental consequences resulting from industrial, commercial, or governmental operations and policies. The environmental justice movement emerged in the 1980s when minority, tribal, and low income communities began to organize in response to excessive detrimental health and environmental impacts in their neighborhoods. Negative impacts found in their communities included air pollution, industrial contamination, overconcentration of hazardous facilities, lead poisoning, and water pollution. Some communities have often directly or indirectly been excluded from the decision-making process. Studies have shown that often these uses are overloaded in minority, low-income, and tribal communities.

Over the years, the EPA and environmental justice organizations have expanded the fair treatment concept to consider not only how burdens are distributed across communities, but also how environmental and health benefits are shared. In other words, all people, regardless of race, ethnicity, or economic status, should have the same opportunity to enjoy the positive outcomes of environmental decisions and programs, such as cleaner air and water, improved health, and economic vitality. Both the Nashville Open Space Plan and the Parks and Greenways Master Plan have actions to provide parks and open space opportunities to everyone in Nashville. The long term goal is to have a park in proximity to and a greenway trail within two miles of every neighborhood of Nashville/Davidson County.

Figure NR-17: Block groups with Environmental Justice communities



Environmental Justice Communities Legend

- Water Bodies
- Anchor Parks
- Floodplain Areas

Environmental Justice Communities

of Factors

- 0 - 2
- 3 - 5
- 6 - 8

Concept Map Features

- High Capacity Transit Corridor
- High Capacity Transit Corridor (long term need)

Natural hazards and building resiliency

Nashville's weather is changing, and the city has experienced an increase in extreme weather events. In May 2010, Nashville received over 17 inches of rain during a two-day period, the most in 140 years of recorded weather. The resulting flood cost an estimated \$2 billion in damages to private property and killed 11 people. More than 10,000 people were displaced from their homes; 2,800 businesses sustained damage; 13,000 jobs were temporarily lost; 1,500 jobs were permanently lost; \$3.6 billion in business disruption occurred; and 115 roads were closed for up to a week. And in 2008, Nashville experienced a strong tornado, killing 22 people along its path in Middle Tennessee. Nashville's hottest day on record occurred in June 2012 when the temperature reached 109 degrees.

A "resilient" community is one that plans for potential hazards and adapts to climate change. Resiliency is a comprehensive approach that establishes patterns of growth, necessary infrastructure, and planned public safety response systems to manage any natural or man-made hazard. The result of a resilient community is one where there are fewer residents and businesses impacted when a catastrophic event occurs, and those that are impacted are more quickly able to get back in their homes and back to work.

Nashville/Davidson County faces natural and man-made hazards. Natural hazards include extreme weather events such as flooding, tornadoes, ice storms, cold snaps, and heat waves. Other hazards and catastrophes are also included, such as acts of terrorism, hazardous material spills, bridge failure, and sinkholes.

Nashville/Davidson County can shape its growth and preservation to increase resiliency. Limiting development on steep slopes, unstable soils and in floodplains can reduce the likelihood of extreme weather events impacting residents and businesses. Compact land use patterns with robust street networks can provide quicker response times for emergency workers. Ensuring that there is street connectivity in suburban settings provides emergency workers more routes to get to residents in danger and allows residents more routes out of a neighborhood that has been impacted by a weather event.

Furthermore, community leaders can identify, build and protect critical infrastructure, making Nashville/Davidson County more resilient in

the face of natural and man-made threats. Nashville's infrastructure network, including transportation, public safety, communications, parks and greenways, electric, water, and gas utilities, are critical to Nashville's emergency response, economy, and neighborhoods. Financial constraints, environmental concerns, and a culture of sustainability support diversification and connectivity of Nashville's infrastructure, including multimodal transportation systems, distributed energy resources, and smart telecommunications and data networks.

Balancing preservation and development to create resiliency

Systems, particularly natural systems, are inherently very complex and cannot be predictably controlled. Even though changes by humans to natural systems are easy to make, the response by natural systems to the changes cannot be as easily predicted. Because natural systems are so complex, negative consequences often come later, resulting in the need for more costly mitigation. Problems may be exacerbated through making individual development and investment decisions that fail to analyze or understand the implications on the entire natural system. That is why it is so important to monitor natural systems for problems and issues and try to correct causes early. Natural systems are dynamic and will adapt to new challenges in the absence of human disruption. Nashville's patterns of growth and preservation, its infrastructure, and its buildings should reflect our culture of sustainability and encourage sustainable living.

