Environmental Advisory Board
Minutes
Thursday, January 12, 2017

The Environmental Advisory Board of the City of Raleigh held a meeting on Thursday, January 12, 2017 at 5:00 p.m. in Room 303, Raleigh Municipal Building, 222 West Hargett Street, Avery C. Upchurch Government Complex, Raleigh, North Carolina, with the following present:

Board Members
Present:
Anya Gordon, Chair
Rob Gelblum, Vice Chair
Beverly Clark
Aranzazu Lascurain
Laurel Passera
Justin Senkbeil
Brian Starky
Dave Toms
Absent:
Larry Larson

Staff: Megan Anderson, Sustainability Mgr.
Cindy Holmes, Assistant Sustainability Mgr.

Visitors
Alice Hinman, Apiopolis*, non-profit, Urban Bee Sanctuary*
Preston Peck, *Toxic Free NC, Policy Advocate*

1. **Meeting Called to Order**
   Ms. Anya Gordon, Chairperson called the meeting to order.

2. **Approval of the Minutes**
   The minutes of the December 8, 2016 meeting were approved as written.

3. **Board Discussion**
   a. The board members discussed what research the city was doing on the upcoming order for the new Transit buses and if the County was considering all electric buses as part of the Transit Plan. Mr. Gelblum proposed a resolution urging that the City purchase non-fossil fuel buses. The members discussed the motion and having a Transit representative at a future meeting to discuss options for purchasing environmentally friendly buses.

The Board amended the original motion to read "A statement shall be entered into the minutes to support the purchase of non-fossil fuel buses." (until future information is provided) *was made and seconded*. For - 4, Against -1, Abstain-3 The motion passed as amended.

EAB Statement entered into the minutes: ***The Environmental Advisory Board urges the City of Raleigh to purchase only non-fossil fuel buses.***

   b. **EAB Work Plan with the FY17 Schedule**
   The board members discussed the work plan items that will be discussed at each of the next meetings for the remainder of the fiscal year. A copy of that schedule will be attached as part of the minutes. The board discussed pollinators and the BeeCity information and asked for a presentation and update in February. Board members also discussed sustainable stormwater and their original joint report with the Stormwater Management Advisory

Commission. An update report from Stormwater on this initiative will be scheduled in May/June.

c. **Follow-up on GHG Presentation**
The board members discussed the presentation and how this information will be used in the future. The AmeriCorps VISTA will continue with the community education about Greenhouse Gas Emissions and the City Council will be updated as part of the Strategic Plan. A follow-up to this work plan item is scheduled for May.

4. Staff Report

a. **Environmental Awards**
The 2017 Environmental Awards Ceremony will be at the Fletcher Opera Theater on Tuesday, April 25, 2017. This will be a desert/cake and champagne reception. The Mayor is confirmed for the event and is very supportive of celebrating all of the past and current winners. The application period ends on February 14, 2017 and members were encouraged to promote the applications and attending the event in the community.

b. **Engagement Activities**
Anya suggested the need for information to promote out in the community on what the Board and the City are doing. Ms. Anderson reviewed the communication efforts of the Sustainability Office. Items mentioned were the *Sustainable Raleigh* blog and the newsletters. A link to the article in Sustainable City Network Magazine and the webinar about Raleigh were also discussed. Other opportunities for community education include water billing inserts and the city website. The EAB also has a webpage on the city website. The board members asked that the Sustainability Communications Liaison be invited to a future meeting.

5. Other Business

Board member promotion of the Environmental Awards applications – deadline 2/14/17

6. Upcoming Meetings/Events

a. MLK event on Friday, January 13, 2017
b. Swift Creek Week, March 18-25
c. 2017 Environmental Awards Celebration – Tuesday, April 25, 2017 Fletcher Theater

With no further business, the meeting was adjourned at 7 PM

Minutes Recorded and Respectfully Submitted by:
Jeanna Benoy

STAR Certification Results Report

City of Raleigh, NC

Certified 4-STAR Community

March 2015

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STAR COMMUNITIES
SUSTAINABILITY TOOLS FOR ASSESSING & RATING COMMUNITIES

This report was prepared by STAR Communities for the City of Raleigh, NC in September 2015.
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The STAR Community Rating System

The STAR Community Rating System® (STAR) is the nation's first comprehensive framework and certification program for evaluating local sustainability, encompassing economic, environmental, and social performance measures.

Sustainability means different things to different people, so STAR provides a clear, data-driven approach to assessing communities' sustainability efforts. The STAR framework helps communities assess their efforts in key areas and define sustainability for themselves.

The rating system is maintained by STAR Communities, a nonprofit organization based in Washington, DC that works to advance a national framework to evaluate and certify sustainable communities in North America.

STAR was developed for local governments by local governments. Nearly 200 volunteers representing 50 cities and counties, state and federal agencies, nonprofit organizations, national associations, universities, utilities and private corporations contributed thousands of hours and diverse expertise to the development of the STAR Community Rating System. Experts served on steering, technical and ad hoc committees, which led to the development of the framework, credits, methodologies for measurement and requirements for achieving and maintaining a STAR Community Rating.

To promote continuous improvement towards sustainability, STAR Communities has developed a certification program based off of the measures in the rating system. To apply for a STAR Community Rating, the town, city or county government must be the primary applicant. Staff and/or representatives of the community fill out an online application by providing data on a variety of community sustainability indicators and coordinating data collection from both governmental agencies and community partners.

Communities choose the measures that they would like to report on and are not required to submit on all measures. This allows local governments to report on the objectives that are most important and relevant to their communities.

Once the community submits the completed application forms, STAR Communities' verification teams reviews and verifies all measures for accuracy and then assigns a rating based upon a total cumulative score of points. A STAR Community Rating lasts for 3 years after the certification date.

Goal Area	Purpose and Intent
Built Environment	Achieve livability, choice, and access for all where people live, work, and play
Climate & Energy	Reduce climate impacts through adaptation and mitigation efforts and increase resource efficiency
Education, Arts & Community	Empower vibrant, educated, connected, and diverse communities
Economy & Jobs	Create equitably shared prosperity and access to quality jobs
Equity & Empowerment	Ensure equity, inclusion, and access to opportunity for all citizens
Health & Safety	Strengthen communities to be healthy, resilient and safe places for residents and businesses
Natural Systems	Protect and restore the natural resource base upon which life depends

Table 1: The Rating System is divided into 7 thematic sustainability goal areas

The STAR Framework & Evaluation Measures

The STAR Community Rating System is built on a framework of sustainability goals, objectives and evaluation measures. Within each of the 7 sustainability Goals, there are between 5-7 Objectives. These 44 objectives are the core areas that contain evaluation measures and metrics.

Built Environment	Climate & Energy	Economy & Jobs	Education, Arts & Community	Equity & Empowerment	Health & Safety	Natural Systems
Ambient Noise & Light	Climate Adaptation	Business Retention & Development	Arts & Culture	Civic Engagement	Active Living	Green Infrastructure
Community Water Systems	Greenhouse Gas Mitigation	Green Market Development	Community Cohesion	Civil & Human Rights	Community Health & Health System	Invasive Species
Compact & Complete Communities	Greening the Energy Supply	Local Economy	Educational Opportunity & Attainment	Environmental Justice	Emergency Prevention & Response	Natural Resource Protection
Housing Affordability	Industrial Sector Resource Efficiency	Quality Jobs & Living Wages	Historic Preservation	Equitable Services & Access	Food Access & Nutrition	Outdoor Air Quality
Infill & Redevelopment	Resource Efficient Buildings	Targeted Industry Development	Social & Cultural Diversity	Human Services	Indoor Air Quality	Water in the Environment
Public Spaces	Resource Efficient Public Infrastructure	Workforce Readiness		Poverty Prevention & Alleviation	Natural & Human Hazards	Working Lands
Transportation Choices	Waste Minimization				Safe Communities	

Table 2: The STAR framework of Goals and Objectives

STAR Objectives are achieved through attainment of two types of evaluation measures: Community Level Outcomes and Local Actions.

Community Level Outcomes are measurable condition-level indicators that depict a community's progress toward a preferred state or condition within the STAR Objective it supports. Outcomes are represented as trend lines, targets, or thresholds in the rating system. Examples include reductions in energy use or increased transportation access.

Local Actions describe the range of decisions and investments that a local government or community can make, or the activities that they can engage in, that are essential to making progress within Objectives. Local Actions in the rating system focus on the key interventions that move the needle towards STAR's identified Outcomes. Since many public, private, and non-profit organizations within the community contribute towards advancing sustainability goals, the rating system recognizes these efforts, not only those of the local government.

There are nine defined Action Types in the rating system. Preparatory Actions are foundational steps that a community should take first to assess the community's needs and trends, identify and execute policy and regulatory changes, and strengthen partnerships and collaborations in order to effectively deploy resources and investments. Implementation Actions are the programs and services, enforcement and incentive mechanisms, and infrastructure investments a community makes in order to efficiently and equitably move the needle towards the desired Outcomes.

Raleigh's STAR Journey

The City of Raleigh started on the path to certification as one of the 20 communities in the Spring 2014 Leadership STAR Community Program.

The Leadership STAR Community Program is a one-year all-inclusive package that provides extensive staff support and services to a cohort of communities as they work through the STAR Community Rating System measuring local sustainability and pursuing certification.

The Spring 2014 cohort was the inaugural class of the Leadership Program, which is based off of the successful STAR Community Pilot Program. The 20 Leadership Communities met in Ft. Lauderdale, FL in January 2014 to receive an orientation and intensive training on the Rating System's measures, project management, communicating results, and certification.

Over the course of 2014 and 2015, Raleigh staff received regular technical support such as monthly and check-in calls with a dedicated STAR coordinator.

In March 2015, the City of Raleigh, NC was awarded the Certified 4-STAR Community Rating for national sustainability leadership. The city received 437 points out of the available 720 points. Raleigh is the first North Carolina community to achieve STAR certification.

Raleigh's sustainability efforts in recent years have been aided by the visionary support of a mayor and city council that recognize the importance and value of sustainability in the community.

The City's efforts are reinforced by those of Wake County and the state of North Carolina, as well as numerous organizations and business that provide programs and opportunities that strengthen the community.

The Office of Sustainability led the City's STAR certification efforts, beginning with upper management identifying key departmental personnel and community partners to assist with gathering necessary information. The certification process provided a unique opportunity to highlight the importance of collaboration toward a shared goal, enhancing strong foundations for subsequent sustainability efforts.

Mayor Nancy McFarlane, staff from the Raleigh Office of Sustainability, and STAR Communities' Executive Director Hilari Varnadore pose with Raleigh's 4-STAR plaque at the City's Environmental Awards celebration in April 2015.

Pursuing STAR certification helped define and showcase Raleigh's strengths as well as opportunities for improvement. The information is influencing next steps in several ways: guiding implementation efforts in the City's current strategic plan process; assisting with refinement of citywide performance measures; advising departmental work plans; and informing the five-year update of the City's 2030 Comprehensive Plan.

Raleigh is the first North Carolina community to achieve STAR certification, receiving the Certified 4-STAR Community Rating for national sustainability leadership in March 2015.

Overview of Raleigh's Score

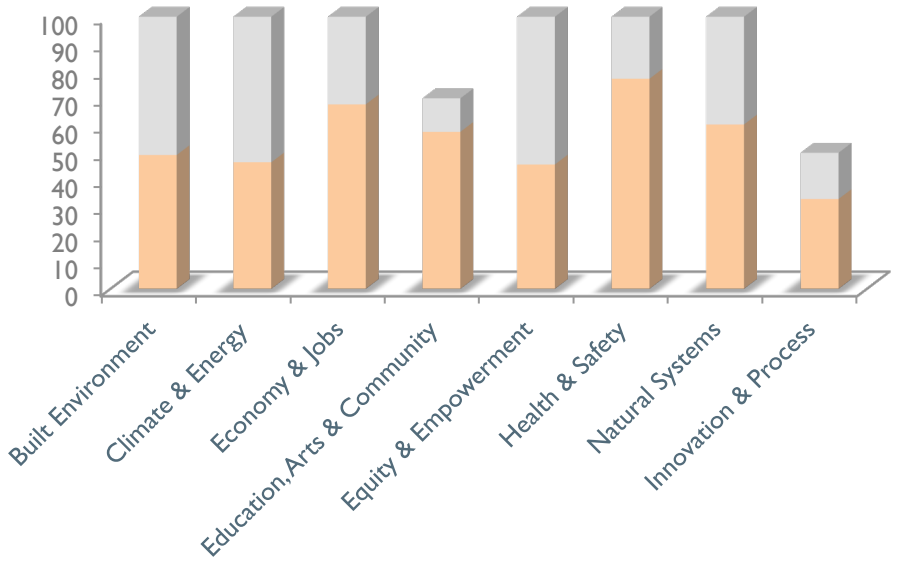
Communities pursuing STAR certification accumulate points for their achievements across seven goal areas that are used to determine their rating. Each community chooses which measures to report on from a menu of over 500+ quantitative outcome and qualitative action measures. This allows local governments to report on the measures that are most important and relevant to their communities. STAR Communities performs a rigorous third party analysis of each application to ensure conformity with national standards and best practices before certifying a community.

There are three STAR certification levels: 3- STAR Community (200-399 points), 4-STAR Community (400-599 points), and 5-STAR (600+ points).

On March 9, 2015, Raleigh received a 4-STAR Certification, recognized for national excellence, by earning 437.5 points. The charts below illustrate Raleigh's strong point achievement in the Education, Arts & Community and Health & Safety goal areas. In other goal areas such as Equity & Empowerment and Climate & Energy, Raleigh achieved fewer than 50% of the available points.

Goal Area	Points Achieved	Points Missed	Points Available	Percent Achieved
Built Environment	49.2	50.8	100	49%
Climate & Energy	46.5	53.5	100	47%
Economy & Jobs	67.8	32.2	100	68%
Education, Arts & Community	57.7	12.3	70	82%
Equity & Empowerment	45.7	54.3	100	46%
Health & Safety	77.2	22.8	100	77%
Natural Systems	60.4	39.6	100	60%
Innovation & Process	33	17	50	66%
Totals	437.5	282.5	720	61%

Table 3: Raleigh STAR Certification Final Score by Goal Area



Graph 1: Raleigh STAR Certification Total Points by Goal Area

Points Missed

Points Achieved

National Context for Raleigh's Score

Over 100 communities have signed up as STAR members, and as of August 2015, 38 have achieved STAR certification with another 10 to certify this year. Out of the 38 certified communities, 3 are 5-STAR, 14 are 4-STAR, and 21 are 3-STAR.

Out of the 14 Certified 4-STAR Communities, Raleigh's scores fall in the middle of the pack. Raleigh's strong performance is a testament to the City's commitment to creating a better city for all its citizens.

5-STAR COMMUNITIES

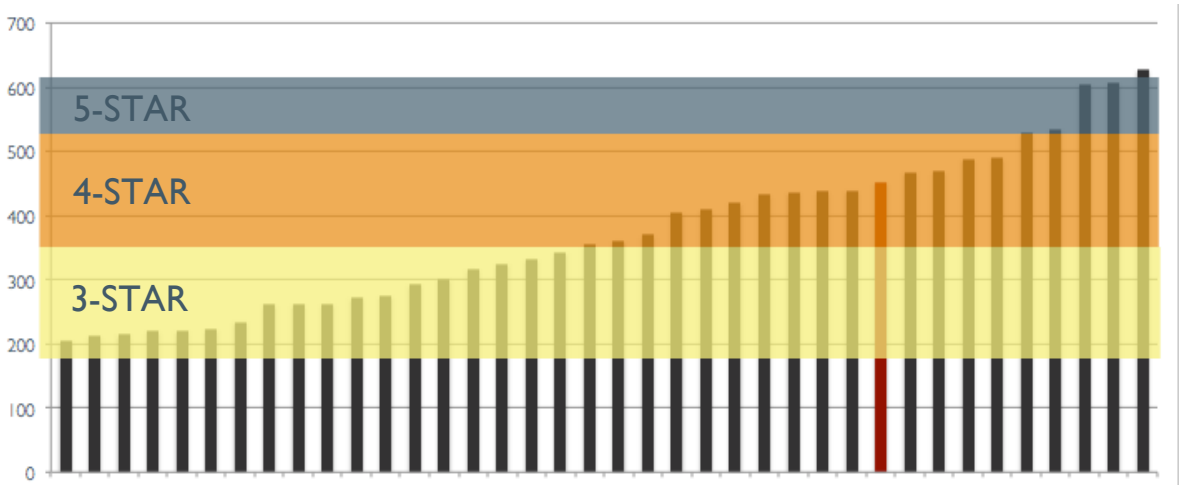
- Baltimore, MD
- Northampton, MA
- Seattle, WA

4-STAR COMMUNITIES

- Austin, TX
- Broward County, FL
- Burlington, VT
- Davenport, IA
- Dubuque, IA
- Evanston, IL
- Louisville, KY
- Memphis/Shelby County, TN
- Plano, TX
- Portland, OR
- Raleigh, NC
- Tacoma, WA
- Tucson, AZ
- Washington, DC

3-STAR COMMUNITIES

- Albany, NY
- Atlanta, GA
- Birmingham, AL
- Chandler, AZ
- Cleveland, OH
- Des Moines, IA
- El Cerrito, CA
- Fayetteville, AR
- Fort Collins, CO
- Houston, TX
- Indianapolis, IN
- Lee County, FL
- Monroe County, FL
- Palm Bay, FL
- Park Forest, IL
- Phoenix, AZ
- Reading, PA
- St. Louis, MO
- Riverside, CA
- Rosemount, MN
- Woodbridge, NJ



Graph 2: Final scores of all Certified Communities as of August 2015. Raleigh's comparative ranking is shown in red.

