

2012

Reducing Energy Use in the East of the Riverway

Growing a Sustainable Community and Local Economy



Prepared by City of Asheville Office of Sustainability and Office of
Community Development, December 2012

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Executive Summary

The City of Asheville is committed to carbon reductions through energy usage reduction and for many years demonstrated this commitment through a lead by example model. The City first prioritized being a green and sustainable organization in 2007 when the city established an annual municipal carbon footprint reduction goal that was later increased to 4% each year. In support of this policy, the municipality created a Sustainability Management Plan which institutionalizes this commitment. Since the inception of this goal the city has repeatedly delivered carbon reductions above and beyond the policy goal through implementing management, capital and education programs to achieve carbon reductions. Examples of successful programming include the creation of a green capital improvement program that recycles energy savings to fund energy investments, equipment upgrades to water pumps at the water treatment plant, and idle reduction education for city fleet drivers.

After successful implementation of an internal energy reduction goal Asheville City Council expanded their energy policy goals through specific community focused strategies in their Strategic Operating Plan:

Asheville will be the southeastern leader in clean energy and environmental sustainability by:

- Setting and developing a plan for implementing a community energy reduction goal (added in FY12)*
- Seek partnerships for a community energy audit and develop metrics to track community energy reduction (added in FY13)*

In order to leverage resources and maximize partnerships in pursuit of Council's energy goals the City integrated community energy planning into the TIGER II community development and planning grant that was awarded in 2011. The TIGER II grant is from the Department of Transportation for a total of \$850,000. The City is using these funds to plan for community sustainability in its East of the Riverway area. The East of the Riverway area contains 1,100 acres of culturally, economically, and environmentally diverse residential, commercial and industrial districts geographically defined by the French Broad and Swannanoa Rivers, McDowell Street, and Downtown. This area has been targeted for a collaborative and concerted revitalization effort that will serve as a model for sustainable development in Asheville for years to come. The series of TIGER II planning efforts are scheduled over a two-year period and are coordinated by the City of Asheville Community Development Division and contract organizations.

A core deliverable of the East of the Riverway Sustainable Communities Initiative is developing a plan to reduce energy use in this area. The City Office of Sustainability is the lead agency for this effort. City staff from this office defined the planning process, which has included developing a model to measure energy use in the area; creating a policy framework to explore energy reduction; assessing best practices for stakeholder action to reduce energy use; and outlining a process to develop model programs to assist the City and stakeholders bring energy reduction to scale and finance those programs.

This report provides details the process of this planning effort, establishes a methodology for conducting a community carbon footprint assessment and provides energy policy recommendations to support community energy reduction. It is a key step towards helping reduce energy use, an important element in the community's long-term sustainability.

Policy Analysis Recommendations

In this report eighteen local government policy tools are detailed and assessed for their ability to influence energy usage reduction in the East of the Riverway neighborhoods. Assessment factors included stakeholder perspective, environmental benefit, social benefit, economic benefit, if there is existing program activity, if there are existing municipal resources, and the technical feasibility. The top five energy policy recommendations for the East of the Riverway are as follows:

1. Prioritize green job creation in municipal economic development

- a. Create an economic development strategy that incorporates green job creation and green business development as a top priority*
- b. Evaluate the Economic Development Incentives Policy (EDIP) for opportunities to better incentivize green job creation and green business development:*

2. Implement a community engagement/education campaign

- a. Establish a coalition of community efforts that align under one brand for community energy reductions*
- b. Establish a One-Stop Shop Resource for Information*

3. Offer cash incentives tied to property taxes for renewable and energy efficiency projects

- a. Expand current incentives that tied to property taxes by creating incentives that apply to existing buildings in addition to new construction*

4. Leverage public infrastructure and property to catalyze sustainable economic development

- a. Create an evaluation tool for long term planning and prioritization of capital improvement project selection across city departments:*

5. Provide access to capital for renewable and energy efficiency projects

- a. Incorporate energy efficiency standards into existing programs that provide access to capital*
- b. Use CDBG Section 108 Loan Funding to establish a loan pool for energy efficiency and renewable energy retrofits in the community*
- c. Utilize any excess general fund revenue to establish a revolving loan fund for energy efficiency and renewable energy retrofits in the community*

Introduction

Where is the East of the Riverway Community in Asheville?

