





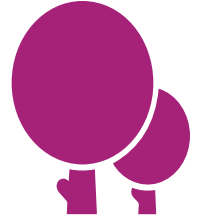


# Harmony with the Natural Environment

**Grow Synergies between the Built and  
Natural Environment**

**Foster Resilient Development Responsive  
to Climate Change**

**Grow Sustainable Industries, Green  
Technology, and Renewable Energy**



## Principle #9

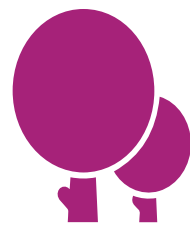
# Grow Synergies Between the Built and Natural Environment

People have been visiting and choosing to live in Asheville since its beginnings because of the beauty and accessibility of the natural environment. National and state parks surround the city, which preserve and protect significant acreage of natural open space. However, because of the city's continued attraction as a place to live and visit, the need for new development will threaten the remaining natural environment of the city. To promote environmental and economic sustainability and protect its image and brand, Asheville must continue with its efforts to promote development and infrastructure that works in harmony with the natural environment and promotes easy access for residents and guests to the outdoors.









GOAL 9-1

# Improve and Expand Greenways Programs and Implement Green Infrastructure

OVERVIEW

The greenways are one of Asheville’s most beloved attributes. The City should expand upon the greenways programs, so long as they don’t disrupt neighborhoods, to connect communities with destinations. The City should also implement green infrastructure along “complete” city streets through the planting of street trees and green stormwater management.

OUTCOMES

- Increase in or achieving a target goal of new trees planted on public and private property, distributed city-wide because of establishing and executing community tree planting program
- Increased biodiversity and tree species diversity along city streets, parks and greenways
- Target 90% of households within 1 mile of greenway trail access

POLICY METRICS

- Increased acreage of tree canopy
- Percentage of community parks that link to City Greenways
- 100% completion of greenway plan
- 100% of new public streets designed to complete streets standards
- Increased investment over time into the development of new green infrastructure and the retrofit of existing infrastructure into green infrastructure
- Increases in funding for street tree maintenance to meet requirements
- Increases in funding for bike lane, trail, greenway maintenance to meet quality requirements
- Develop a stormwater plan around green infrastructure.







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## DIRECT STRATEGIES

- Create an Urban Forestry Master Plan that promotes biodiversity and forestry best practices.
- Create an educational program that describes the benefits of green infrastructure.
- Expand green infrastructure options in the City's Standard Specifications and Details Manual.
- Implement low impact development strategies that may include naturalized stormwater features, such as rain gardens, landscaped swales and bio-retention areas along roadways and greenways.
- Incentivize street tree planting and maintenance on private property and develop a planting policy for commercial and residential development through incentives and program support.
- Create a community supported and celebrated city-wide tree planting program that encourages private property owners and businesses to plant more trees.
- Educate and encourage residents on the benefits of tree preservation and tree planting on their own properties to stop city-wide tree canopy losses and to encourage a healthier urban forest.
- Coordinate appropriate tree species and placement with overhead power lines and other obstacles.
- Create a natural surface trail program in the greenway program.
- Consider the use of green infrastructure when improving existing parks or creating new ones.

## KEY TERMS

- **Green infrastructure** is an approach to water management that protects, restores, or mimics the natural water cycle. Green infrastructure is effective, economical, and enhances community safety and quality of life. It means planting trees and restoring wetlands, rather than building a costly new water treatment plant.
- **Complete Streets** is a policy for roadway intended to ensure safe and efficient access for all users, including pedestrians, bicyclists, motorists, and transit riders of all ages and abilities. Integrating transportation facility planning, design, construction, operation, and maintenance, a Complete Streets approach attempts to balance the needs of various modes and land uses in support of the local community and its economic, cultural, and environmental goals. Benefits include improved safety; better connectivity; increased travel options; enhanced sustainability; and a more attractive and vibrant community.
- **Green Streets** use vegetation, soil, and engineered systems to slow, filter, and clean stormwater runoff from impervious surfaces. Rather than directing stormwater runoff away from impervious surfaces into storm sewer systems, green streets attempt to capture rainwater as near as possible to where it falls, using design elements such as street trees, permeable pavements, bio-retention, and swales.