Comparative Analysis of Raleigh's Score

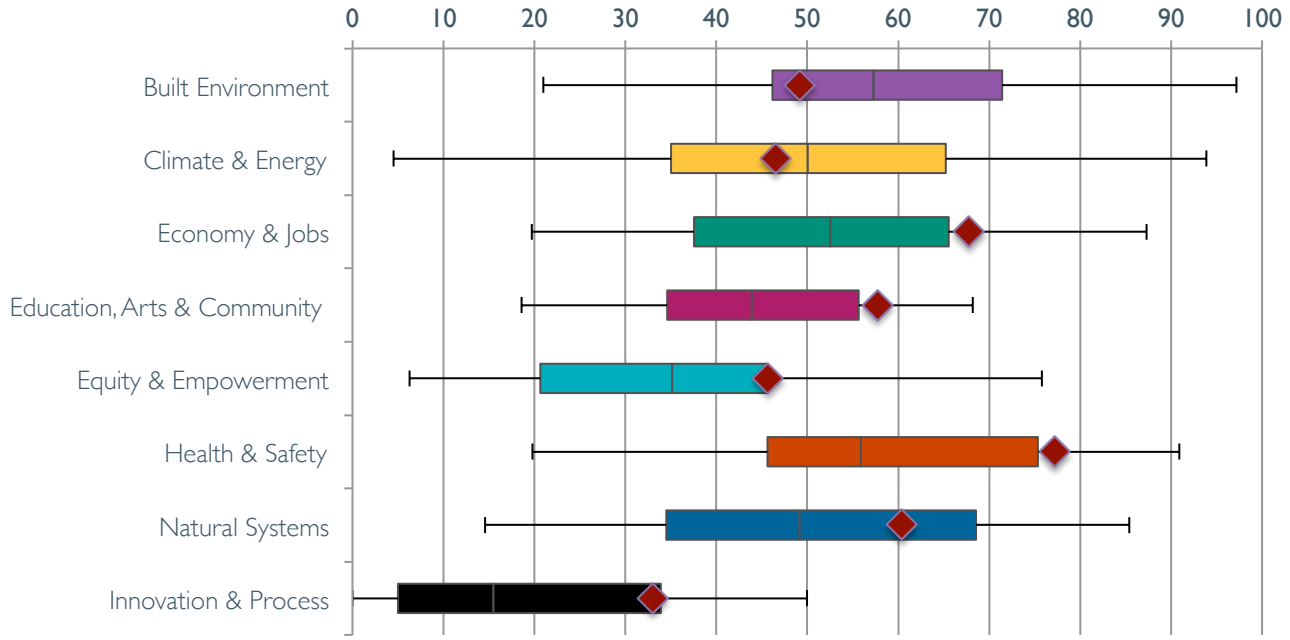
A closer examination of Raleigh's point totals in each goal area compared to other certified communities reveals areas of national leadership as well as opportunities for improvement. The box-and-whisker graph below illustrates how Raleigh performed in each goal area relative to all other certified communities.

The box-and-whisker graph is divided into quartiles, with the middle division representing the median score and the outer ends on the "whiskers" representing the lowest and highest score. The section from the end of the whisker on the low end to the beginning of the box represents the 25th percentile, the first half of the box represents scores from the 25th-50th percentile, the second half of the box represents score from the 50th-75th percentile and the whisker on higher end represents scores in the 75th-100th percentile. The smaller the box the closer the distribution of scores, while a longer box mean the scores are more dispersed.

In the goal areas of Economy & Jobs, Education, Arts & Community, and Health and Safety Raleigh outscored the majority of other communities, sitting in the top 25th percentile. While Climate & Energy and Built Environment are not the city's lowest scoring goal area, these are the only two goal areas where Raleigh falls in the bottom 50th percentile. There is significant opportunity for the city to improve in these areas.

In the Equity & Empowerment goal area, the median score is approximately 35 out of a possible 100 points, representing the lowest scoring goal area for all communities. Raleigh's score in Equity & Empowerment is comparatively better than most, but most certified communities have significant room for improvement when it comes to measuring equity.

In the next section we will go a step further by breaking down each goal area and analyzing performance in the 44 Objectives.



Graph 3: Comparative analysis of Raleigh's Goal Area scores. The pink diamonds indicate Raleigh's score in each Goal. The colored boxes represent the 25th-75th percentile of all certified communities' scores.

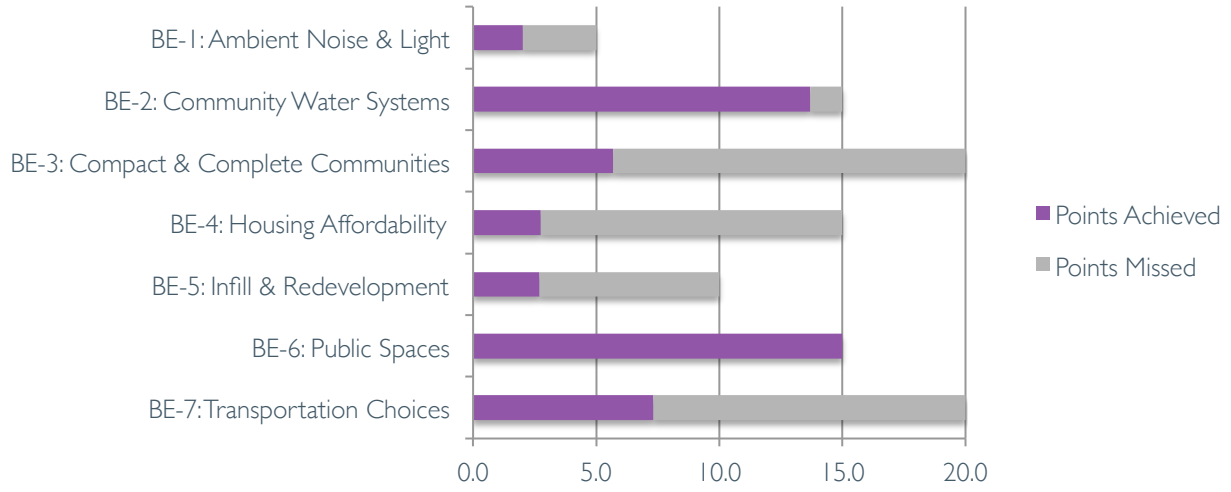
BUILT ENVIRONMENT
Overview

The 7 Objectives in the Built Environment Goal Area evaluate community development patterns, livability, and design characteristics, with emphasis on access and choice for all residents regardless of income.

OBJECTIVE	PURPOSE & INTENT	AVAILABLE POINTS
BE-1	**Ambient Noise & Light:** *Minimize and manage ambient noise and light levels to protect public health and integrity of ecological systems*	5
BE-2	**Community Water Systems:** *Provide a clean and secure water supply for all local users through the management of potable water, wastewater, stormwater, and other piped infrastructure*	15
BE-3	**Compact & Complete Communities:** *Concentrate development in compact, human-scaled, walkable centers and neighborhoods that connect to transit, offer diverse uses and services, and provide housing options for families of all income levels*	20
BE-4	**Housing Affordability:** *Construct, preserve, and maintain an adequate and diverse supply of location-efficient and affordable housing options for all residents*	15
BE-5	**Infill & Redevelopment:** *Focus new growth in infill areas and on redevelopment that does not require the extension of water, sewer, and road infrastructure or facilitate sprawl*	10
BE-6	**Public Spaces:** *Create a network of well-used and enjoyable parks and public spaces that feature equitable, convenient access for residents throughout the community*	15
BE-7	**Transportation Choices:** *Promote diverse transportation modes, including walking, bicycling, and transit, that are safe, low-cost, and reduce vehicle miles traveled*	20

Table 4: Objectives within Built Environment and their associated points.

Raleigh achieved 49.2 out of available 100 points in the Built Environment Goal Area. The majority of the points were achieved in BE-2: Community Water Systems and BE-6: Public Spaces. All other objectives represent areas of significant opportunity for Raleigh.



Graph 4: Raleigh's Built Environment performance by Objective.

BUILT ENVIRONMENT
Objective Analysis

BE-1: AMBIENT NOISE & LIGHT
2/5 points

In BE-1, Raleigh does well by assessing local noise targets, demonstrating noise levels below 70dBa in downtown and having a noise policy in place. Raleigh could increase their BE-1 score by identifying light pollution targets and working towards a Bortle Dark Sky Rating below 4.

BE-2: COMMUNITY WATER SYSTEMS
13.7/15 points

Raleigh did extremely well in BE-2, receiving credit for all outcomes through the demonstration of a secure water supply, safe wastewater and stormwater management, and high water quality in accordance with EPA standards. The city didn't miss out on many points, but the actions that were not pursued required the city to demonstrate investment in infrastructure.

BE-3: COMPACT & COMPLETE COMMUNITIES
5.7/20 points

Raleigh earned 5.7 points in BE-3 through the achievement of 6 of the 10 local actions. In "Designing a 21st Century City: The 2030 Comprehensive Plan for the City of Raleigh", the City does a good job detailing different types of mixed-use development for expected growth—the "Growth Framework Map" illustrates this. Improvement could be obtained by implementing a policy requiring walkability standards for new developments (i.e. sidewalks, street trees, and ADA crosswalks) and developing a policy to encourage affordable housing development in transit-oriented areas.

The majority of points missed in BE-3 come from not pursuing the outcomes requiring identification and analysis of Compact & Complete Communities (CCCs), which are walkable ½ mile areas offering transit access and diverse uses and services. The number of CCCs required for analysis is determined by community size; with a population of around 425,000, Raleigh would need to identify 6 CCCs. To receive credit, the City should analyze these areas using metrics for walkability, design, affordable housing, density, destinations, and transit. STAR's metrics will help Raleigh analyze the performance of policies that encourage compact and mixed-use development.

BE-4: HOUSING AFFORDABILITY
2.8/15 points

Raleigh did not purse any of the Outcomes in BE-4, which ask for the city to demonstrate an affordable relationship between housing and transportation, the production of new affordable housing units, and the preservation of existing affordable housing.

Raleigh received credit for Action 1 by supplying the components of the consolidated plan required by the U.S. Department of Housing and Urban Development (HUD) that address affordable housing. This plan is broad and a more detailed comprehensive housing strategy that looks at specific actions may help to achieve the Outcomes. These actions include analyzing access to transit and costs for low-income neighborhoods, researching the impacts of new transit infrastructure on housing costs in low-income areas, and implementing programs to preserve and maintain existing affordable housing in transit-served areas, compact and mixed-use areas, and areas with rapidly-rising housing costs.

BUILT ENVIRONMENT
Objective Analysis, continued

BE-5: INFILL & REDEVELOPMENT
2.7/10 points

Raleigh identifies and maps areas slated for redevelopment in the "Downtown Plan Soft Site Analysis" and provides some incentives for redevelopment, such as the Façade Grant Program. Those programs may not go far enough, as neither STAR Outcome was pursued to show an increase in infill and redevelopment or show that 75% of new housing used existing water and sewer mains. Some strategies to further progress in BE-5 include working with state and federal authorities to clean up brownfields, limiting the expansion of jurisdiction boundaries, creating a program to educate developers on brownfield redevelopment, and incentivizing infill development.

BE-6: PUBLIC SPACES
15/15 points

Raleigh's commitment to public parks is well demonstrated through the achievement of 100% of the points available in BE-6. As the "City of Oaks", Raleigh has 28.98 acres of parks per 1,000 residents. 81% of residents live within ½ mile of park space and 95.7% live within 3 miles of an off-road trail, and 83% of residents visit a park at least once a year. These metrics make Raleigh a leader among STAR Certified Communities for high quality public spaces.

BE-7: TRANSPORTATION CHOICES
7.3/20 points

For BE-7, Raleigh was unable to achieve the national thresholds required for the Outcomes of Mode Split, Transportation Affordability, and Transportation Safety. In recent years Raleigh has worked towards improvements in transportation choices, as demonstrated by a 2.5% increase in sidewalk construction from 2013-14. Also, the City launched a "Watch for Me" campaign to increase pedestrian safety at crosswalks and adopted the Raleigh Bike Plan in 2009.

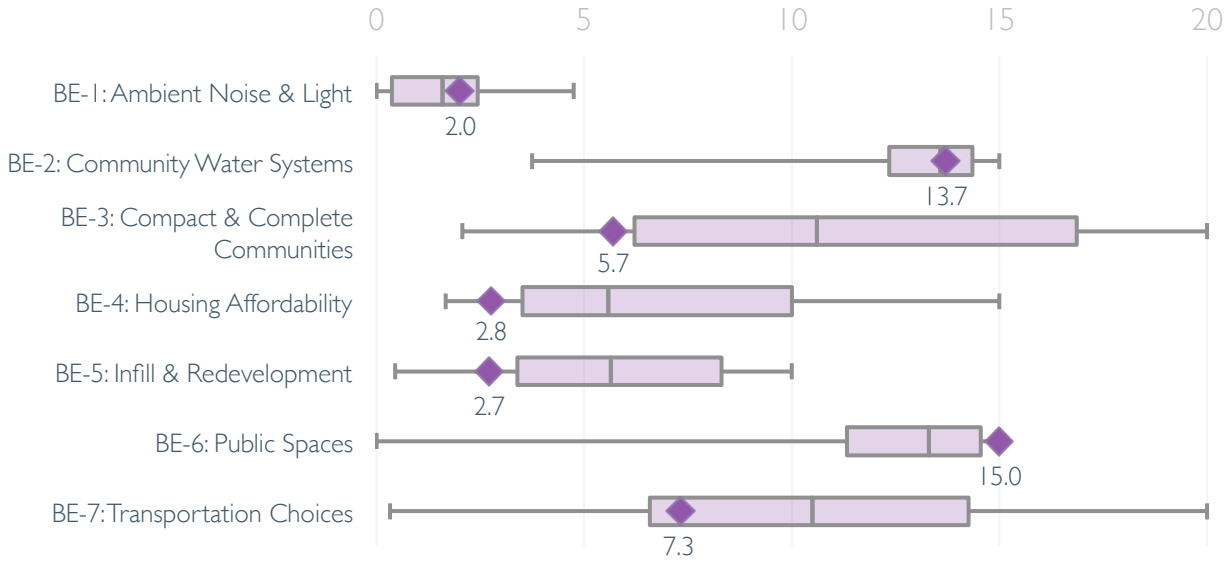
To improve their BE-7 score, Raleigh could implement a Complete Streets Policy, increase transit access, and implement the bike share program that the city began to research in the spring of 2014.