The “East of the Riverway” community is a geographic area within the City of Asheville that encompasses six different neighborhoods directly east of the French Broad River, including WECAN (West End/Clingman Avenue Neighborhood), Hillcrest, South French Broad, Livingston, Lee-Walker Heights and the River Arts District. The East of the Riverway area includes 1,100 acres between downtown and West Asheville along the French Broad River.

According to 2010 US Census data, the East of the Riverway area has a total population of 3,643 with a total of 1,497 households. The East of the Riverway area is largely located in Buncombe County Census Tract 9¹ (although it does not define its boundaries and includes also parts of Census Tract 2) which is considered to be an urban distressed community². Distressed communities are characterized by significantly lower incomes, higher unemployment rates, lower homeownership rates and education attainment. Ironically, the largest employer in the larger Asheville Metropolitan Area, Mission Hospital, is directly adjacent to its boundaries, and AB Tech Community College, the area’s largest college and training institution, is found within the East of the Riverway borders.

Despite these challenges, each neighborhood within this community has a unique culture and unique community and economic assets. When neighborhoods collaborate together, they can combine those assets to strengthen their capacity to accomplish goals that benefit a greater number of residents. Strengthening community level action across the neighborhoods can create and strengthen relationships, professional and social networking opportunities, increase the sharing of ideas and resources, and other activities that lead to social and economic benefits.

The neighborhoods in the East of the Riverway area are primarily older Asheville residential areas with a rich history and established neighborhood identity. According to the 2006-2010 American Community Survey 5-Year Estimates, 51% of the housing units in Census Tract 9 (which largely correlates with the study area, but excludes Hillcrest) were built prior to 1970³. On average, homeowners in the East of the Riverway neighborhoods have lived in the community for a longer period of time than renters⁴. The residential building stock in the area is very diverse, and includes single and multifamily buildings of many architectural types, sizes, conditions and ages.

Over 70% of the residents in the East of the Riverway neighborhoods rent their homes. Of these residents, 56% live in public housing, and 14% live in other rental housing⁵. In the City of Asheville, over 6,000 Asheville residents live in properties managed by the Housing Authority of the City of Asheville (HACA) in 1,500 public housing units in 10 developments. Six public housing developments with 666 apartments are located in the East of the Riverway area.

¹ US Census Tract Outline Map, Buncombe County North Carolina, 2000,

http://www2.census.gov/plmap/pl_trt/st37_NorthCarolina/c37021_Buncombe/CT37021_A01.pdf