Through zoning and subdivision regulations, Metro manages the conversion of land to more intense development uses as well as the design of the built environment—the site, infrastructure, and buildings—all of which impact natural features. Residential and commercial development can significantly alter the natural relationships between water, woodlands, air, and climate. A commercial tree ordinance has strengthened the preservation of urban trees, while a residential tree ordinance in Nashville is still needed.

Multiple skill sets, diverse perspectives, and collaboration are necessary to create sustainable, resilient development. In its broadest sense, strategies for sustainability and sustainable development aim to provide benefits to the environment, the economy, and for the community—today and in the future. Preserving and restoring natural systems leads to sustainability. This does not mean, however, a ban on development. It means a development approach that strategically locates new growth, utilizes

appropriate building techniques, and preserves some areas as natural areas, serving an important function for the city.

This also means a development approach that integrates natural features into the design. It works progressively toward a process of continuous improvement. Increasingly, built environments are being designed to mimic low maintenance natural environments. These built environments integrate native landforms, native plants, and natural functions; are cheaper to install than expensive concrete pipes and asphalt; and are less expensive to maintain. They also prove to be more resilient and adaptable to pests, storm events, and other hazards. Some built environments might incorporate solar panels in the future. As the city preserves, restores, and allows natural systems to continually regenerate, the result is higher quality and more resilient infrastructure than human infrastructure can do alone.

Finally, in addition to thoughtfully deciding where and how to grow, Metro should seek to invest in infrastructure wisely, considering long-term costs (including infrastructure constructed by the private sector that passes over to public ownership for operations and maintenance with those costs going to the city and its taxpayers). In this manner, future taxpayers, ratepayers, and the children of today's residents will avoid the price of inadequately informed programs where the man-made system comes at one price when first installed and then costs much more years later when the system requires extensive maintenance. Today's residents could instead enjoy natural, sustainable, and regenerative investments that add value now and that grow in value forever. Nashville has committed to creating a system of publicly and privately held open space—parks and preserves—to protect some of Nashville's natural systems for their hazard mitigation properties and for their scenic, cultural, and recreational value.

Nashvillians should strive to include a diversity of opinions, encourage honest debate about issues among decision makers, and ultimately balance impacts of land uses throughout the entire city and county. Nashville needs to expand its legacy of inclusion with policies that provide nearby access to environmental resources for those living in areas that are underserved and balance the economic, social, and environmental needs and impacts when making land use and transportation decisions.

Today, Nashville is redirecting priorities to restoring natural systems that can protect the lives and property of Nashvillians from future extreme

weather events, while thoughtfully, strategically deciding where to grow and how to develop land. Numerous people and organizations across Nashville and the Middle Tennessee region have come together and are diligently working to protect and enhance our natural resources and our resiliency. Like many cities, Nashville must address development that occurred over decades where policy and regulations did not protect natural systems such as floodplains, wetlands, and steep slopes and did not provide critical infrastructure needed for resiliency like connected streets and sidewalks. However, for several years now, Nashville’s development regulations have protected natural systems that play a key role during extreme weather events. Meanwhile, the city has taken decisive action—after the 2010 flood and other floods—to purchase properties in the floodway and remove buildings inappropriately located. Metro departments that work in growth and development have introduced policies, regulations, tools, and incentives to encourage sustainable, resilient development. The Codes Department created a “Green Building Permit” that is issued to any building meeting the sustainable design protocol within the zoning code. The green permit incentivizes sustainable development through expediting the permitting process for a building permit and providing local recognition for excellence in sustainable development. Meanwhile, the Parks Department strategically locates greenways on or near floodplains, providing an amenity to the community as well as a visual reminder of the importance of protecting Nashville’s natural resources. Metro Nashville has also led the region in creating “green streets”—street design that incorporates urban natural infrastructure. Deaderick Street and the 28th Avenue/31st Avenue Connector included green street elements. However, it takes all residents of Nashville and Davidson County—from individual behaviors to larger community approaches—to accomplish what needs to be done. This will enable us to secure the best Nashville for our current and future generations.