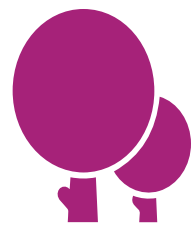
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#### SYNERGISTIC STRATEGIES

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- Develop policies and secure funds to acquire needed property and easements to expand the existing Asheville and Buncombe County greenway programs.
  - Implement a street tree planting program, ideally in conjunction with creating complete streets, to increase the number of street trees planted and maintained on city streets.
  - Where dimensionally and topographically possible, create adequate growing room and space for adequate soil volumes for planting and maintaining shade trees along existing and new city streets.
  - Where feasible, link greenways to transit nodes, employment, shopping, schools, and other nodes and corridors so that they can be used as a practical alternative to vehicular transportation.
  - Increase greenway connectivity between neighborhoods, parks, natural areas and other greenways.
  - In support of “Complete Streets”, create design standards for “Green Streets” that includes planting space, tree placement, naturalized stormwater management features, sidewalks, bike lanes, landscape, etc.
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GOAL 9-2

# Promote Access to Well-Maintained Parks and Open Space for All

OVERVIEW

Asheville should strive to increase the quality, number and accessibility of parks and open spaces by developing new city parks of all types that serve each neighborhood equitably, manage existing parks with environmental best practices and create walkable and bikeable access to parks and open spaces for all the city’s residents. In doing so, it should provide adequate funding, staffing and operations to meet demands.

OUTCOMES

- Increased value and longevity of park trees (reference ANSI A-300 Tree Care Standards)
- 85% of city households to be located within 1/2-mile walking distance of a park
- 90% of city households to be located within 3 miles of greenway trail access

POLICY METRICS

- At least 7 acres of parks per 1,000 residents distributed city-wide to serve all neighborhoods within a 5-minute walk
- No net loss and/or increase in percentage of city open space as a function of total city area
- Maintain a natural resource acreage of 20 acres per 1,000 residents or greater OR Maintain natural resource acreage at 11.5% or more of total jurisdictional land area
- All parks accessible by a bike lane, bike trail, or greenway

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#### DIRECT STRATEGIES

- Adopt environmentally friendly and site design guidelines for new public parklands and develop design and maintenance guidelines for improvements to existing park facilities.
- Implement best management practices for park maintenance and operations.
- Leverage the Parks Advisory Board to regularly receive feedback from residents and organizations regarding planning, decision-making, and other issues affecting the quality and availability of public parklands.
- Fund a parks and greenways maintenance program to meet the level of service demands.
- Consistently invest sufficient capital and operational funding to create and maintain park facilities & buildings.
- Look for opportunities to provide naturalized stormwater and native plants within parks and open spaces and on city owned property.
- Establish a tree management plan within parks that embraces tree maintenance best management practices and follows national tree maintenance standards.
- Develop code and policies for conservation based subdivisions and communities.
- Promote / prioritize the use of native plants on public and private developments.
- Continue to ensure equity in parks planning.

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#### SYNERGISTIC STRATEGIES

- Ensure all city parks are safe and secure and accessible to all levels of ability
  - Develop more pocket and neighborhood-scale parks city wide within walking distances (1/4 mile) of residences
  - Require that developments be planned and located so they provide access to natural and programmed open spaces
  - As part of greenway planning, ensure that there is an adequate bike lane, bike trail, or greenway connection to all city owned and managed parks and open spaces
  - Strengthen park programming city wide and seek grants for unique programs that fit with neighborhood character and need and ensure new and existing park amenities are in line with neighborhood needs and demographics
  - Promote community / neighborhood gardens as part of parks design and programming to encourage social interaction and healthy food choices
  - Require neighborhood input into the design and maintenance of parks
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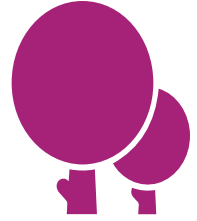