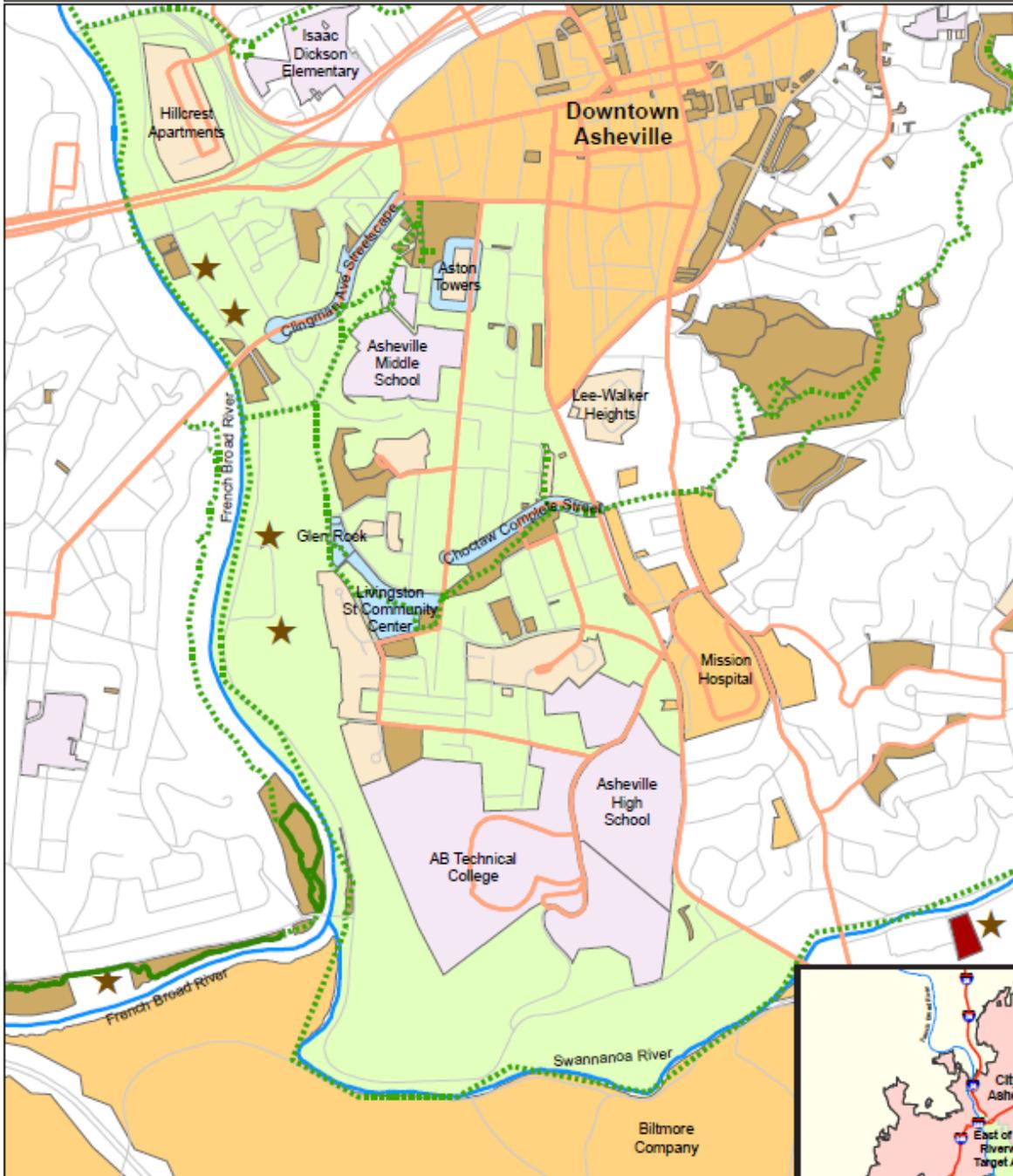
² The State of North Carolina Urban Distressed Communities, Allen Serkin & Stephen Whitlow, Center for Urban and Regional Studies, University of North Carolina at Chapel Hill, February, 2005, http://research.unc.edu/n/CCM1_029980

³ Milstead et al, Appalachian State University Graduate Planning Studio, *Transportation and Energy Community Survey 2012*.

⁴ Milstead et al

⁵ Milstead et al.

East of the Riverway Target Area



Legend	
	Greenways - Complete
	Greenways - Proposed
	Transit Routes
	Brownfields
	Future Rail Station
	East of the Riverway Target Area
	Recent Investments
	Major Employers
	Public Housing
	Schools
	City-Owned Property



Target Area Location within City of Asheville

Similarly, the majority of businesses located in the East of the Riverway neighborhoods rent a building or space within a building, rather than own it⁶. Businesses located in the East of the Riverway District are very diverse in size, type, and include a full spectrum of service and medical industries, including automobile repair shops, real estate services, restaurants, beauty parlors, printing services, etc., as well as light industrial, instructional schools and non-profit agencies. In addition, there are retail shops, artist galleries, convenience stores, and services that support the tourism economy, although no large grocery, hardware, clothing stores or retail outlets. The majority of businesses are independently owned, small businesses or medical providers⁷ rather than franchise chain stores or large manufacturing facilities. The commercial building stock is as diverse as the residential housing stock, and includes many historic industrial and residential renovations, as well as large and small office buildings and light industrial.