Goals and policies

Goals set broad direction for the plan by applying the Guiding Principles to NashvilleNext's seven plan elements. They identify, for each element, what NashvilleNext is trying to achieve.

Policies extend goals by providing more detail. They give more direct guidance on community decision making, without specifying which tools to use. (Identifying and adopting which tool is a job for actions and implementation.) As implementation occurs, if one particular tool is rejected by the public, the policy guidance remains.

Actions (Volume IV) are short-term steps to carry out these Policies and achieve these Goals. The plan is structured so that the Action plan is updated the most frequently. During the annual update process, actions can be removed if accomplished or if they were deemed infeasible. Removing an action because it's infeasible leaves the overarching Policy in place. During the update, the Planning Department would seek to identify alternative ways of accomplishing the policy.

Related plans

With a strong commitment to annual updates and review, the General Plan is able to play a key role in providing coordination between other agencies and plans. It helps other departments understand long term goals and how their work shapes that, even if they must focus on short term needs that are out of step with the long term plan. For example, the long term vision for transit is to build a high capacity transit network operating along major corridors, with few deviations from those corridors. In the short term, MTA needs to conduct its operations to connect to riders, who may not live along those major corridors. Eventually, MTA operations should merge with the long range vision, but it will take time to build the infrastructure and housing to support the high capacity network.

Thus, Element chapters highlight related plans when discussing NashvilleNext Goals & Policies.

Much of what Nashvillians want for the future goes beyond what Metro can achieve on its own. Partnerships with community groups, nonprofits, and the private sector are critical.

NR goal 1

Nashville invests in and increases its natural environment for beauty, biodiversity, recreation, food production, resiliency, and response to climate change through mitigation and adaptation strategies.

NR policy 1.1

Prioritize water quality and conservation by protecting the Cumberland River and its tributaries.

NR policy 1.2

Provide resources such as land, sustained funding, staffing, and policies to maintain a growing parks and natural infrastructure network.

NR policy 1.3

Develop a secure and sustainable local food system that supports our local farmers and growers.

NR policy 1.4

Preserve and expand upon Nashville's existing tree canopy including urban trees, street trees, and larger tracts of forested lands.

NR policy 1.5

Invest in robust and diversified infrastructure including transportation choices which prioritize the maintenance of existing streets, expansion of mass transit service, and the creation of more walking and biking options in order to reduce sprawling development patterns, improve air and water quality, and preserve existing open spaces in Nashville.

NR goal 2

All communities in Nashville enjoy equally high levels of environmental protection, equitable access to nature, and opportunities to improve their health and quality of life.

NR policy 2.1

Diversify participation in the policymaking and implementation of Nashville's local services relating to infrastructure, land use, transportation, and parks.

NR policy 2.2

Increase access to recreational opportunities that distinguish Nashville, improve quality of life, and support the local economy.

NR goal 3

Nashville's built environment—public, private, and residential—conserves and efficiently uses land, energy, water, and resources while reducing waste and pollution.

NR policy 3.1

Establish and implement citywide energy reduction goals and target percentages of renewable energy sources with input from key stakeholders.

NR policy 3.2

Establish a wide-ranging green education campaign that focuses on the "why" and "how" for water conservation, energy efficiency and reductions, recycling and waste reduction, natural resources preservation, and outdoor activity.

NR policy 3.3

Metropolitan Government buildings should lead the city in energy efficiency by modeling with oversight best practices to meet the city's green initiatives which reduce energy and water consumption and shift to renewable energy sources.

NR goal 4

Nashville's built and natural environment is resilient, sustainable, and smart because it adapts to and mitigates the impact of climate change involving extreme weather, hazards, and catastrophes.

NR policy 4.1

Identify threats to current and future infrastructure related to climate change including extreme weather, hazards, and catastrophes.

NR policy 4.2

Establish policies that encourage resiliency and mitigate the effects of climate change leading to weather extremes, hazards, and catastrophes.

NR policy 4.3

Prepare for and quickly respond to extreme weather, hazards, and catastrophes by creating, implementing, and communicating contingency plans with smart and connected infrastructure.