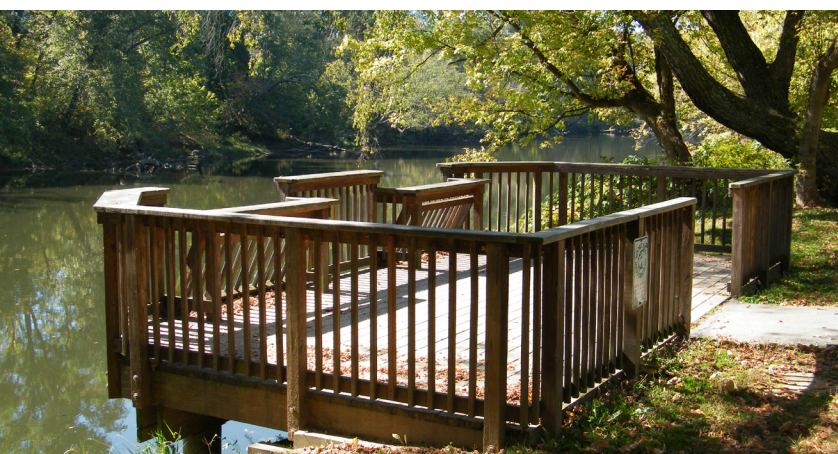


## Principle #10

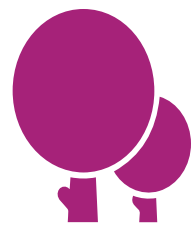
# **Foster Resilient Development That is Responsive to Climate Change**

It is imperative that countries, cities, towns, communities and individuals each accept the reality that climate change will affect our lives and the health of the natural environment in significant ways for generations to come. We must conserve our natural resources, transition to less polluting forms of energy, implement “greener” infrastructure, protect our biodiversity and protect our forests and riparian landscapes if we are to be resilient through this time of change. As part of that, the city, its citizens and those doing business here must become more invested in and accountable to the protection of the natural environment.









GOAL 10-1

# Mitigate Flooding and Erosion

OVERVIEW

With a mountainous climate and abundant waterways, Asheville is unendingly threatened by landslides, flooding, hillside instability. This need not be an impediment to quality of life, however, so long as key steps are taken to mitigate the likelihood and impacts of flooding and erosion on communities. Existing responsibly in this natural context bears responsibility on both public policy and on individual decision-making.

OUTCOMES

- Reductions in sediment at receiving streams
- Reduction in the hazard impacts on development

POLICY METRICS

- 100% of the existing 100-year flood plain preserved or mitigated in accordance with existing regulations
- All slopes over 35 percent are protected
- Increase in the promotion and implementation of LID strategies on private and public development projects
- Increase in the percentage of green infrastructure installed using the climate adaptation plan and census block data

KEY TERMS

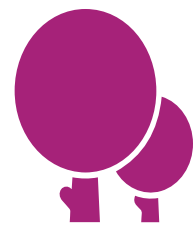
- **National Environmental Modeling and Analysis Center (NEMAC):** UNC Asheville’s National Environmental Modeling and Analysis Center (NEMAC), established in November 2003, specializes in science communication and the development of decision support tools for local, regional, and national decision makers, planners, and the public. Their goal is to synthesize and integrate data, create tools and visualizations, foster understanding, and provide decision support to help their partners achieve resilience based solutions.

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#### SYNERGISTIC STRATEGIES

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- Implement NEMAC's Citywide resiliency guidelines.
  - Update the steep slope ordinance to ensure more stringent protections.
  - Enhance buffers and open space preservation along creeks, streams and rivers.
  - Ensure zoning organizes and locates new development so that it protects waterbodies, streams, steep slopes, sensitive landscapes and habitats.
  - Revisit all waterfront zoning to ensure polluting uses are prohibited within flood zones.
  - Increase funding of stormwater maintenance programs that mitigate flooding and erosion.
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GOAL 10-2

# Protect Land and Water Assets

OVERVIEW

Ensuring a responsible relationship with land and water assets will require creating further public awareness and the augmentation or creation of ordinances and standards that protect sensitive lands, forests, habitats and water resources.

OUTCOMES

- Improvement in light pollution over existing condition based on Sky Quality meter reading
- Increase the amount and diversity of native habitats within the city

POLICY METRICS

- Increases over time in total preserved natural open space acreage within the city limits
- Restore degraded natural resource areas at a ratio greater than 1% of developed land area in jurisdiction
- Achieve certification as an International Dark Sky Community

KEY TERMS

- **Sky Quality meter:** The Sky Quality Meter (SQM) is an instrument used to measure the luminance of the night sky. It is used, typically by amateur astronomers, to quantify the sky glow aspect of light pollution, and uses units of “magnitudes per square arcsecond” favored by astronomers.
- **International Dark Sky Ordinance:** The dark-sky movement is a campaign to reduce light pollution. The advantages of reducing light pollution include an increased number of stars visible at night, reducing the effects of electric lighting on the environment, and cutting down on energy usage.