There have been recent re-development efforts and investment within the area, with high profile commercial and mixed use development and infrastructure improvements slated for completion within the next several years. A new production facility of the national New Belgium Brewery will soon start construction. At “The Community Speaks,” an East of the Riverway Day event held in September of 2012, residents expressed both a sense of renewed pride and excitement about opportunity associated with this new growth, as well as concerns of gentrification, and other potential negative community impacts. This latter largely stems from the historical experience of “urban renewal” in the 1970’s where thousands of residents were relocated and primarily African American neighborhoods devastated to make way for new highways, multi-story buildings and other infrastructure changes⁸. Regardless of the reaction, community partners who spoke at the event expressed a similar vision of maintaining community identity, creating a livable community, and the importance of public participation in the process.

The Partnership for Sustainable Communities initiative

The Partnership for Sustainable Communities is an effort to make the East of the Riverway neighborhoods more sustainable and vibrant. This public private community initiative is designed to increase community involvement in planning in order to strengthen and support livable communities, and prevent repeating the urban renewal experience. Six Livability Principles were established by the federal government’s Partnership for Sustainable Communities to help guide this planning process⁹. They include:

1. Provide more transportation choices
2. Promote equitable and affordable housing
3. Enhance economic competitiveness
4. Support existing communities
5. Coordinate policies and leverage investment
6. Value communities and neighborhoods

This neighborhood level initiative is happening at the same time a regional planning process is underway as the GroWNC Project engages stakeholders in a multi-county area within Western North Carolina¹⁰.

Additional grant focus areas that are part of the East of the Riverway project include 1) Community Involvement; 2) Community Inventories and Asset Sharing; 3) Transportation Planning; 4) Greenways Planning; 5) The Wilma Dykeman Riverway Plan; and 6) Transformational Development Projects. Visit the East of the Riverway website for updates on these additional initiatives at www.eastoftheriverway.com

⁶ Data acquired from the Buncombe County Tax Department, <http://www.buncombetax.org/>

⁷ Data acquired from the Buncombe County Tax Department, <http://www.buncombetax.org/>

⁸ Twilight of a Neighborhood, Sarah M Judson, Crossroads, Summer-Fall 2010.

⁹ Partnership for Sustainable Communities, <http://www.sustainablecommunities.gov/aboutUs.html#2>

¹⁰ GroWNC, <http://www.gro-wnc.org/index.html>

The Energy Planning Process

In April and May of 2012, Appalachian State University, in partnership with Green Opportunities, Just Folks and the Asheville Design Center, conducted a door to door survey to collect data on the ways neighborhood residents were using energy, what conservation measures were being practiced, and what efficiency and weatherization investments had been made and were of the most interest. City of Asheville Office of Sustainability staff researched community energy reduction best practices to create an outline of potential action opportunities and policy recommendations. A total of four community and business focus groups were held to better understand the barriers and opportunities associated with efficiency and conservation, i.e. why decisions, behavioral patterns and certain investments were being made. Participants included residential property owners, residential renters, housing authority residents and business owners, who provided feedback about the strategies to reduce energy consumption and about barriers to conserving energy. A baseline greenhouse gas emissions inventory for buildings within the East of the Riverway area was conducted by City of Asheville Office of Sustainability staff. The inventory, described later, measured emissions from residential and CIG (commercial, industrial, and governmental) buildings and serves as a benchmark to measure future changes against. The baseline inventory includes data collected from the door-to-door surveys and data provided from community partners. The draft plan will be shared and reviewed by the East of the Riverway residential and business community members, the program partners, the policy advisory committee the Sustainability Advisory Committee on Energy and the Environment as well as the Asheville City Council.