BUILT ENVIRONMENT HIGHLIGHTS:

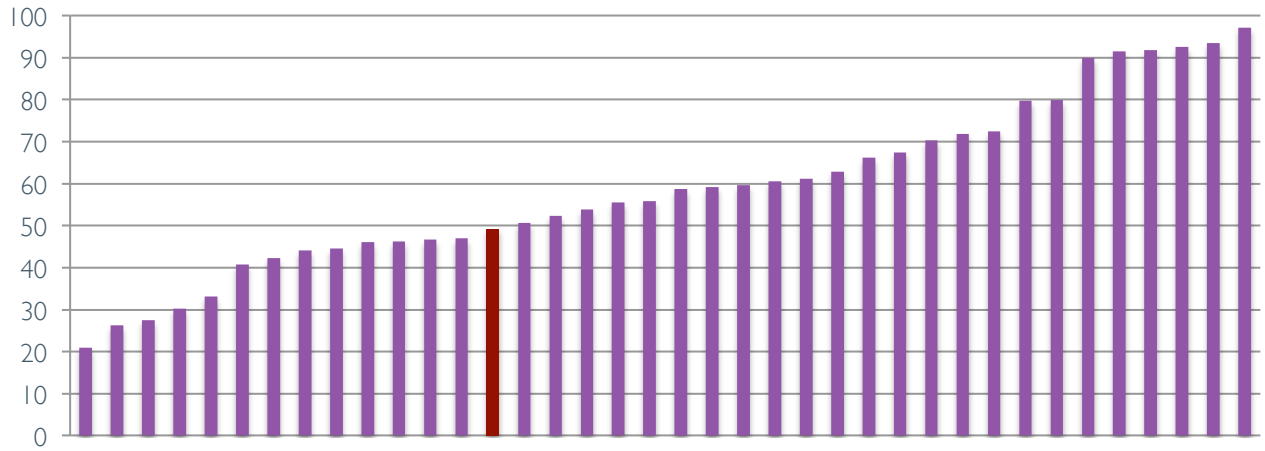
- Raleigh has **28.98** acres of parks per 1,000 residents
- **81%** of residents live within ½ mile of park space
- **95.7%** live within 3 miles of an off-road trail
- **83%** of residents visit a park at least once a year
- **2.5%** increase in sidewalk construction from 2013-14

BUILT ENVIRONMENT
Comparative Analysis

The box-and-whisker graphs below show how Raleigh's Built Environment Objective scores compare to those from other certified communities. As noted in the previous analysis, Raleigh could make improvements to better their performance in BE-3, BE-4, and BE-5, since they are Objectives where Raleigh scored in the bottom 25th-percentile of all certified communities. In addition, the graph shows that Raleigh is a leader when it comes to BE-6 Public Spaces.



Graph 5: Raleigh's Objective scores for the Built Environment, as indicated by diamonds, overlaid on top of the combined percentile scores of all certified communities.



Graph 6: Raleigh's Built Environment total score in red, as compared to all Certified STAR Communities.

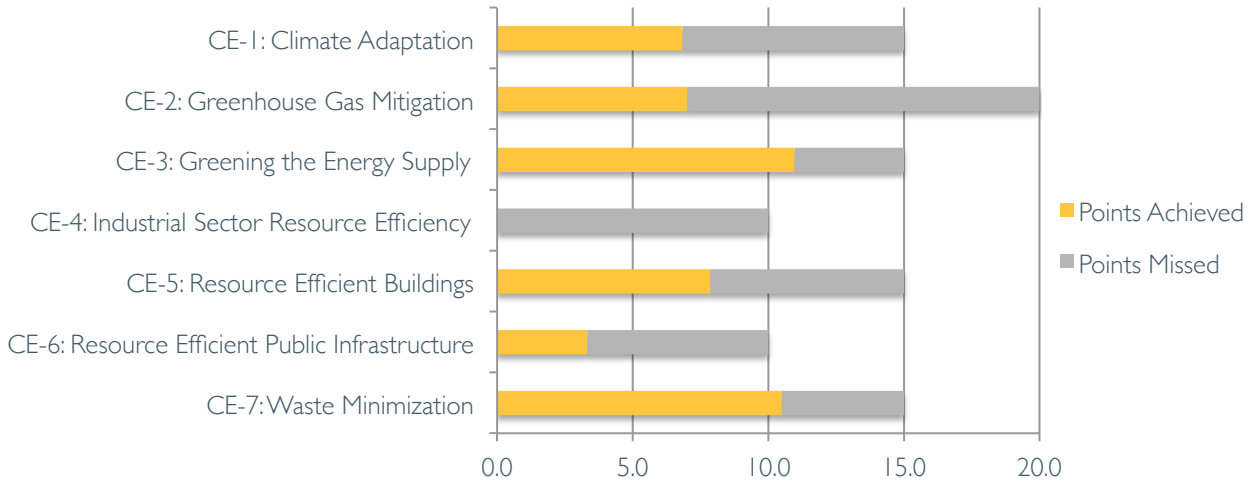
CLIMATE & ENERGY
Overview

The 7 Objectives in STAR's Climate & Energy Goal Area aim to reduce climate impacts and increase resource efficiency in order to create safer and healthier communities.

OBJECTIVE	PURPOSE & INTENT	AVAILABLE POINTS
CE-1	**Climate Adaptation:** *Strengthen the resilience of communities to climate change impacts on built, natural, economic, and social systems*	15
CE-2	**Greenhouse Gas Mitigation:** *Achieve greenhouse gas emissions reductions throughout the community*	20
CE-3	**Greening the Energy Supply:** *Transition the local energy supply for both transportation and non-mobile sources toward the use of renewable, less carbon-intensive, and less toxic alternatives*	15
CE-4	**Industrial Sector Resource Efficiency:** *Minimize resource use and demand in the industrial sector as a means to mitigate greenhouse gas emissions and conserve water*	10
CE-5	**Resource Efficient Buildings:** *Improve the energy and water efficiency of the community's residential, commercial, and institutional building stock*	15
CE-6	**Resource Efficient Public Infrastructure:** *Minimize resource use and demand in local public infrastructure as a means to mitigate greenhouse gas emissions and conserve water*	10
CE-7	**Waste Minimization:** *Reduce and reuse material waste produced in the community*	15

Table 5: Objectives within Climate & Energy and their associated points.

Raleigh achieved 46.5 out of 100 available points for the Climate and Energy goal area, one of the city's lower performing areas. CE-3: Greening the Energy Supply and CE-7: Waste Minimization represent the two high scoring areas, while CE-4: Industrial Sector Resource Efficiency received 0 points.



Graph 7: Raleigh's Climate & Energy performance by Objective.

CLIMATE & ENERGY
Objective Analysis

CE-1: CLIMATE ADAPTATION
6.9/15 points

Raleigh has successfully addressed many facets of climate change planning through a partnership with the Wake County Hazard Mitigation Team. The "Wake County Multi-Jurisdictional Hazard Mitigation Plan" addresses issues such as a vulnerable water supply and the potential for increased flooding. To reduce vulnerability in these areas, the City could adopt zoning regulations that address water security and flooding and launch an educational campaign to engage citizens and businesses on climate adaptation.

CE-2 GREENHOUSE GAS MITIGATION
7/20 points

This Objective asks for communities to demonstrate progress towards a reduction in greenhouse gas (GHG) emissions, and while Raleigh did not submit data showing they are on track to meet the United Nations standard of an 80% reduction by 2050, local policies have been adopted to address the issue. Raleigh's "A Roadmap to Raleigh's Energy Future: The Climate Energy Action Plan (CEAP)" is a unique partnership that requires the city to increase the energy efficiency of its operations and facilities. The City could also adopt energy efficiency standards for all buildings in the jurisdiction and incentivize distributed energy generation to better their CE-2 score.

CE-3: GREENING THE ENERGY SUPPLY
11/15 points

Raleigh's citizens have chosen to own fewer cars and purchase fuel-efficient and alternative fuel vehicles in the past 5 years, which played a major role in the high score in CE-3. The "Renewable Energy & Energy Efficiency Portfolio Standard" policy sets a clear target for Raleigh to produce 12.5% of all retail electric sales from renewable sources by 2021. To aid this policy, the City has adjusted its zoning to make it simpler to install solar photovoltaic (PV) systems. Residents can also participate in the SunSense program, which provides a $250 upfront rebate plus monthly bill credits to residents that install a solar PV system on their home.

CE-4: INDUSTRIAL SECTOR RESOURCE EFFICIENCY
0/10 points

No points were achieved for this Objective, but there are actions that can be taken to improve Raleigh's performance in the future. A first step could be to develop a collaborative partnership between the City and the industrial sector, which could lead to best practices for data collection. Going further, Raleigh could adopt plans and policies to promote and incentivize efficient resource usage in the industrial sector.

CE-5: RESOURCE EFFICIENT BUILDINGS
7.9/15 points

Raleigh demonstrated an increase in Green-Certified Building Stock in the community in Outcome 3, but energy and water efficiencies could not be demonstrated in Outcomes 1 and 2. Raleigh is on the right track in this Objective, but can improve by adopting a water and energy efficiency plan specific to the different sectors of the community, adopting codes requiring more water and energy efficiencies, and incentivizing the construction of more energy and water efficient buildings.

CLIMATE & ENERGY
Objective Analysis, continued

CE-6: RESOURCE EFFICIENT PUBLIC INFRASTRUCTURE
3.3/10 points

Raleigh has made strides to make their public infrastructure more efficient, but there is room for improvement. Developing targeted strategies to improve specific systems would be a good first step. In addition, the City could work with public works managers to report GHG emissions and provide training on new water and energy efficiency techniques.

CE-7: WASTE MINIMIZATION
10.5/15 points

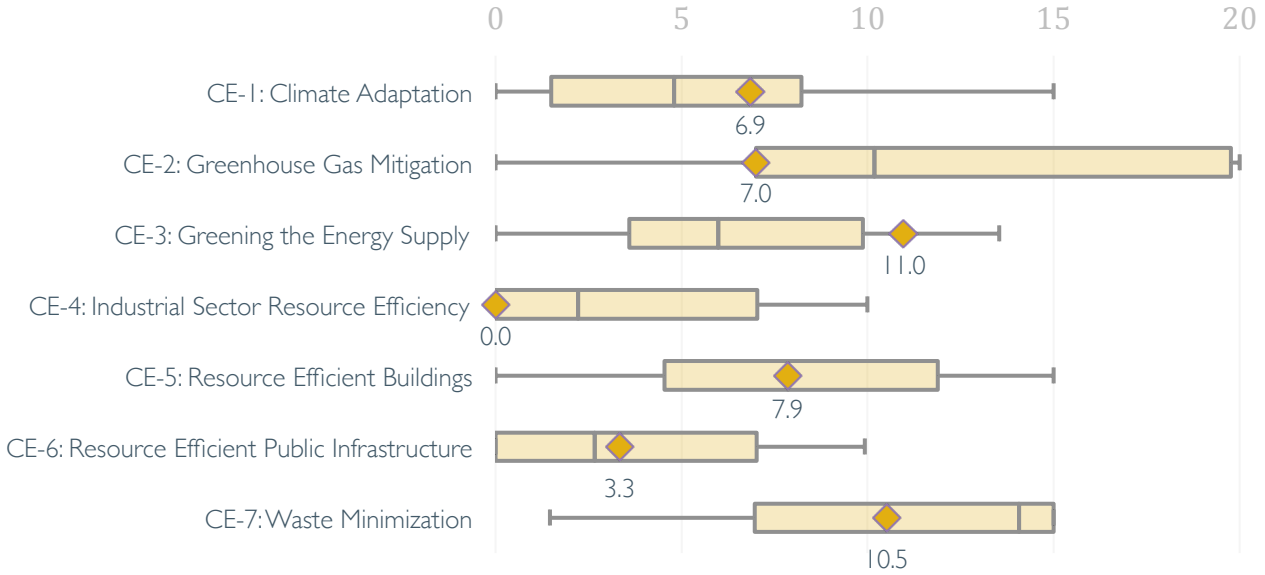
Raleigh performed well in CE-7, receiving credit for all 9 Actions. Actions include adoption of a waste management plan that establishes waste reduction targets, education programs on waste reduction, and recycling programs like Big Belly Solar, which use solar powered, trash-compacting bins to more efficiently manage waste in public spaces.

CLIMATE & ENERGY HIGHLIGHTS:

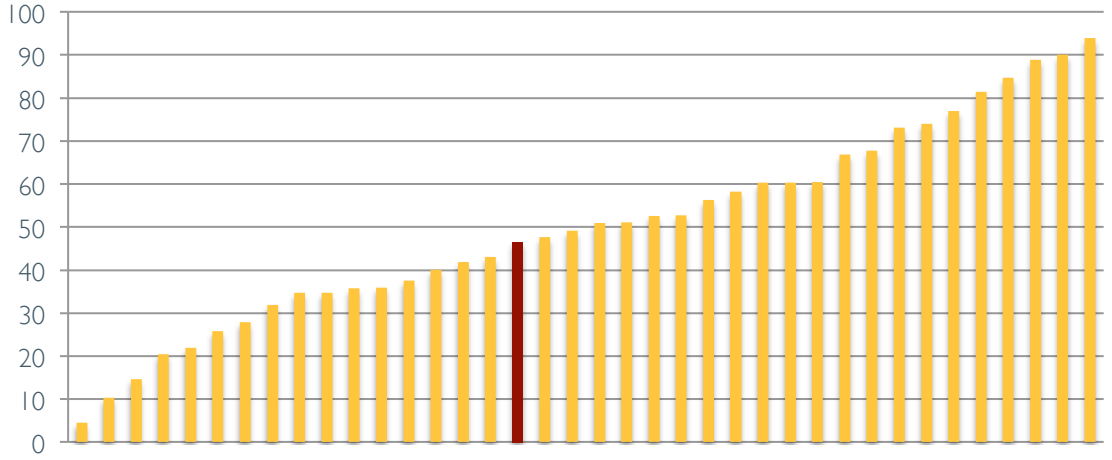
- On average, alternative-fuel vehicle ownership and fuel-efficient vehicle ownership have **increased by 3.75% and 4.69%** annually
- **2%** of Raleigh's energy comes from a renewable source
- On average, there has been an annual increase in green non-residential and residential buildings by **89.57% and 93.44%** respectively

CLIMATE & ENERGY
Comparative Analysis

The box-and-whisker graph below shows how Raleigh's score compares to all other certified STAR communities. As seen in the previous analysis, CE-2 and CE-4 were areas where Raleigh can certainly improve. Many communities have scored well in CE-2, which indicates that Raleigh has plenty of room to catch up. However, many communities have struggled with the reporting for CE-4, indicating that this is a difficult area to measure. Raleigh's recent efforts to increase renewable energy sources are highlighted in CE-3 where the city ranks in the top 25th-percentile.



Graph 8: Raleigh's Objective scores for Climate & Energy, as indicated by diamonds, overlaid on top of the combined percentile scores of all certified communities.



Graph 9: Raleigh's Climate & Energy total score in red, as compared to all Certified STAR Communities.

ECONOMY & JOBS
Overview

The 6 Objectives of STAR's Economy & Jobs Goal Area work together to promote equitably shared prosperity and access to quality jobs.

OBJECTIVE	PURPOSE & INTENT	AVAILABLE POINTS
EJ-1	**Business Retention & Development:** *Foster economic prosperity and stability by retaining and expanding businesses with support from the business community*	20
EJ-2	**Green Market Development:** *Increase overall market demand for products and services that protect the environment*	15
EJ-3	**Local Economy:** *Create an increasingly self-reliant community through a robust local economy with benefits shared by all*	15
EJ-4	**Quality Jobs & Living Wages:** *Expand job opportunities that support upward economic mobility and provide sufficient wages so that working people and their families can afford a decent standard of living*	20
EJ-5	**Targeted Industry Development:** *Increase local competitiveness by strengthening networks of businesses, suppliers, and associated institutions*	15
EJ-6	**Workforce Readiness:** *Prepare the workforce for successful employment through increasing attainment of post-secondary education and improving outcomes of workforce development programs*	15

Table 6: Objectives within Economy & Jobs and their associated points.

Raleigh achieved 67.8 out of 100 available points for the Economy & Jobs goal area. The city did well across the board, with EJ-1: Business Retention & Development as the strongest area. The largest opportunity for improvement exists in EJ-4: Quality Jobs & Living Wages.

Graph 10: Raleigh's Economy & Jobs performance by Objective.

ECONOMY & JOBS
Objective Analysis

EJ-1: BUSINESS RETENTION & DEVELOPMENT
18.1/20 points

Raleigh performed very well in the EJ-1 Objective. The city demonstrated increases in the number of new business establishments and employment in recent years. The Downtown Raleigh Alliance, the Hillsborough Street Community Services Corporation, and Southeast Raleigh Assembly are excellent examples of partnerships that the city cultivates to support the business community. One tool the City could utilize to support increased business growth is tax incentives, such as the creation of a tax increment financing (TIF) district.