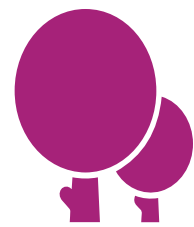


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**DIRECT STRATEGIES**

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- Commit to minimizing the loss of the urban forest - especially on city owned land.
  - Educate and encourage residents on the benefits of tree preservation and tree planting on their own properties to stop city-wide tree canopy losses and to encourage a healthier urban forest. Coordinate placement of trees with overhead power lines and other obstacles that would prevent the tree from maturing naturally.
  - Protect land and water resources by enforcing stream or water body buffers and other similar requirements and development standards.
  - Develop a program to increase the amount and diversity of native species and habitats within the city.
  - Reduce further fragmentation of forest and habitats, and look for opportunities to connect natural and forested areas.
  - Restore 1% of degraded natural resources per year.
  - Educate property owners on the benefits of resource protection and environmentally friendly behaviors including reducing light pollution, increasing natural area buffers near waterways, and keeping more forested land instead of creating more lawn space.
  - Invest in stormwater, water, and sanitation education programs and code enforcement.
  - Educate citizens about the importance of maintaining healthy and connected natural areas.
  - Develop a city-wide program to restore watersheds, daylight covered up streams and reduce future impairment.
  - Manage public lands with a goal to enhance habitat types: meadows, designs with a specific species focus for example- monarch butterfly flyway or bat habitat to assist animal diversity and let some parks re-naturalize.
  - Adopt a city-wide night sky ordinance to reduce further degradation of the night sky.
  - Create and enforce policies that protect the habitats of endangered and threatened species.
  - Create a city-wide program to purchase sensitive land for natural open space, forest, habitat and stormwater management.
  - Protect water assets by enforcing strict rules within hydro buffers and appropriate regulations outside the buffers.
  - Provide public education on the National Wildlife Federation's Certified Wildlife Habitat program, and work toward Asheville achieving the Certified Community Wildlife Habitat program designation.
  - Locate development to minimize environmental impact - Identify environmentally sensitive areas such as steep slopes, mature forests, intact native ecosystems and wetlands. Cluster buildings and minimize road construction to preserve these open spaces and wildlife habitats.
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GOAL 10-3

# Encourage Naturalized Stormwater Management Techniques

OVERVIEW

The City should work to reduce impervious surfaces and urban runoff and implement watershed-based, innovative and naturalized stormwater management techniques that provide infiltration, enhance water quality and replenish ground water.

OUTCOMES

- Stabilization, slowed rate of increase, or decrease in the percentage of pervious surfaces across the city
- Reduction of illicit discharge violations over time
- Reduced sedimentation at stormwater outfalls
- Educational program participation
- Improved indicators like stream quality, flow over time
- Increase in swimmable days in natural water bodies

POLICY METRICS

- No more than 65% of the City-owned land area contains impervious surfaces
- 35% of City-owned land area as green stormwater infrastructure providing bio-retention and infiltration
- Coverage of green infrastructure features that provide cooling through tree cover or vegetative surfaces
- Percentage of naturalized stormwater infrastructure
- Number of cistern covers cleaned/ maintained/ replaced seasonally (particularly during fall)

KEY TERMS

- **Low-Impact Development** privileges conservation and the use of on-site natural features for managing stormwater where possible instead of pipes. This approach seeks to protect watersheds by maximizing infiltration, filtering, evaporation, and minimizing the imprint of human activity.
- **Green infrastructure** is an approach to water management that protects, restores, or mimics the natural water cycle. Green infrastructure is effective, economical, and enhances community safety and quality of life. It means planting trees and restoring wetlands, rather than building a costly new water treatment plant.