Why reducing energy use is important: Community, Environmental, and Economic Benefits

Saving energy results in saving money spent on utilities, whether it is in an individual home, apartment building, business, or in a manufacturing facility. Reducing energy costs raises the standard of living of local residents, increases financial stability and can help ensure that housing remains affordable in the community. A low cost home is not necessarily affordable, particularly if utility costs are high. Even in public housing where utility costs may be included as part of the rent, tenants are responsible for excess energy charges when they exceed energy usage allowances, which can add up to significant financial burdens. Reducing energy use reduces these expenses and allows residents to have more control over increased discretionary income.

Inefficient energy consumption disproportionately impacts low income residents, who have the most inefficient homes and transportation, and the least amount of resources to respond to changes or invest in improvements. According to HUD, energy costs consume 19 percent of total annual income for single, elderly, poor, and disabled persons living on social security, compared with a national average of only 4 percent¹¹. Households can save between 20 and 30 percent on energy costs by improving energy efficiency¹². Household energy expenditures per median income in Western North Carolina exceed the state average by 13.7%¹³. Heating and cooling costs on average account for over 50% of residential energy use¹⁴. According to the Asheville Chamber of Commerce, utility costs, as well as the overall cost of living in Asheville is higher than the national average, as well as higher than in NC cities like Raleigh, Durham, Winston Salem, Wilmington and other regional cities including Atlanta, Charleston, Knoxville, Columbia, and Chattanooga¹⁵. By planning and implementing neighborhood level programs, we can improve social equity.

¹¹ Energy Efficiency in Affordable Housing, A Guide to Developing and Implementing Greenhouse Gas Reduction Programs *Energy*, US Environmental Protection Agency, 2011.

¹² US EPA Energy Savers. Accessed in August 2012 from www.energysavers.gov

¹³ Energy Data for Western North Carolina, adapted from Clean Energy Lecture Series, WNC Alliance and Transition Asheville, 2012, <http://www.transitionasheville.org/document/energy-data-western-north-carolina>

¹⁴ US Energy Savers, 2012.

¹⁵ Cost of Living Reports, 2012, Asheville Chamber of Commerce website, <http://www.ashevillechamber.org/economic-development/research-and-reports/cost-living-reports>

Reducing energy use creates local jobs: Western North Carolina has among the highest rate of growth of the clean energy and efficiency sectors in the state¹⁶. North Carolina's energy efficiency and renewable energy sector accounts for 14,800 full time equivalent (FTE) employees in 2011, growing by 18% from 12,500 FTE employees in 2010 in at least 1,084 firms¹⁷. Among the growing green businesses found in the East of the Riverway neighborhoods are FLS, one of the largest solar companies in the Southeast, and Blue Ridge Biofuels, one of the region's largest biofuels production facilities. Targeted energy planning and strategic implementation projects can simultaneously reduce poverty and strengthen the regional markets for efficiency and renewable energy products and services, increasing local economic growth and job creation. North Carolina has one of the fastest growing populations in the nation, and efficiency investments can help not only individual residents, but help the state meet its growing demand for energy¹⁸ without the need for additional expensive power plants.

Reducing energy consumption and retrofitting buildings can result in indirect health benefits, like improving indoor or outdoor air quality, and other comfort measures. Much of the East of the Riverway area is located in a flood plain, and residents participating in focus groups expressed concerns related to storm water management issues and mold. Energy efficiency improvements, like better sealing the home's exterior, interior and duct ventilation system, will not only save residents on utility costs, but can also result in improved comfort, and improved indoor air quality and health from minimizing the infiltration of dust, pollen, and mold into living areas. In addition to minimizing heat transfer, additional insulation can help decrease interior noise, another concern expressed by East of the Riverway residents in the 2012 Community Survey¹⁹. When less fossil fuels are burned in power plants, we reduce emissions that cause and/or exacerbate multiple health problems associated with poor air quality, including respiratory illnesses like asthma.