EJ-2: GREEN MARKET DEVELOPMENT
12.3/15 points

Raleigh has supported green market development by adopting a policy that all new government facilities over 10,000 feet be certified at the U.S. Green Building Council's LEED Silver level. The City has also installed 88 electric vehicle-charging stations and supported programs such as Raleigh Composts to help businesses adopt new green practices. To further cultivate green market development, Raleigh should look to remove zoning barriers for green businesses and work with regional partners to develop a sustainable economic development strategy for the region.

EJ-3: LOCAL ECONOMY
9.9/15 points

Raleigh was able to demonstrate that 60% of import sectors have increased their location quotient in the past 3 years, thus showing a more self-reliant local economy. Programs such as "Shop Local Raleigh" and the "Raleigh4U Economic Development Business Assistance Program" support small and local entrepreneurs and are excellent examples of how private-public partnerships bolster the local economy. This work could be better informed by conducting an assessment of local economic conditions to target future investment and incentivize the purchase and sale of local products.

EJ-4: QUALITY JOBS & LIVING WAGES
3.7/20 points

The EJ-4 Objective represents Raleigh's lowest score in the Economy & Jobs Goal Area. Raleigh has made strides in improving this Objective by enacting family-friendly workplace policies for local government employees and the StepUp program that offers job training and a placement program to assist low-income, homeless, jobless, and underemployed individuals.

There are several actions Raleigh could pursue to improve access to quality jobs and living wages, including enacting a living wage policy for local government employees and contractors. The City could set up programs that support family-friendly employers, such as a Best Places to Work campaign, and conduct trainings for businesses to encourage family-friendly policies.

EJ-5: TARGETED INDUSTRY DEVELOPMENT
13.2/15 points

For this Objective, Raleigh demonstrated development in the selected industries of retail, hotels & accommodations, and other professional services and was able to show increased number of businesses, sales, and employment in each industry. Studies such as Raleigh's hotel market feasibility study from 2003 are a great way to target investment.

ECONOMY & JOBS
Objective Analysis, continued

EJ-6: WORKFORCE READINESS
10.7/15 points

To prepare the workforce for successful employment Raleigh has adopted the "Capital Area Local Workforce Development Area Plan 2014", created the "Capital Area Workforce Development Board" to align education and workforce development, and invested in the Wake Technical Community College. With these efforts Raleigh's workforce will continue to improve.

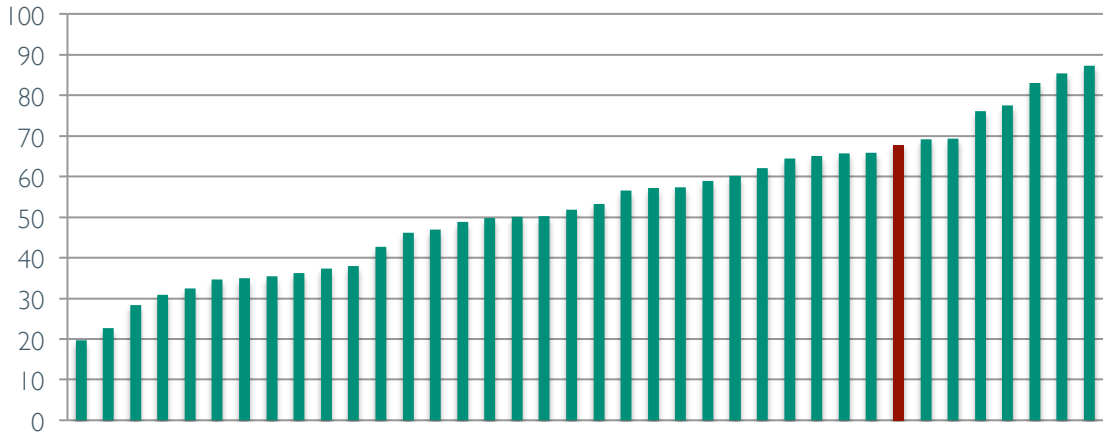
ECONOMY & JOBS HIGHLIGHTS:

- Over **650 businesses** were created in Raleigh from 2010-2012
- The number of bachelor degrees in Raleigh **increased by 18.4%** from 2011-2013
- The number of graduate or professional degrees in Raleigh **increased by 11.2%** from 2011-2013

ECONOMY & JOBS
Comparative Analysis

The box-and-whisker graph below shows how Raleigh's score compares to all other certified communities. Overall, Raleigh performed very well comparatively in the Economy & Jobs Goal Area and demonstrated leadership in EJ-2 and EJ-5. Raleigh's lowest scoring area, EJ-4, proves to be a challenge and an opportunity for all certified communities.

Graph 11: Raleigh's Objective scores for Economy & Jobs, as indicated by diamonds, overlaid on top of the combined percentile scores of all certified communities.



Graph 12: Raleigh's Economy & Jobs total score in red, as compared to all Certified STAR Communities.

EDUCATION, ARTS & COMMUNITY
Overview

The 5 Objectives of STAR's Education, Arts & Community Goal Area promote an educated, cohesive, and socially connected community.

OBJECTIVE	PURPOSE & INTENT	AVAILABLE POINTS
EAC-1	**Arts & Culture:** *Provide a broad range of arts and cultural resources and activities that encourage participation and creative self-expression*	15
EAC-2	**Community Cohesion:** *Ensure a cohesive, connected community through adequate venues for community interaction, community building activities and events, and the sharing of information about community issues and services*	15
EAC-3	**Educational Opportunity & Attainment:** *Achieve equitable attainment of a quality education for individuals from birth to adulthood*	20
EAC-4	**Historic Preservation:** *Preserve and reuse historic structures and sites to retain local, regional, and national history and heritage, reinforce community character, and conserve resources*	10
EAC-5	**Social & Cultural Diversity:** *Celebrate and respect diversity and represent diverse perspectives in community decision-making*	10

Table 7: Objectives within Education, Arts & Community and their associated points.

Raleigh's score in the EAC Goal Area is very strong across the board and the City received full credit for EAC-2 Community Cohesion.

Graph 13: Raleigh's Education, Arts & Community performance by Objective.

EDUCATION, ARTS & COMMUNITY
Objective Analysis

EAC-1: ARTS & CULTURE
11/15 points

Raleigh's ART-ON-THE-MOVE program is a great way to expose a wide audience to local artists by displaying art on buses. Raleigh could extend this work by establishing an arts or cultural district and provide workforce development programs for artists.

EAC-2: COMMUNITY COHESION
15/15 points

Raleigh performs exceptionally well here, receiving all 15 available points. 93.29% of residents live within 1-mile of a community venue that is open to the public and offers free services and programs for residents. The Digital Connectors program shows Raleigh's commitment to community cohesion by bringing broadband access to underserved homes and providing youth leadership and tech literacy programs.

EAC-3: EDUCATIONAL OPPORTUNITY & ATTAINMENT
13.4/20 points

Raleigh was unable to achieve the STAR Outcomes for reading proficiency, graduation rate, and graduation equity, but there are many partnerships and programs that are moving the city forward. Raleigh's "Excellence in Action" program identifies and profiles the best educational practices in Wake County public schools, while the "Communities in Schools" partnership connects businesses and schools by providing funding and offering mentorship opportunities. Additionally, the Wake County SmartStart program that helps prepare children 5 and under for success in schools. Raleigh could consider creating an annual report that highlights the progress of the school system's performance to improve their score in EAC-5.

EAC-4: HISTORIC PRESERVATION
8.9/10 points

Raleigh's commitment to historic preservation is demonstrated through actions such as the establishment of the Raleigh Historic Development Commission, the designation of 6 historic districts and many individual sites, and the green retrofitting of historic buildings. To ensure that historic preservation is felt throughout the community, Raleigh should look into providing financial assistance to low income homeowners for historic preservation renovations.

EAC-5: SOCIAL & CULTURAL DIVERSITY
9.4/10 points

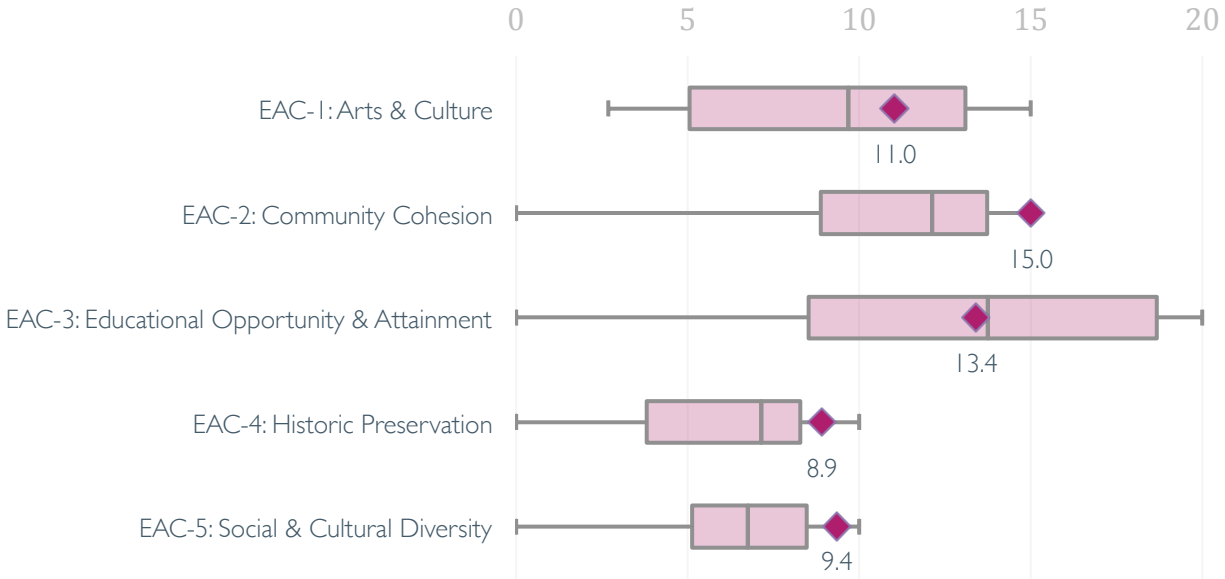
Festivals such as Raleigh's CaribMask Caribbean Carnival and the Raleigh Irish Music Festival celebrate the city's diversity. In addition, Raleigh's Human Relations Commission has issued over $3.7 million in grants over the past 3 years to nonprofit organizations that provide services to the elderly, youth, persons with handicaps or disabilities, and homeless individuals.

EDUCATION, ARTS & COMMUNITY HIGHLIGHTS:

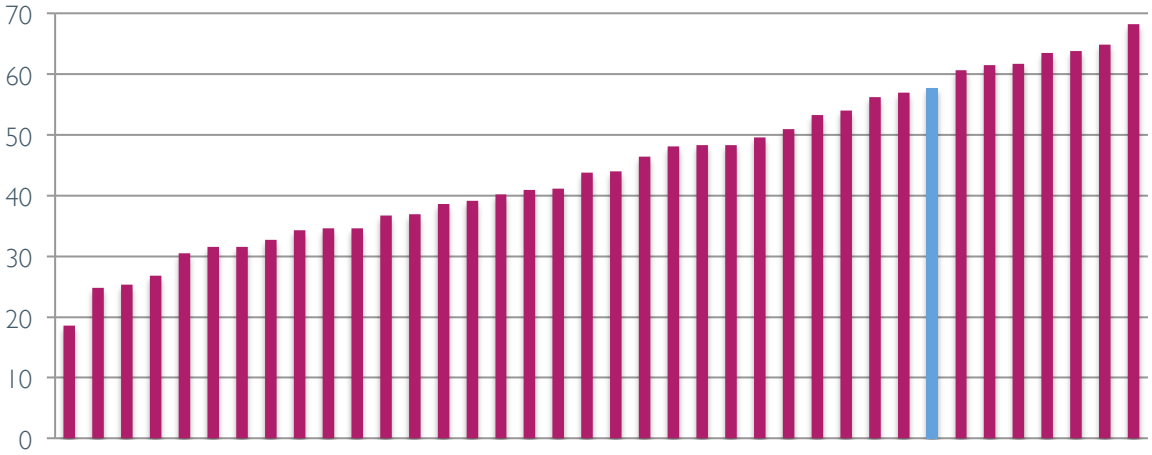
- **Over 90%** of residents live with in 1 mile of a community venue
- There are **6 historic districts** in Raleigh
- **27.3%** of adults visit an art museum annually

EDUCATION, ARTS & COMMUNITY
Comparative Analysis

The box-and-whisker graph below shows how Raleigh's score compares to all other certified communities. Raleigh shows national leadership in several objectives – EAC-2 Community Cohesion, EAC-4 Historic Preservation, and EAC-5 Social & Cultural Diversity.



Graph 14: Raleigh's Objective scores for Education, Arts & Community, as indicated by diamonds, overlaid on top of the combined percentile scores of all certified communities.



Graph 15: Raleigh's Education, Arts & Community total score in blue, as compared to all Certified STAR Communities.

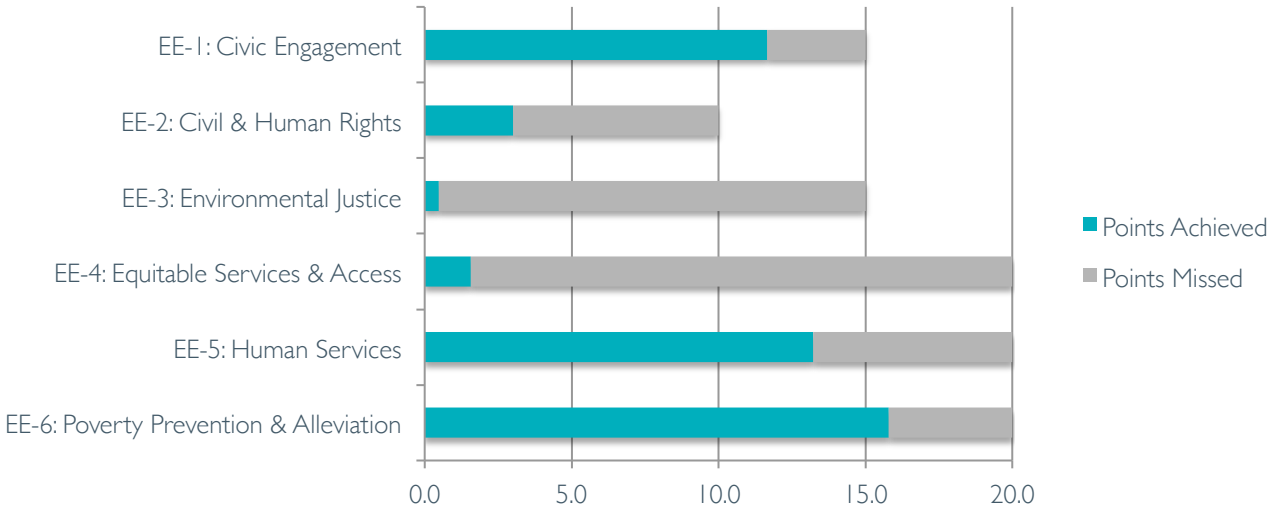
EQUITY & EMPOWERMENT
Overview

The 6 Objectives in STAR's Equity & Empowerment Goal Area promote equity, inclusion, and access to opportunity for all residents.

OBJECTIVE	PURPOSE & INTENT	AVAILABLE POINTS
EE-1	**Civic Engagement:** *Improve community well-being through participation in local decision-making and volunteering with community organizations*	15
EE-2	**Civil & Human Rights:** *Promote the full enjoyment of civil and human rights for all residents in the community*	10
EE-3	**Environmental Justice:** *Reduce polluted and toxic environments with an emphasis on alleviating disproportionate health hazards in areas where low-income residents and persons of color live*	15
EE-4	**Equitable Services & Access:** *Ensure equitable access to foundational community assets within and between neighborhoods and populations*	20
EE-5	**Human Services:** *Ensure high quality human services programs are available and utilized to guarantee basic human needs so that all residents lead lives of dignity.*	20
EE-6	**Poverty Prevention & Alleviation:** *Prevent people from falling into poverty and proactively enable those who are living in poverty to obtain greater, lasting economic stability and security*	20

Table 8: Objectives within Equity & Empowerment and their associated points.