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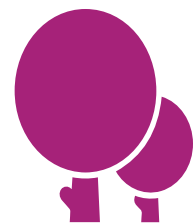
#### DIRECT STRATEGIES

- Extend stormwater management thinking to the whole watershed and consider that preserving hillsides, forests, natural drainage ways, landscapes and reducing impervious surfaces city wide are part of a system based stormwater management strategy.
- Increase funding of the stormwater maintenance program and capital improvements program so that existing infrastructure can be maintained and improved to the best possible condition within the urban environment and construct new infrastructure using current technology and best practices which may include green infrastructure.
- Increase funding of educational programs to teach the community about stormwater management and how impervious surfaces (not just parking) impacts our community.
- Work with partnering groups on items such as bank stabilization and flood mitigation.
- Establish target for maximum area of impervious surfaces city wide.
- Create a low-impact development (LID) technical guidance manual to encourage green infrastructure design.
- Promote and implement low-impact development and green infrastructure strategies. Create demonstration projects with interpretive and educational signage.
- Incorporate green infrastructure and low-impact development within City park projects.
- Create best practices manual, relevant for the regions soils and rainfall that provides guidance to public and private users regarding stormwater best practices.
- Work with partners on flood mitigation initiatives.

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#### SYNERGISTIC STRATEGIES

- Include rain garden designs in all public open spaces, parks and streets to prevent runoff.
  - Incentivize the development of living roofs, rain water capture and reuse, rain gardens, and other green infrastructure techniques on private developments.
  - Incentivize landscape retrofitting of existing parking lots to reduce impervious surface and stormwater runoff.
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GOAL 10-4

# Implement Green Building Programs

OVERVIEW

Implement and incentivize the principles, guidelines and requirements of green building and/or select an appropriate green building program, for new and existing developments of all types. Encourage and incentivize adaptive reuse of existing buildings and building preservation.

OUTCOMES

- Percent increase of new and remodeled buildings that meet US Green Building Council Leadership in Energy and Environmental Design (LEED) or Energy Star or other adopted Green Building requirements and standards
- Percent increase of new or redeveloped neighborhood developments that meet LEED Neighborhood Development requirements and standards
- Decrease in the Municipal Operations carbon footprint

KEY TERMS

- **LEED (Leadership in Energy and Environmental Design)** is an ecology-oriented building certification program run under the auspices of the U.S. Green Building Council (USGBC).
- **LEED for Neighborhood Development (LEED-ND)**, where “LEED” stands for Leadership in Energy and Environmental Design, is a United States-based rating system that integrates the principles of smart growth, urbanism and green building into a national system for neighborhood design.
- **Energy Star** is a program which provides certification to buildings and consumer products which meet certain standards of energy efficiency.