Reducing energy consumption will reduce greenhouse gas emissions that contribute to global warming. Climate change threatens the quality of life and the macro- and micro level ecosystems and economies found in the East of the Riverway neighborhoods. Severe weather patterns have increased across the state, already producing record summer temperatures, hurricanes, floods, draughts, erosion, landslides, shifts in species habitat and migration, and changes in agricultural production²⁰. In 2004, Asheville experienced two severe storms and flooding that resulted in \$200 million worth of damage in Western North Carolina during a two-week period, according to the National Climatic Data Center. Reducing the amount of energy consumed will reduce carbon emissions that contribute to global warming.

Energy reduction and planning can be part of a place-based, multi-faceted economic strategy to help increase standard of living and create jobs. Two community related concerns were expressed and repeated throughout interviews, surveys, events, meetings and focus groups within the East of the Riverway neighborhoods: a need to contain costs and keep neighborhoods affordable, and a need for more local jobs. While not directly related to the carbon reduction goals found in more traditional climate action plans, reducing energy use, increasing renewable energy production and implementing related programming can enhance a place-based, multi-faceted economic strategy that addresses these concerns. This type of strategy has been identified as one that can be effective in helping to reduce poverty and increase economic activity²¹.

¹⁶ Western North Carolina Clean Energy Cluster Analysis Study, AngelouEconomics, Land of Sky Regional Council and Advantage West, September 2011.

¹⁷ Renewable Energy & Energy Efficiency Industries Census 2011. North Carolina Sustainable Energy Association, November 2011.

¹⁸ North Carolina's Energy Future, ACEEE, March 2010.

¹⁹ Milstead et al.

²⁰ Potential Impacts of Climate Change in Three Regions of NC, Fox et al, RENC Report, March, 2010.

²¹ Documenting Poverty, Economic Distress and Challenge in North Carolina, The Center on Poverty, Work and Opportunity, University of North Carolina at Chapel Hill, January 15, 2010.

Establishing a Carbon Footprint Baseline for Community Building Energy Usage

To manage emissions, cities must measure them. To extend the global impact of local efforts, cities must report them publicly as well. Planning for climate action at the city level starts with developing a GHG inventory, which allows local policy makers and residents to understand which sectors drive GHG emissions in their city or community, and respond by developing action plans that address those sectors.

– *Global Protocol for Community-Scale GHG Emissions, 2012*²²

Measuring the carbon footprint of municipal operations has become a key tool for Cities to measure the progress of their internal sustainability goals, and is practiced by cities all over the globe, including Asheville. Measuring the carbon footprint of the community at large, including the residential, commercial and industrial sectors that operate within a city’s geopolitical boundaries, is the next step towards managing greenhouse gas emissions in the most effective manner to prevent the worst effects of climate change. Community-level GHG accounting, however presents a number of new challenges, and this study attempts to identify and overcome these challenges by focusing on the East of the Riverway neighborhoods in Asheville, North Carolina²³.

The “Global Protocol for Community-Scale GHG Emissions”, or GPC, was used as the guideline for conducting the carbon footprint assessment of the East of the Riverway neighborhoods²⁴. The GPC is the product of a yearlong collaboration of multiple international institutions to standardize GHG (greenhouse gas) accounting protocol, and is recognized as the most up to date methodology for this type of study.

This carbon footprint study of the East of the Riverway area focuses on the built environment. Certainly the greenhouse gas emissions from transportation, solid waste and other sources within this community are significant. However, the scope of this study is focused on what the local government can do as a partner to the community to reduce greenhouse gas pollution from the building sector. As illustrated in , buildings make up over 41% of GHG emissions in the US²⁵.