Raleigh scored well in EE-1 Civic Engagement and EE-6 Poverty Prevention & Alleviation. Significant opportunity for improvement exists in EE-3 Environmental Justice and EE-4 Equitable Services & Access.



Graph 16: Raleigh's Equity & Empowerment performance by Objective.

EQUITY & EMPOWERMENT
Objective Analysis

EE-1: CIVIC ENGAGEMENT
11.7/15 points

Raleigh scored highly in EE-1 by promoting diversity on local advisory boards and commissions and engaging youth in the "Kids Voting Wake County" program, which provides lessons and grade appropriate activities about democracy, citizenship and the election process. To further civic engagement, the City could provide training to local government agencies on strategies for successful public engagement and partner with local organizations to increase voter registration.

EE-2: CIVIL & HUMAN RIGHTS
3/10 points

Raleigh's Human Relations Commission furthers progress in this area, but there is room for improvement. Raleigh could take actions such as adopting a policy that specifically protect the rights of all citizens, establishing an office that investigates civil and human rights complaints, and launching an educational campaign on civil and human rights.

EE-3: ENVIRONMENTAL JUSTICE
0.5/15 points

The Environmental Justice objective offers Raleigh the biggest opportunity for improvement in the Equity & Empowerment Goal Area. Community partnerships are an important way to address these issues and the Walnut Creek Urban Wetlands Education Center, created through a partnership between the City of Raleigh and Partners for Environmental Justice, is an excellent example of the community coming together to address a neglected site.

Going forward, the City should first identify and assess all environmental justice sites. The City should assess the risk and exposure to toxins for each site and set targets to reduce criteria pollutants. An environmental justice plan should be established that aims to reduce the sites and the impact they have on the community. Ideally, assessing environmental justice impacts will become a routine part of all city departments, especially when it comes to land use planning and reviewing new development projects.

EE-4: EQUITABLE SERVICES & ACCESS
1.6/20 points

To improve in this area, Raleigh should begin by assessing the current state of access to services such as public transit, libraries, schools, public space, healthy food, high speed internet, and health and human services. From there the city can prioritize specific services that need to be improved and better target investment. In addition, providing diversity training for staff and adopting equity or social justice policy will demonstrate a commitment to addressing equity issues.

EE-5: HUMAN SERVICES
13.2/20 points

Raleigh was able to achieve 7 of the 8 Actions through work with the Wake County Human Services Department. The 2013 Wake County Health Needs Assessment will guide improvements and future work in Human Services – it was conducted with the help of dozens of partners and identifies priorities for the coming years.

EQUITY & EMPOWERMENT
Objective Analysis, continued

EE-6: POVERTY PREVENTION & ALLEVIATION
15.8/20 points

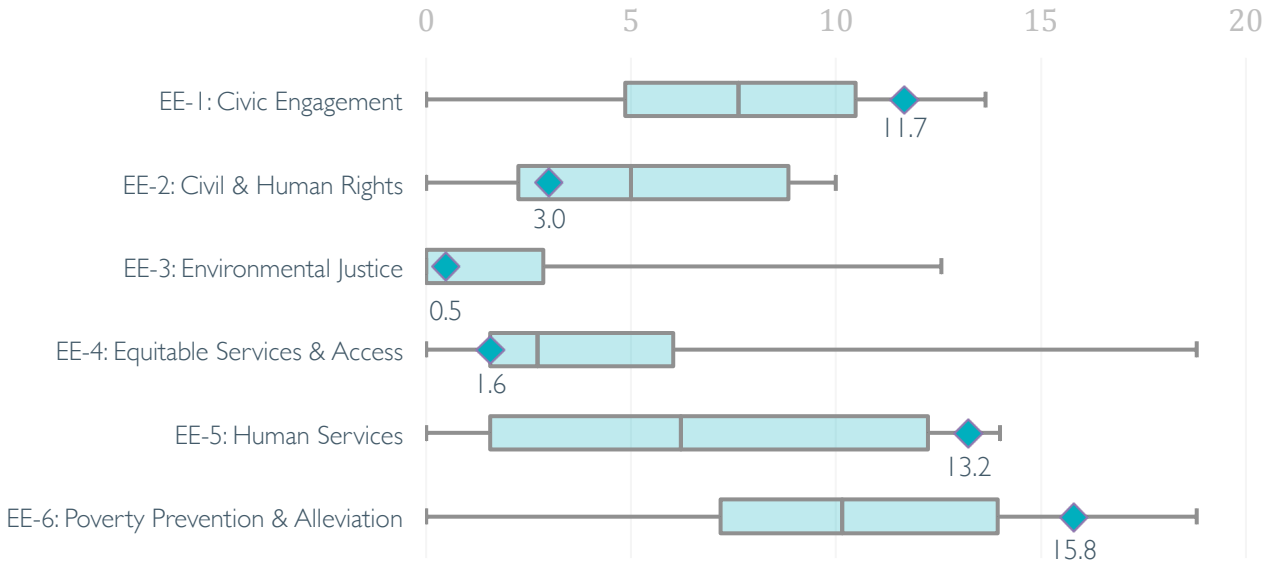
Raleigh's highest score in the EE Goal Area is in Poverty Prevention Alleviation. Programs such as "Cool for Wake" and "Warmth for Wake" which assist vulnerable populations during extreme heat and cold are important to reduce the health impacts of poverty. The job training and life skill education programs offered by "StepUp" are also vital to helping citizens reach greater opportunity. To go further, the City could adopt a community-wide plan to reduce poverty.

EQUITY & EMPOWERMENT HIGHLIGHTS:

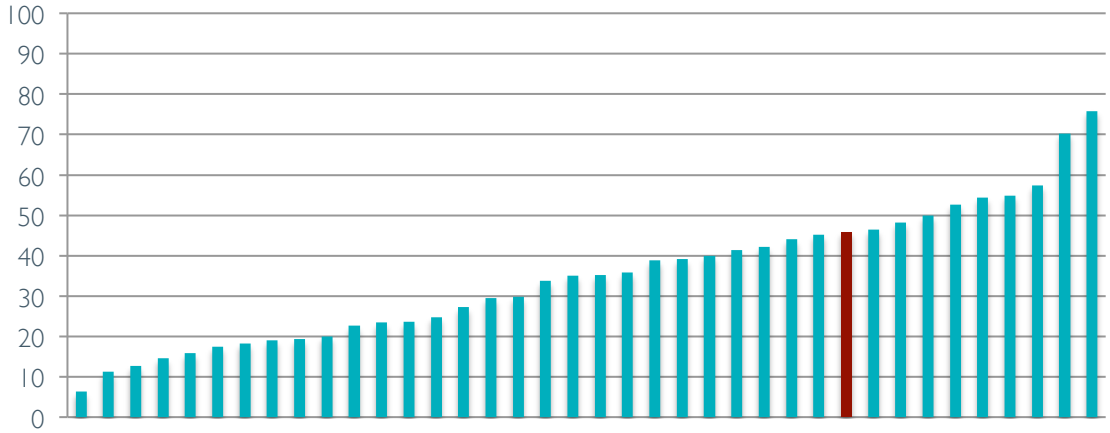
- Raleigh has an annual average increase of **24.37%** in adults that volunteer
- Partners for Environmental Justice work to establish **Walnut Creek Urban Wetlands**
- **900 participants** on average in Cool for Wake and **600 participants** on average for Warmth for Wake

EQUITY & EMPOWERMENT
Comparative Analysis

The box-and-whisker graph below shows how Raleigh's score compares to all other certified communities. The Equity and Empowerment Goal Area is a challenge for many of the certified communities. In the three areas that Raleigh scored lowest, EE-2, EE-3, and EE-4, the majority of certified communities also scored low here. The spatial analysis required in EE-4 can require a large data collection effort, but the results of the analysis are extremely helpful for visualizing access to community services and assets and can provide greater insight for decision-making processes. In the Objectives of EE-1, EE-5, and EE-6, Raleigh shows national leadership by outperforming most certified communities.



Graph 17: Raleigh's Objective scores for Equity & Empowerment, as indicated by diamonds, overlaid on top of the combined percentile scores of all certified communities.



Graph 18: Raleigh's Equity & Empowerment total score in red, as compared to all Certified STAR Communities.

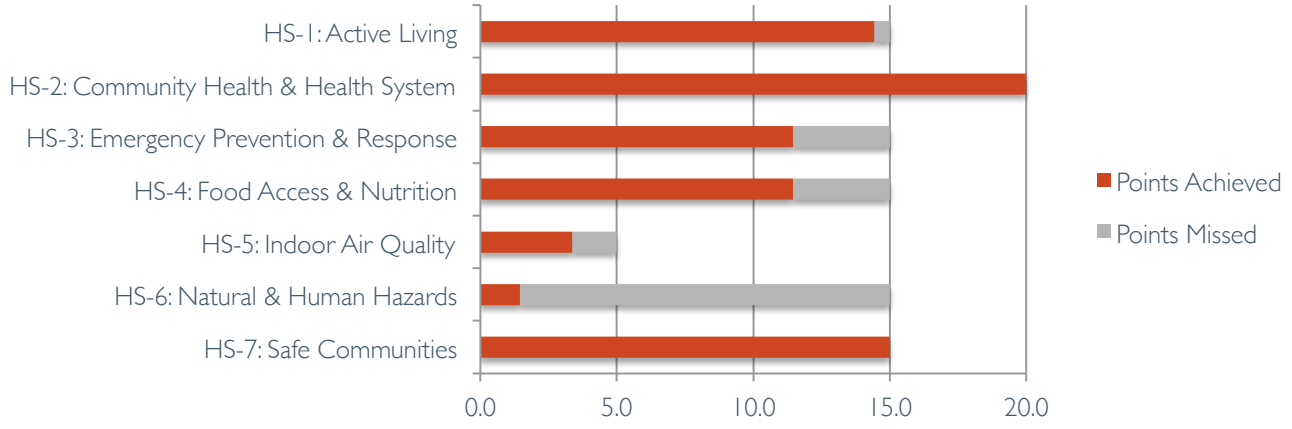
HEALTH & SAFETY
Overview

The 7 Objectives in STAR's Health & Safety Goal Area recognize that the development of healthy, safe, and resilient communities requires proactive efforts to prevent disease, injury, and premature death by fortifying protective factors and reducing risk factors that undermine healthy outcomes.

OBJECTIVE	PURPOSE & INTENT	AVAILABLE POINTS
HS-1	**Active Living:** *Enable adults and kids to maintain healthy, active lifestyles by integrating physical activity into their daily routines*	15
HS-2	**Community Health & Health System:** *Achieve positive health outcomes and minimize health risk factors through a high quality local health care system that is accessible and responsive to community needs*	20
HS-3	**Emergency Prevention & Response:** *Reduce harm to humans and property by utilizing long-term preventative and collaborative approaches to avoid emergency incidents and minimize their impacts*	15
HS-4	**Food Access & Nutrition:** *Ensure that adults and children of all income levels have opportunities to learn about nutritious eating and have physical and economic access to fresh, healthful food*	15
HS-5	**Indoor Air Quality:** *Ensure that indoor air quality is healthy for all people.*	5
HS-6	**Natural & Human Hazards:** *Reduce vulnerability to all hazards, secure critical infrastructure, and ensure that communities are prepared to effectively respond to and recover from crisis.*	15
HS-7	**Safe Communities:** *Prevent and reduce violent crime and increase perceptions of safety through interagency collaboration and with residents as empowered partners*	15

Table 9: Objectives within Health & Safety and their associated points.

Raleigh achieved 77 of the 100 available points for the Health & Safety Goal Area, making it the City's strongest performing Goal Area. Raleigh scored particularly well in HS-2 Community Health & Health System and HS-7 Safe Communities. The greatest opportunity for improvement exists in HS-6 Natural & Human Hazards.



Graph 19: Raleigh's Health & Safety performance by Objective.

HEALTH & SAFETY
Objective Analysis

HS-1: ACTIVE LIVING
14.4/15 points

Raleigh is an active community, with only 19% of adults reporting no leisure time in the past month, according to the national County Health Ranking survey. The City of Raleigh demonstrates its commitment to active living by incorporating bike and pedestrian amenities as part of the Unified Development Ordinance. The Capital Area Greenway System also provides infrastructure for a wide variety of activities like biking and fishing.

HS-2: COMMUNITY HEALTH & HEALTH SYSTEMS
20/20 points

Raleigh did extremely well in this Objective by demonstrating that Wake County is a top-performing county in the state in regards to health outcomes, health behaviors, and clinical care. The County also has two top performing hospitals recognized by the Joint Commission.

HS-3: EMERGENCY PREVENTION & RESPONSE
11.5/15 points

Raleigh's Office of Emergency Operations works closely with the Wake County Local Emergency Planning Committee to make sure the city and county are prepared for emergency situations. Plans are in place to ensure at risk populations will be attended to in case of emergency, and the "Ready Wake" program educates residents on emergency management. To improve their score, the county could look into developing a NIMS-compliant local inventory of assets available for emergency response and mutual aid requests.

HS-4: FOOD ACCESS & NUTRITION
11.5/15 points

In recent years, Raleigh has been able to demonstrate both an increase in access to healthy foods for low-income families as well as an increase of fruits and vegetables at public schools. This progress is supported by actions such as the Wake County Public School System Wellness Policy, zoning that allows community gardens, and the matching of up to $10 of fresh local food purchases for EBT/SNAP users at the Downtown Raleigh Farmers Market. To continue this momentum, the City should conduct a local food system assessment and do more public outreach around healthy food choices.

HS-5: INDOOR AIR QUALITY
3.4/5 points

Raleigh supports increased indoor air quality by banning smoking in all public buildings, reducing the use of toxic chemicals in its pest management, and providing grants through the Homeowner Rehabilitation Program. The city should consider banning smoking in multi-family buildings and requiring advanced ventilation standards for all new public buildings and schools.

HS-6: NATURAL & HUMAN HAZARDS
1.5/15 points

To achieve a higher score in this Objective, Raleigh needs to identify areas that are at high risk to hazards and reduce the number of homes and infrastructure below code. To move in this direction, the City should adopt a hazard mitigation action plan, enact building codes with higher standards in hazard areas, and create incentives to help remove residents from potentially hazardous situations.

HEALTH & SAFETY
Objective Analysis, continued

HS-7: SAFE COMMUNITIES
15/15 points.

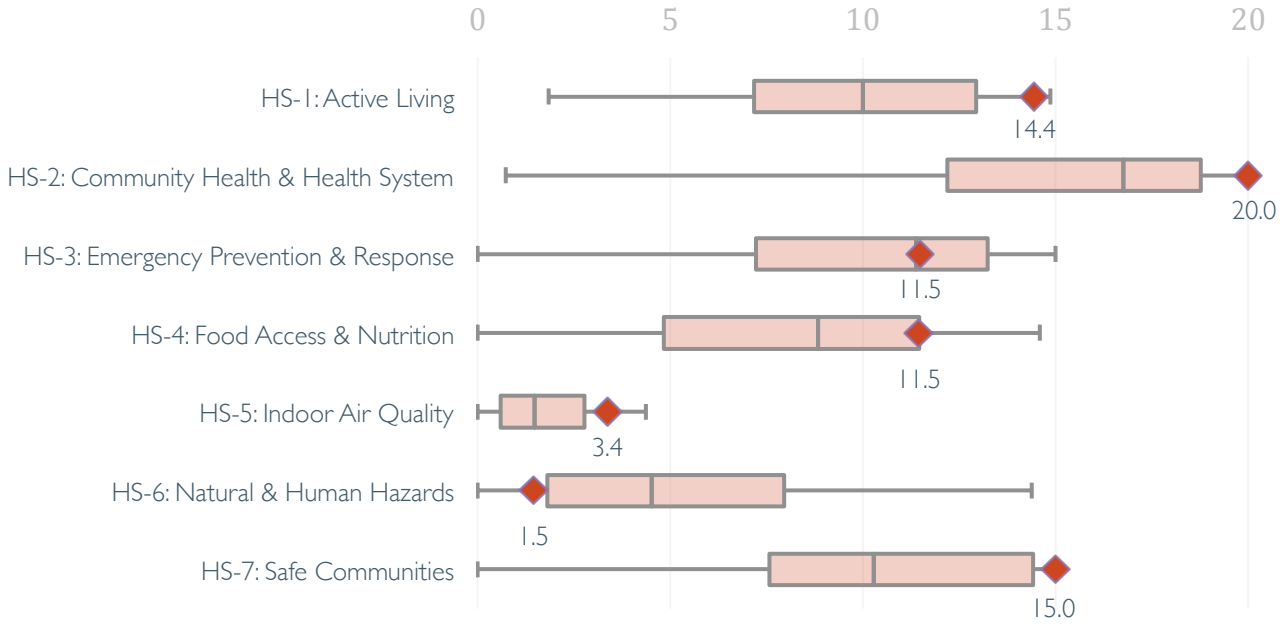
Raleigh received full credit in this Objective by showing that local violent crime rates fall below national thresholds, as well as demonstrating a low school violence rate.