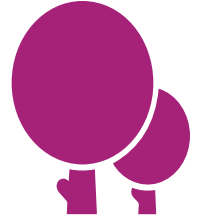


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## DIRECT STRATEGIES

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- Explore options and commit to requiring an industry accepted Green Building Programs and /or environmental rating system(s) or program(s) that require adherence to green building practices, such as but not limited to LEED ND and LEED NC, for new community development, new neighborhood development, new commercial construction, new home construction, redevelopment and refurbishing / remodeling existing buildings.
  - Provide incentives and fast track permitting to encourage the use of a Green Building program or environmental rating system(s) in the design, construction and operations of a building or development, such as for LEED certified buildings and LEED ND developments.
  - Either create or select a green building program for new housing such as NCECC H.E.R.O code, Energy star, Green Built NC.
  - Require certification from an industry accepted green certification program for new hotel construction and operations such as LEED NC, Green Leaf and Green Globe, Energy Star, Green Seal, or others.
  - Pursue ways to work with major utility providers to streamline energy efficient design and incentives programs.
  - Incentivize ASHRAE 189.1 for commercial construction.
  - Target incentives for increasing performance of aging building stock.
  - Provide permitting incentives for homes and commercial buildings with verified performance such as those that are commissioned and commercial buildings that go beyond minimum commissioning requirements.
  - In the absence of commitment to established Green Building rating systems, create Design Standards that establish minimum performance requirements for Green Building.
  - Incentivize hotels and other commercial and industrial users to offset energy use with alternative energy created at the site, such as solar or wind energy.
  - Promote and incentivize the reuse of existing buildings.
  - Continue to reduce the City's carbon footprint from municipal operations as identified by the Office of Sustainability.
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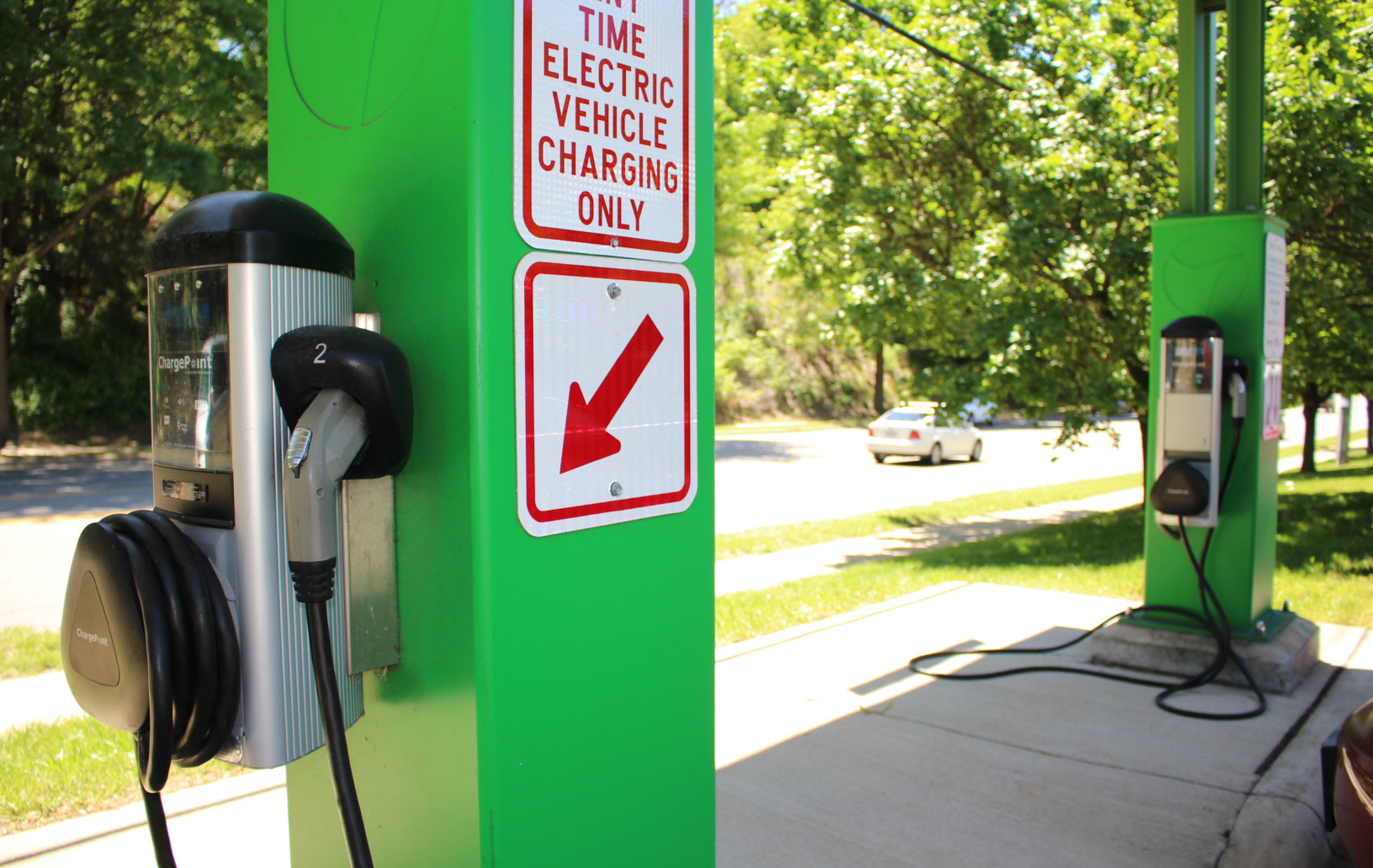


## Principle #1 1

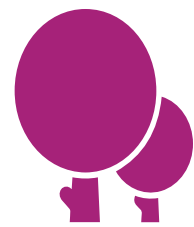
# **Grow Sustainable Industries, Green Technology, and Renewable Energy**

As part of its ongoing efforts to promote sustainability and remain resilient environmentally and economically, expanding upon and implementing innovations in sustainable industries, green technology and renewable energy will contribute toward the creation of new jobs, reducing the impacts of climate change, contribute toward a healthy society and augment the city's image.









GOAL 11-1

# Encourage the Use of Alternative and Clean Energy Systems

OVERVIEW

The future demands a progressive attitude toward renewable energy, and Asheville has a setting that can support it. The City can incentivize behavior changes by establishing city-wide efforts, policies and ordinances that promote the creation and use of alternative and clean energy.