HEALTH & SAFETY HIGHLIGHTS:

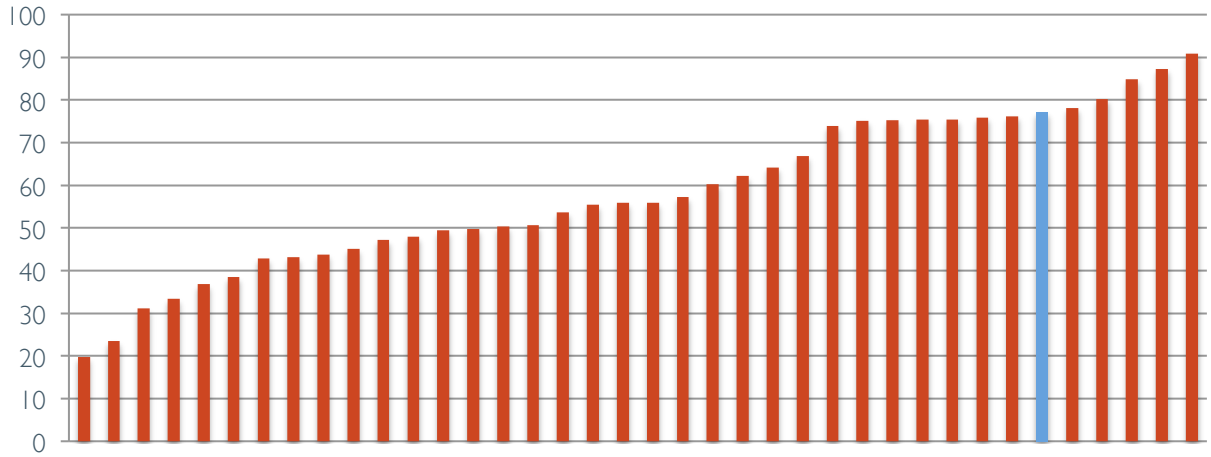
- Only **19% of adults** reporting no leisure time in the past month
- An increase of **$697,081** in sales of fresh fruit and vegetables in the past 3 years
- A **Class 3** ISO Rating for fire protection

HEALTH & SAFETY
Comparative Analysis

The box-and-whisker graph below shows how Raleigh's score compares to all other certified communities. Overall, Raleigh scored extremely well in the Health & Safety Goal Area, in the top 25th-percentile for HS-1, HS-2, HS-5, and HS-7. Raleigh has the greatest opportunity for improvement in HS-6 Natural & Human Hazards. Achieving the remaining 13 points in this Objective would help the community to break the 90% achievement rate for the Health & Safety Goal Area.



Graph 20: Raleigh's Objective scores for Health & Safety, as indicated by diamonds, overlaid on top of the combined percentile scores of all certified communities.



Graph 21: Raleigh's Health & Safety total score in blue, as compared to all Certified STAR Communities.

NATURAL SYSTEMS

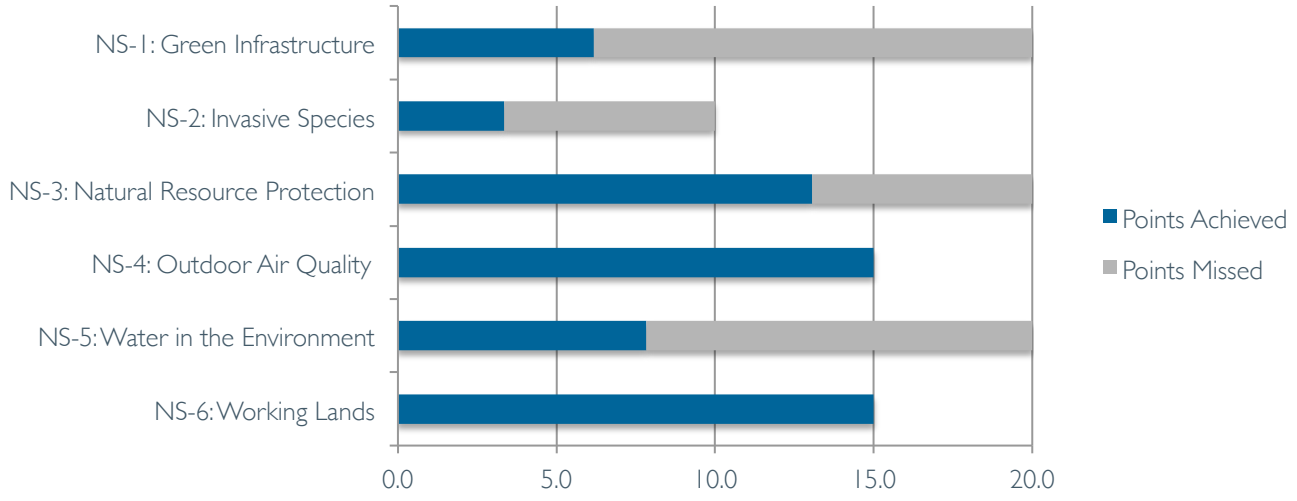
Overview

The 6 Objectives in the Natural Systems Goal Area help communities protect and restore the places that provide resources to support life. The Goal Area takes an ecosystem services approach and recognizes the wide range of benefits natural systems provide, such as food, water, and natural regulating processes affecting climate and floods.

OBJECTIVE	PURPOSE & INTENT	AVAILABLE POINTS
NS-1	**Green Infrastructure:** *Design and maintain a network of green infrastructure features that integrate with the built environment to conserve ecosystem functions and provide associated benefits to human populations*	20
NS-2	**Invasive Species:** *Prevent and manage invasive species in order to restore and protect natural ecosystems and the benefits they provide*	10
NS-3	**Natural Resource Protection:** *Protect, enhance and restore natural ecosystems and cultural landscapes to confer resilience and support clean water and air, food supply, and public safety*	20
NS-4	**Outdoor Air Quality:** *Ensure that outdoor air quality is healthy for all people and protects the welfare of the community*	15
NS-5	**Water in the Environment:** *Protect and restore the biological, chemical, and hydrological integrity of water in the natural environment*	20
NS-6	**Working Lands:** *Conserve and maintain lands that provide raw materials in ways that allow for sustained harvests and preserves ecosystem integrity*	15

Table 10: Objectives within Natural Systems and their associated points.

Raleigh scored highly on NS-4 Outdoor Air Quality and NS-6 Working Lands. Objectives that pertain to water quality and management, such as NS-1 Green Infrastructure and NS-5 Water in the Environment, offer an opportunity for improvement.



Graph 22: Raleigh's Natural Systems performance by Objective.

NATURAL SYSTEMS
Objective Analysis

NS-1: GREEN INFRASTRUCTURE
6.2/20 points

. Raleigh has taken several steps to encourage the use of green infrastructure to address stormwater issues in the community, including the adoption of design criteria for green infrastructure projects and the assessment of a stormwater fee based on impermeable surface area.

There is more that could be done, such as establishing a green infrastructure monitoring program, increasing annual investment in green infrastructure projects and ongoing maintenance, and partnering with groups to implement green infrastructure in appropriate settings. These steps should lead to an increase in total vegetated land area and a wider distribution of green infrastructure throughout the community.

NS-2: INVASIVE SPECIES
3.4/10 points

The City of Raleigh's Parks, Recreation and Cultural Resources Department commits significant resources towards invasive species removal. Since 2009, over 1,700 volunteers at 27 parks have worked to remove invasive species. This is excellent work, but to make a more targeted impact, the city could create a community-wide invasive species integrated pest management plan, implement incentive programs for local businesses to grow and sell native plants, and consider a local ordinance to control priority invasive species.

NS-3: NATURAL RESOURCE PROTECTION
13.1/20 points

Raleigh's commitment to land conservation is apparent in the *Designing a 21st Century City: The 2030 Comprehensive Plan*. The Unified Development Code includes buffer requirements, and the City of Oaks Foundation runs the "Raleigh Naturally" land conservation program. Even with all this work, Raleigh was unable to demonstrate a no-net-loss for wetlands and stream buffers or an increase in land directly connected to regional natural systems. It is important to ensure that the policies in place are being upheld for their intent.

NS-4: OUTDOOR AIR QUALITY
15/15 points

Raleigh was able to earn full credit for this objective by demonstration that the City met attainment or maintenance status for all measured criteria pollutants as determined by the EPA's National Ambient Air Quality Standards.

NS-5: WATER IN THE ENVIRONMENT
7.8/20 points

Raleigh's partnership with the Conservation Trust of North Carolina to create the Upper Neuse Clean Water Initiative is an impressive collaboration that has protected 68 properties with 64 miles of streamside buffer, totaling 6,300 acres valued at $65 million. This was done through voluntary action and the use of the watershed protection fee.

To achieve more points in this Objective Raleigh should adopt a watershed management plan for all water systems in the jurisdiction, educate residents on water conservation, and develop partnerships to monitor for water quality and non-point source water pollution. These steps will help the City to meet national thresholds for hydrological integrity, biological integrity, and chemical integrity.

NATURAL SYSTEMS
Objective Analysis, continued

NS-6: WORKING LANDS
15/15 points

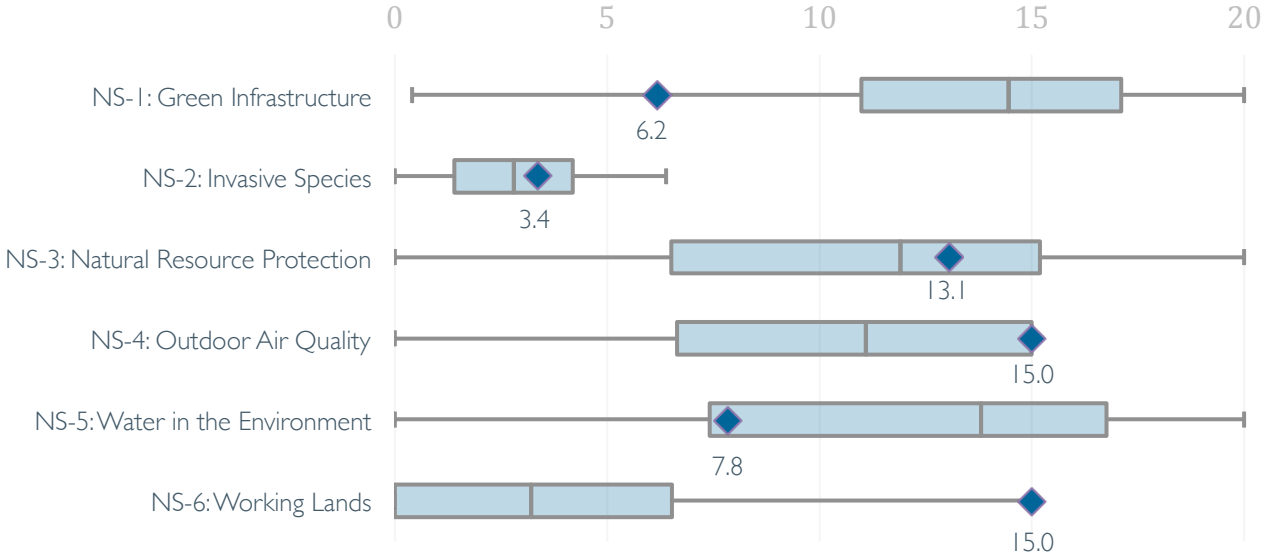
Raleigh did extremely well in this Objective, achieving all 15 available points. The Wake County Farmland Preservation Program is an example of the region's commitment to the preservation and enhancement of working lands, through the protection of "Agricultural Priority Areas."

NATURAL SYSTEMS HIGHLIGHTS:

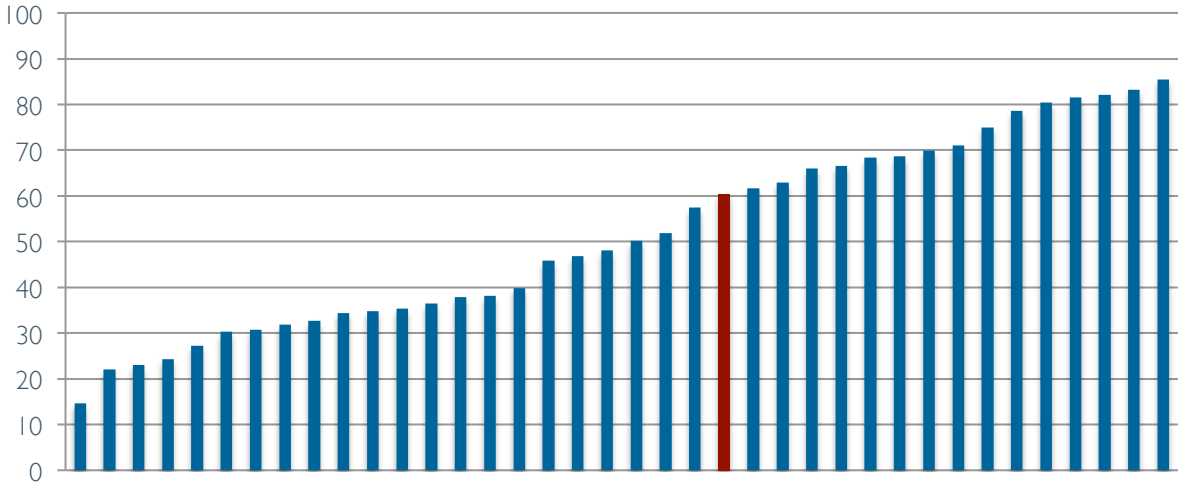
- Raleigh meet attainment or maintenance status for **all measured criteria** pollutants as determined by the EPA's National Ambient Air Quality Standards
- An annual **increase of 4.43%** of working lands using BMPs
- Over **1,700 volunteers at 27 parks** have worked to remove invasive species since 2009

NATURAL SYSTEMS
Comparative Analysis

The box-and-whisker graph below shows how Raleigh's Natural Systems score compares to all other certified communities. In this Goal Area, Raleigh has a mixed performance. In NS-6, most certified communities do not score very high, but Raleigh's commitment to working land preservation puts the city at the top. On the other hand, many cities have made greater strides in NS-1 Green Infrastructure, an Objective where Raleigh did not score highly.



Graph 23: Raleigh's Objective scores for Natural Systems, as indicated by diamonds, overlaid on top of the combined percentile scores of all certified communities.



Graph 24: Raleigh's Health & Safety total score in red, as compared to all Certified STAR Communities.

INNOVATION & PROCESS

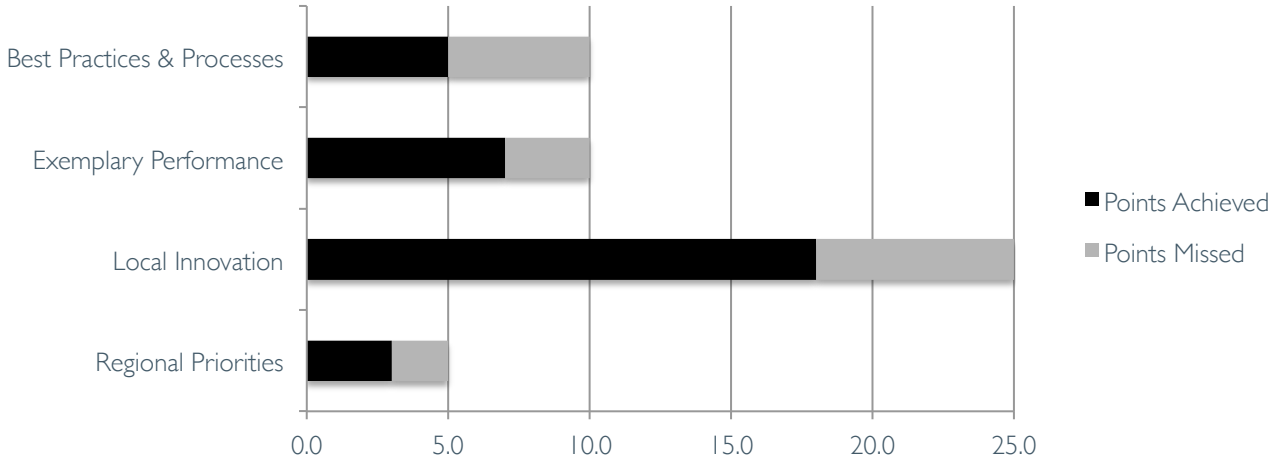
Overview

The Innovation & Process category is an avenue for discovering emerging and leading edge practices that communities are implementing to improve sustainability outcomes.