OUTCOMES

- Annual reduction in energy usage Citywide
- Target 50 percent renewable energy generation
- Capping temperature increases associated with urban heat island effect
- Annual increase in city employees that use transit
- Annual increase in transit ridership
- Annual increase in # homes with voluntary smart metering and monitoring of energy use
- Increase in the number of private and public EV stations meet or exceeds 1.07 per 10,000 residents
- 80% Citywide carbon reduction by 2030, and accompanying reduction in greenhouse gas emissions

POLICY METRICS

- Reduction in permitted municipal greenhouse gas emissions from city operations
- Improvement in joint private and public alternative fuel stations meet or exceed 1.52 per 10,000 acres

KEY TERMS

- **Zero Peak Energy:** A zero-energy building, also known as a zero net energy (ZNE) building, net-zero energy building (NZEB), or net zero building, is a building with zero net energy consumption, meaning the total amount of energy used by the building on an annual basis is roughly equal to the amount of renewable energy created on the site, or in other definitions by renewable energy sources elsewhere

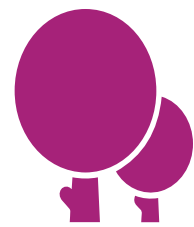


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## DIRECT STRATEGIES

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- Develop a Citywide carbon reduction/peak oil task force to plan for reducing carbon emissions and reducing liquid fossil fuel demand.
  - Create a Citywide energy ordinance and adopt or upgrade building codes to ensure that new and renovated buildings are more energy efficient.
  - Adopt an energy use information disclosure ordinance requiring energy users to disclose consumption levels.
  - Conduct annual review of new energy technologies and create panel for recommending adoption of new strategies (e.g. solar-powered roadways).
  - Create a comprehensive program and policy about alternative and renewable fuel usage on city property, and create positive press to promote this behavior or create educational programs and incentives to promote this behavior.
  - Consider and phase in a comprehensive strategy for city vehicles to use more energy efficient, clean vehicles and alternative-fuel vehicles including plug-in hybrid electric vehicles, hybrid electric vehicles, compressed natural gas, bio-diesel, and other platforms as technology evolves - recognizing that sometimes our users need a vehicle that is powered by fossil fuel such as gasoline because their work requirements and the vehicle application or duty cycle may demand it.
  - Work with major utility providers to provide more resources to the provision of customer-generated energy and more generation and use of renewable energy city wide.
  - Create incentives for business, lessors, homeowners, and renters to improve the energy efficiency of their existing buildings and homes.
  - Consider incentivizing smart meters and home storage systems to make it easier to monitor energy use.
  - Incentivize “zero peak energy” construction.
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GOAL 11-2

# Reduce Water Use and Waste Production

OVERVIEW

Conserve water resources by reducing potable water use for non-potable uses, managing consumption and promoting the use of clean waste water for non-potable uses to reduce the amount of drinking water wasted in the city.

OUTCOMES

- 10% water usage reduction per household Citywide
- Annual increase in # homes with voluntary home monitoring for water use
- 50% Citywide waste reduction by 2035
- Reduction in the number of gallons of lost water from leaks in the municipal water system

KEY TERMS

- **Water-wise:** Using water resources wisely such as with low water plants, minimal irrigation, recycled water.

POLICY METRICS

- 10% decrease in local government-owned public infrastructure water use
- 10% reductions in water use at public facilities
- Increase in the amount of waste that is diverted from landfills from City operations



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#### DIRECT STRATEGIES

- Adopt policies for city and public to ensure water conservation measures during periods of drought.
- Study current consumption rates through the utility billing program to learn more about consumers and then develop realistic programs to reduce waste.
- Continue to fund and grow city supported composting and recycling.
- Fund water and sanitation operations that can reduce water loss with pipe replacement and leak detection programs, promote waste diversion programs, promote reuse opportunities, and work with community opportunities to reuse materials.
- Explore and implement a grey water program and policy to enable the use of grey water for non-potable uses.
- Implement a “Water-wise” program for public landscape plantings.
- Encourage the use native plants to reduce non-source point pollution from lawns and minimize water usage during periods of drought.

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#### SYNERGISTIC STRATEGIES

- Implement a Citywide commitment to reduced energy, fossil fuel and water use.
  - Incentivize at-home water collection and reuse to save and reuse rainwater and grey water.
  - Target a 10% reduction in municipal water use.
  - Enable / require that apartments and other multifamily dwellings have the same opportunities and be subject to the same requirements as single-family homes.
-