OBJECTIVE	PURPOSE & INTENT	AVAILABLE POINTS
IP-1	**Best Practices & Process:** *Recognize important local government practices and processes that underpin the implementation of sustainability measures and accelerate community-scale achievement across STAR Goal Areas*	10
IP-2	**Exemplary Performance:** *Reward performance in Community Level Outcome measures that significantly exceeds the evaluation criteria established by the existing STAR Community Rating System*	10
IP-3	**Local Innovation:** *Encourage and reward creative, effective approaches to enhancing a community's environmental, social and/or economic sustainability not reflected in existing STAR Objectives or evaluation measures*	25
IP-4	**Regional Priorities:** *Encourage coordinated regional action on the sustainability issues of greatest importance to the region in which the jurisdiction resides*	5

Table 11: Thematic areas within Innovation & Process and associated points.

Raleigh performed well in all of the Innovation & Process credit areas, especially in Local Innovation, which allows communities to create and submit their own outcomes and actions.



Graph 25: Raleigh's Innovation & Process scores.

INNOVATION & PROCESS
Objective Analysis

IP-1: BEST PRACTICES & PROCESS
5/10 points

Raleigh received innovation credit by describing the city's process for the 2030 Comprehensive Plan development. The plan's development utilized extensive public engagement, data collection, and a systems-based approach. In addition, Raleigh described how the plan specifically addresses several STAR Objectives—BE-7 Transportation Choices, CE-7 Waste Minimization, EJ-4 Quality Jobs & Living Wages, and EAC-4 Historic Preservation.

IP-2: EXEMPLARY PERFORMANCE
7/10 points

For several of STAR's quantitative Outcomes, Raleigh went above and beyond the national thresholds and received extra credit for exceptional progress. Raleigh's excellent network of public spaces puts 81% of households within a ½-mile walk to a park, which is significantly higher than the required 70% threshold. In addition, 95.7% of households are within a 3-mile radius of an off-road trail, 5% more than the leadership standard of 90%.

IP-3: LOCAL INNOVATION
18/25 points

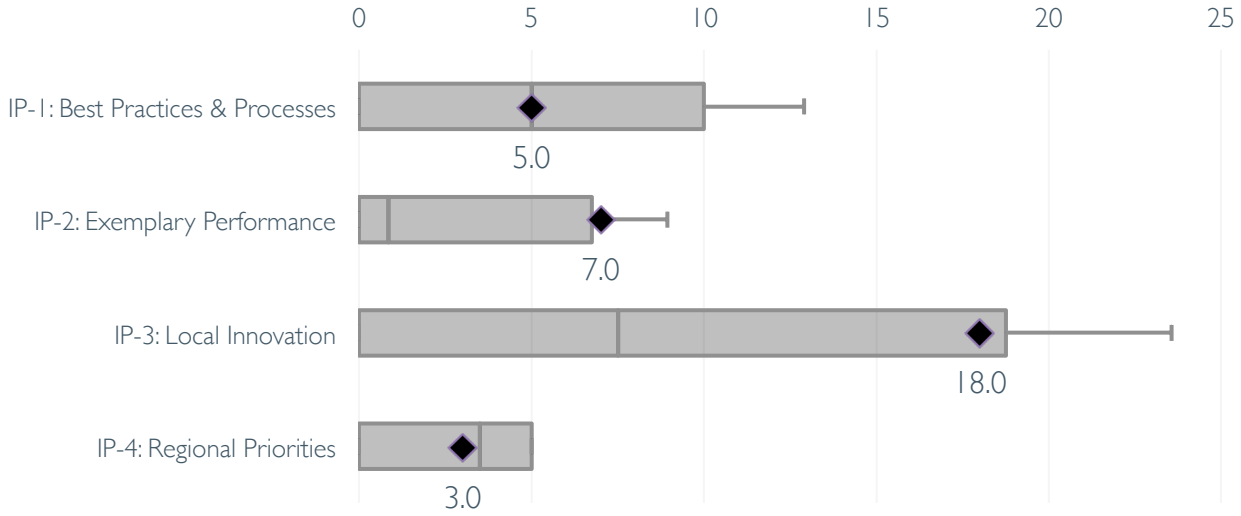
Some of Raleigh's innovative programs that were not captured in other areas of the Rating System include increasing government transparency through a "Smart Cities" approach, utilizing innovative financing for renewable energy installations, and assessing the age of registered vehicles in the City to better capture GHG emissions.

IP-4: REGIONAL PRIORITIES
3/5 points

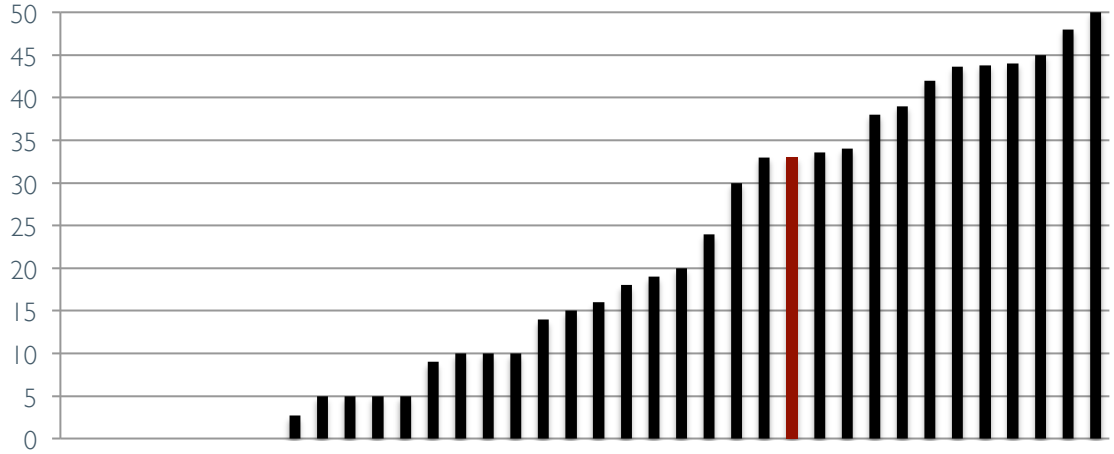
Raleigh received credit here for their work with the Triangle Clean Cities Coalition to reduce dependence on petroleum and promote alternative transportation.

INNOVATION & PROCESS
Comparative Analysis

The box-and-whisker graph below shows how Raleigh's score compares to all other certified communities. Because this section of the Rating System provides an opportunity for communities to demonstrate cross-objective progress or innovative local actions that are not captured within STAR, performance varies widely for certified communities. However, Raleigh's role as a sustainability leader can be seen through a high score in IP-2 Exemplary Performance and IP-3 Local Innovation.



Graph 26: Raleigh's Innovation & Process scores, as indicated by diamonds, overlaid on top of the combined percentile scores of all certified communities.



Graph 27: Raleigh's Innovation & Process total score in red, as compared to all Certified STAR Communities.

NEXT STEPS

Certification isn't the end of Raleigh's STAR Journey. The results of the assessment should provide insight to the current state of sustainability and ideas for improvement and next steps.

BENEFITS OF STAR CERTIFICATION

Communities join STAR for mainly reasons and report a variety of benefits from STAR Certification. These can help to communicate the value of STAR Certification and provide ideas for how to use Raleigh's STAR rating going forward.

Communities who achieve certification under the STAR Community Rating System are:

- Aligning local plans and priorities with a national sustainability framework
- Strengthening local metrics
- Demonstrating a commitment to data-driven performance management
- Increasing transparency and accountability through public-facing reporting
- Gaining competitive advantage and attract funding
- Catalyzing action in implementing solutions and best practices for sustainability
- Communicating resilience and risk management to municipal bond agencies
- Integrating health and equity into existing sustainability or environmental efforts
- Strengthening civic, university, and governmental partnerships throughout the community
- Building and branding a culture of local sustainability
- Improving sustainability communication and education
- Identifying gaps and prioritize future investment
- Celebrating local progress and achieve national recognition

STRATEGIES FOR IMPROVEMENT

In order to improve a STAR Rating, STAR Communities recommends that the local government perform either a gaps analysis or a strengths, weaknesses, opportunities and threats (SWOT) analysis. Some tips for how to start:

1. Look at the objectives with lower scores.
2. Ascertain why points were missed. Some possibilities:
    a. The data wasn't available.
    b. The data was available, but had not been tracked for long enough to demonstrate a trend line.
    c. The data was available, but did not meet the STAR trend line or threshold requirement.
    d. The outcome wasn't a community priority for reporting..
    e. Didn't have GIS analysis capability or another required skillset to complete the analysis.
    f. Couldn't find the correct data holder.
3. Prioritize measures for future tracking based upon existing community plans and needs assessments.
4. Identify opportunities for future actions, such as new policies or programs.
5. Develop a plan and timeline for the new actions and measures.
6. Develop community working groups or committees to assist in implementation, or task a green team or other existing sustainability group with aiding in implementation.
7. Consider embedding STAR metrics into annual reports, plans, and local government decision-making processes.

FOR LEADERS IN GOVERNMENT, EDUCATION & HEALTHCARE.

SUSTAINABLE CITY NETWORK

VOLUME 21 October 2016

BEST OF SUSTAINABLE CITY NETWORK

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LEADERBOARD SERIES
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14 SMALL TOWNS SHARE A ROADMAP TO ECONOMIC RECOVERY
22 TENNESSEE CITY BUILDS OUTDOOR CLASSROOM TO TEACH SUSTAINABILITY

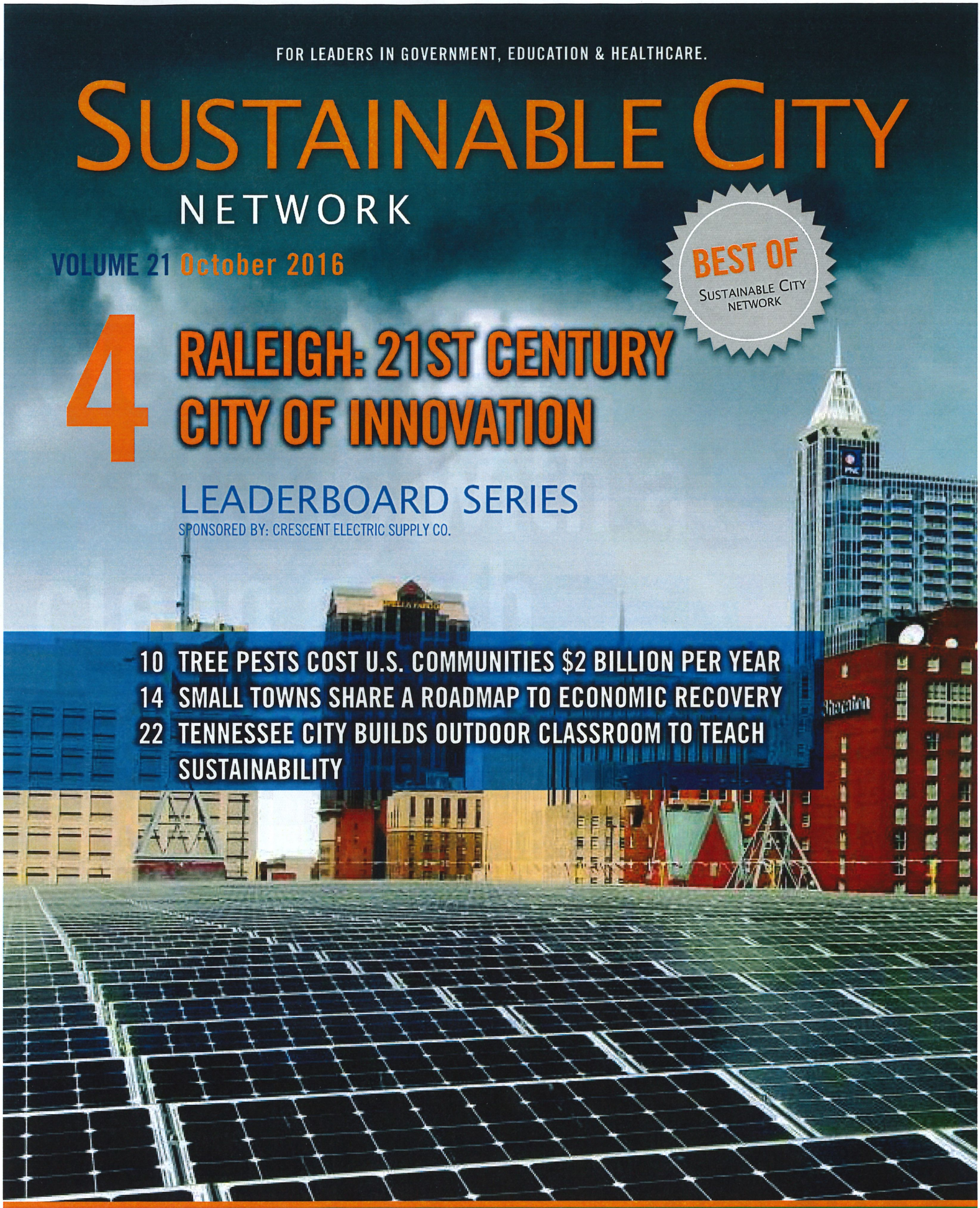

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Photo: Rossie Eslar

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from the editor

Randy Rodgers
Publisher & Executive Editor
SUSTAINABLE CITY NETWORK
www.sCityNetwork.com

801 Bluff Street
Dubuque, IA 52001
563.588.3853
randy@scitynetwork.com

OUR MISSION

"To make U.S. cities more sustainable through quality and well-organized information."

Welcome to Sustainable City Network Magazine – the Best of sCityNetwork.com! This quarterly magazine is a compilation of the most popular articles on our web site and in our email newsletter, the InBox, which is delivered to more than 40,000 leaders in government, education and healthcare across the U.S. and Canada. Sustainable City Network produces advertiser-supported, non-partisan articles, webinars, trade shows and white papers that provide local institutions with quality, organized and timely information about sustainability projects, plans and best practices. This magazine is another way we fulfill our mission.

In this issue, we continue our Leaderboard Series with a profile of Raleigh, N.C. You'll learn how this state capital, county seat and college town is trying to grow smart as its booming economy attracts more than 60 new residents per day.

In our cover story, you'll meet Sustainability Manager Megan Anderson, Energy Manager Suzanne Walker, Senior Stormwater Engineer Scott Bryant, and Assistant Public Utility Director T.J. Lynch, who will explain how city staff is working with elected officials and community groups to make the city more sustainable even as its population explodes. Anderson and her colleagues will also be featured in an upcoming free Sustainable City Network webinar (sign up for the live event or download the recording afterwards at http://sCityNetwork.com/Raleigh).

In other top stories: Trees are an integral and cherished feature of most American cities, and now they are under attack more than ever before. Tree pests, mostly imported from overseas in wooden shipping containers, are costing U.S. cities $2 billion per year. A new report by the Cary Institute of Ecosystem Studies calls for more investment into preventative steps against this problem, which is widespread in all 50 states. Other articles in this issue focus on soil erosion, small-town economic recovery, the Transportation Health Tool, wetland restoration, edible gardening, the Smart School Siting Tool, and large-scale composting, among other topics.

The articles in this magazine have been selected by our readers. We've packaged them together in this convenient magazine format, available as a digital download or in print at **sCityNetwork.com/Bestof.**

We hope you find value inside.

City of Kiel WWTP, Wisconsin

Unison Solutions Inc., based in Dubuque, Iowa is proud to be part of the team at this municipal treatment plant site. The anaerobic digesters produce 140 scfm of biogas which is treated with the biogas conditioning equipment designed and built by Unison Solutions. After removing hydrogen sulfide, moisture, and siloxanes, the gas is used to fuel a 280 kW Tech 3 engine. In addition to the electricity production, the heat from the system is used to supply hot water for the digestion process and to heat the facilities buildings. Learn more about it at **www.unisonsolutions.com**

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RALEIGH: 21ST CENTURY CITY OF INNOVATION

NORTH CAROLINA CAPITAL GROWS FAST… AND SMART

BY RANDY RODGERS, PUBLISHER & EXECUTIVE EDITOR

"We are a 21st Century City of Innovation focusing on environmental, cultural and economic sustainability."

So proclaims the Raleigh, N.C. City Council in the leading sentence of its mission statement.

"I think that's a pretty strong statement in support of the work we do," said Raleigh Sustainability Manager Megan Anderson.

Elected officials putting sustainability at the top of the agenda might seem a bit uncommon in a southern state where Republicans occupy the governor's mansion and have commanding majorities in both chambers of the statehouse. But Raleigh – the state capital, county seat and college town – has always been more progressive than the state at large, and its rapid growth in recent years has helped make North Carolina a "swing state" in national elections of late.

In fact, perhaps the biggest challenge facing Raleigh now is its own success. With a booming economy that attracts more than 60 new residents per day, managing the growth has become more than a full-time job. In 2015, Forbes ranked Raleigh number two on its list of best places for businesses and careers. Its portfolio of local companies is heavily laden with high-tech giants, bio-tech research firms, banking/financial services, pharmaceutical companies and huge healthcare centers.

With all those high-tech companies and more than a dozen public and private colleges in town, Raleigh is also ranked as one of the most educated cities in America. It is one of the three cities and their respective research universities that make up the "Research Triangle" of Durham (Duke University), Chapel Hill (the University of North Carolina) and Raleigh (NC State University).

"So, our population growth is just crazy," Anderson said. "It's exciting, but also a lot to keep up with," she said. "We want to grow smart."

According to U.S. Census data, Raleigh's population grew 49 percent between 2001 and 2014. As of 2015, it was the second largest city in North Carolina with 451,066 people. Raleigh is the seat of Wake County, which now has a population exceeding 1 million people.

Going Green

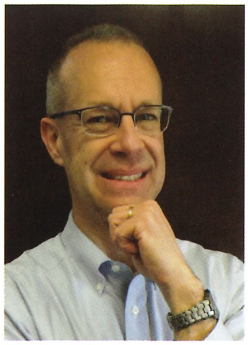
The city of Raleigh opened its Office of Sustainability in 2008. The department reports directly to the city manager, which gives it easy access to every other department in city government. It now has three full-time and one part-time staff members who are sometimes supplemented with various fellows, interns and temporary staff that work closely with other departments and community partners to implement the city's many sustainability initiatives.

Aside from its explosive growth, the city's key sustainability "stressors" include reoccurring floods interspersed with periods of drought, exacerbated by the occasional hurricane. Protecting vulnerable populations and infrastructure from the intensifying effects of climate change has become a motivating factor in the city's overall efforts to improve resiliency, Anderson said.

Last year, Raleigh was recognized as a 4-Star Community by the Star Communities sustainability rating system, scoring highest in the categories of Health & Safety and Economy & Jobs – not a big surprise, but it also pointed out some of the areas Raleigh needs to improve, particularly in infrastructure and the built environment.

Megan Anderson
is sustainability manager at the city of Raleigh, N.C.

Suzanne Walker
is energy manager at the city of Raleigh, N.C.



Scott Bryant
is senior engineer at the city of Raleigh Stormwater Management Division.

T.J. Lynch
is assistant public utility director in the city of Raleigh Public Utilities Department.

"The Star Communities process was a great benchmarking tool for us and was so interesting that we weaved it into our strategic plan," Anderson said. "It showed us that it's not just the big things you do, but also all the little things that add up."

Energy Management

Raleigh has been a leader in North Carolina and across the nation in energy conservation and renewable energy initiatives. It has been recognized for its use and support of alternative fuel vehicles, electric vehicle charging stations and energy analytics systems in its buildings. In 2006 it became the first LED City in the world in partnership with CREE, and its convention center was the one of the first in the nation to be LEED Silver certified, according to Anderson.

As the city's population has grown, so have its municipal facilities. Suzanne Walker, Raleigh's energy manager, said the square footage of city facilities recently increased 25 percent in 24 months. As new and expanded facilities come online the city's approach to reducing fossil fuel consumption and greenhouse gas emissions has focused on technology, collaborating with partners and taking a holistic approach to managing energy, Walker said.

"We have a very integrated facility management control and security system deployed in over 120 buildings now," she said. "So, as the city was growing we were putting these smart building systems in place so we can manage the lighting; we can manage the HVAC, the sub-metering, the electrical."

A Roadmap to Raleigh's Energy Future: Climate/Energy Action Plan was approved by the City Council in 2012, according to project manager Cindy Holmes. It focused on a dollars and sense approach since the aggregated energy accounts for the City of Raleigh represent the second largest operating expense, surpassed only by personnel-related expenses. Strategic focus areas were established that have been guiding the sustainability office ever since and include transforming the city's fleet to cleaner alternative fuels and/or electricity, increasing the energy efficiency of its buildings, implementing a wide variety of renewable energy projects, and reducing its greenhouse gas emissions.

Transportation

Walker said the Raleigh Union Station project, a multi-modal transit center scheduled to open in 2017, is a great example of collaboration between the local, state and federal governments as well as GoTriangle, the regional transit authority in Wake County, and other partners. The project is part of a broader initiative to increase capacity, efficiency and safety in the railroad corridor between Raleigh and Charlotte.

The city has administered its own bus transit fleet since 1975. It operates 29 bus routes as well as a free downtown circulator service that runs in two 30-minute loops, so designated stops see a bus about every 15 minutes. As the city has grown, so has demand for improvements and more options in the transit system, Anderson said. The Union Station project is a major initiative in that direction and other regional projects are also in the planning stages, she said.

■ Biofuel Trailer

A grant provided funds to develop a vertically integrated biofuel processor that can clean, crush and process sunflower and/or soybean into biofuels onsite for use in the Raleigh municipal fleet. The completed biofuel processor is self-contained, enclosed in this 46-foot trailer and powered by a generator fueled sustainably by the very biofuel it produces.

Photo: City of Raleigh

A City within a Park

Anderson said the Union Station project will include landscaping that provides support for bees and other pollinators, part of a long-term effort to improve pollinator habitats throughout the city. "There are a lot of local things going on with bee keeping," she said, "on top of roofs at different buildings around the city, and we're putting pollinator habitat in parks and in flood-prone areas of the city."

With so many parks and green spaces, some folks joke that Raleigh is a "city within a park," rather than the other way around, Walker said. Known as the "City of Oaks" for its many oak trees, Raleigh is proud of its 200-plus parks, four nature preserves and 117 miles of greenway trails, all of which combine to occupy 9,829 acres within the city. Keeping its streets and parks clean has been increasingly more difficult as the city has grown, and Anderson said Raleigh has developed a high-tech solution to assist.

"Our IT department has been pretty innovative and they've won a lot of awards for getting involved in a lot of projects," Anderson said. "Recently, we were having some issues with our downtown. Because of our growth we were starting to see some issues with keeping it clean. So, we got together with our solid waste department, IT, sustainability and parks & rec… and in a matter of about two weeks we came up with a little litter audit app that basically identifies our hot spots and tells us where to focus. Then we built that into a longer process for coming up with a downtown clean plan that expanded way beyond just cleaning up litter," she said.

Photo: City of Raleigh

■ Tesla

A Tesla electric car gets charged at one of the charging stations installed by the city of Raleigh, N.C. The city has installed 29 charging stations; 18 are public charging stations and 11 are fleet charging stations.

Stormwater Management

Scott Bryant, senior engineer at the City of Raleigh Stormwater Management Division, said the city's stormwater utility is funded by a single-family residential user fee that averages about $5 per month. Commercial and multi-family residential property owners pay fees based on the total impervious area of their properties (mostly roofs, driveways and parking lots). Those fees can be reduced when property owners install green infrastructure or take other measures to manage the stormwater on site. The utility fees generated about $23.7 million for the current fiscal year, Bryant said.

That money is spent on programs that provide flood control, reduce stream erosion, fund green infrastructure projects, restore water quality in designated "impaired streams," reduce nitrogen and other nutrient loads in waterways, and expand volunteer engagement programs. He said Raleigh citizens have recently volunteered more than 1,500 hours per year on programs that clean up rivers and streams, mark storm drains to discourage illegal discharges, and monitor water quality in area waterways with city-provided testing equipment and training.

"Because, that's really what it's going to take," Bryant said. "It's going to take the entire city's efforts and all the residents in the community working together to manage stormwater better and to protect our resources and have a sustainable community."

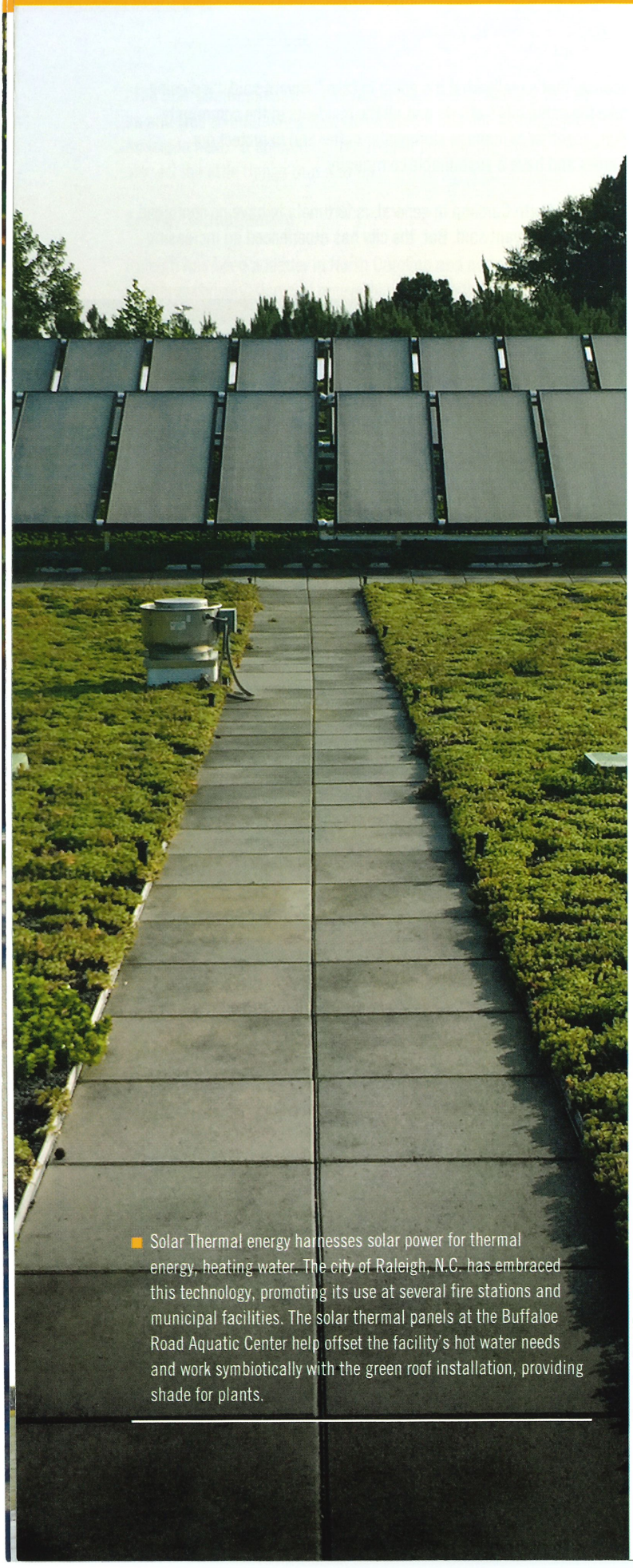
Raleigh, and North Carolina in general, is fortunate to have no combined sewer systems, Bryant said. But, the city has experienced an increasing number of street and structure flood events in recent years and has 32.4 miles of EPA-designated "impaired streams," where water is considered too polluted to meet the water quality standards established by the Clean Water Act.

The Stormwater Management Division has a capital improvement program that is designed to focus on reducing floods, improving water quality and completing watershed studies to identify existing and potential future drainage system problems. The division has completed 125 projects at a cost of $31 million since 2004.

Turning Wastewater Treatment into 'Resource Management'

The Raleigh Public Utilities Department has historically been the largest energy user in the city, and the department with the largest carbon footprint. But, according to Assistant Public Utility Director T.J. Lynch, all that is about to change.

About a year ago, the city changed the name of its Neuse River Wastewater Treatment Plant to the Neuse River Resource Recovery



Solar Thermal energy harnesses solar power for thermal energy, heating water. The city of Raleigh, N.C. has embraced this technology, promoting its use at several fire stations and municipal facilities. The solar thermal panels at the Buffaloe Road Aquatic Center help offset the facility's hot water needs and work symbiotically with the green roof installation, providing shade for plants.

Photo: City of Raleigh

Facility. The change reflected the city's long-term goal of converting its 60-million-gallons-per-day treatment plant from an energy hog into an energy producer.

Lynch said the city is planning to install a $90 million anaerobic digester system at the facility. The project is in the detailed design phase and the city was recently promised a $50 million zero-interest loan from the North Carolina Department of Environmental Quality's revolving loan program to help complete the project.

Once complete, the system will produce methane gas that can be used to make biofuel for vehicles or natural gas to produce heat and/or electricity. The final decision about how to use the methane has not been made yet, but Lynch said the goal is to reduce the facility's energy demand by 2.12 MW per day.

"That's a huge shift for us," he said.

Part of that plan includes the ability to accept fats, oils and grease (FOG) from restaurants and food processors to generate even more methane. Currently, some FOG waste is being sent to rendering companies that convert it to biodiesel, but Lynch said most of it is taken to a farm field and land applied or illegally dumped into the sanitary sewer system where it clogs pipes and causes overflows.

"So, while we were planning this project, we decided it would be prudent to provide a beneficial outlet for this material," Lynch said.

The city currently uses an aerobic process to create biosolids that it then uses to fertilize more than 1,000 acres of farmland the city owns surrounding the plant.

"We purposely grow some crops for market, but we also grow some crops for the production of biodiesel," Lynch said. "We did a study in association with the Biofuel Center of North Carolina, NC State and some other partners, which estimated that with our current farming practices and crop production we're actually capable of producing about 147,000 gallons of ethanol per year and about 19,800 gallons of biodiesel."

The department currently uses between 13,000 and 25,000 gallons of diesel fuel per year to power the equipment it uses to farm the land, Lynch said.

Recently, the city purchased a 46-foot-long trailer that contains a mobile biodiesel production system. The trailer can be used to produce biodiesel on-site in any location and as a demonstration tool for educational purposes.

The department is also leasing part of its land to a third party that has installed a 2.3 MW solar array on the property, Lynch said. ■

Free webinar: Sustainability in Raleigh, N.C. Oct. 27
http://sCityNetwork.com/Raleigh

To: Mayor and City Council Members

From: Environmental Advisory Board Members

Date: 10/13/2017

Re: FY17 Environmental Advisory Board Work Plan

---

1. Continue to host the Raleigh Environmental Awards, implementing changes & modifications to the program as appropriate. *Strategic Plan – Growth & Natural Resources* **All- Larry**

2. Evaluate pollinator issues and opportunities, which may include investigating the effect of pesticides in Raleigh. *Strategic Plan – Growth & Natural Resources and Safe, Vibrant & Healthy Community* **(Dave, Brian)**

3. Evaluate the Compact of Mayors Agreement on Climate Change, review the City of Raleigh Greenhouse Gas Emissions (GHG), explore setting a GHG reduction goal and the role of renewable energy in community resiliency. *Strategic Plan – Growth & Natural Resources* (**Laurel, Aranzazu, Rob)**

4. Continue to support urban agriculture as part of a healthy food system and evaluate an organics recycling program.* *Strategic Plan –Safe, Vibrant & Healthy Community (***Anya, Justin, Brian)**

5. Evaluate and report on other important environmental issues and serve as a forum for environmental education. *Strategic Plan – Growth & Natural Resources* **(Beverley)**

6. Other items as directed by City Council.

*Organics Recycling - The Solid Waste Reduction Task Force referred assessing the development of an organics/food waste diversion strategy or strategies to the Environmental Advisory Board.