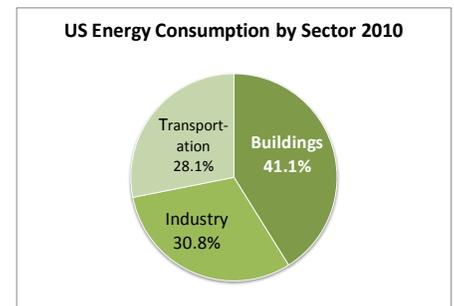


Figure 1: Buildings dominate energy usage in the US

Units

This study will present GHGs in metric tons of carbon dioxide equivalents, denoted as “MT CO₂e”. This metric includes the global warming potential of carbon dioxide (CO₂), the principal anthropogenic greenhouse gas, as well as methane (CH₄) and nitrous oxide (N₂O), GHGs which are also released as a result of fossil fuel combustion.

Carbon Footprint Summary

This inventory examined two different sectors of buildings within the East of the Riverway neighborhoods. The GHG contribution of each sector was determined through different methodologies. The Residential sector includes all privately owned single-family homes, apartments and condos, and Housing Authority-operated apartments and houses located in seven different neighborhoods within the East of the Riverway. The Commercial/Industrial/Governmental (CIG) sector included all other building types: schools, AB Tech community college, and all commercial and industrial properties.

²² C40 Cities Climate Leadership Group and ICLEI Local Governments for Sustainability, *Global Protocol for Community-Scale GHG Emissions* (March 2012), <http://www.ghgprotocol.org/city-accounting>

²³ Note – the terms “carbon footprint” and “GHG Emissions” are used interchangeably in this document

²⁴ C40 and ICLEI, *Global Protocol for Community-Scale GHG Emissions*

²⁵ US Dept of Energy, Buildings Energy Data Book, <http://buildingsdatabook.eren.doe.gov/TableView.aspx?table=1.1.3>

Table 1: CIG sector dominates the East of the Riverway carbon footprint

EOR Carbon Footprint by Sector		
	Number of properties	MT CO2e/year
CIG (Comm/Ind/Gov)	225	42,973
Residential	1,496	10,540
Totals	1,721	53,513

When looking at heating sources aside from electricity such as natural gas, fuel oil and/or propane, we see that the associated emissions from electricity production are the highest.

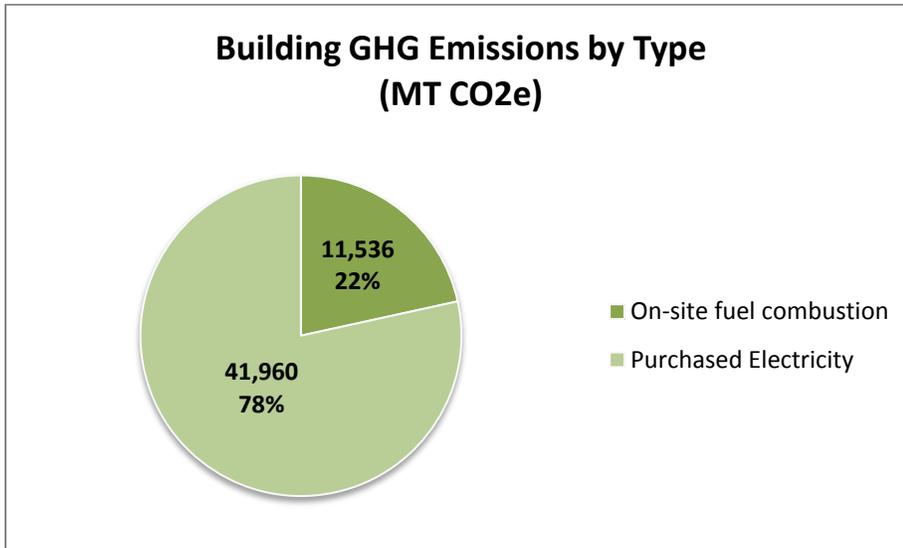


Figure 2: Fuel combustion vs. electricity emissions

Residential Sector Energy Usage

The residential sector of the East of the Riverway area is characterized by a high percentage of public housing and rental housing. According to the Appalachian State University study, 30.1% of East of the Riverway residents live in owner-occupied houses, while 56.4% of East of the Riverway residents live in Housing Authority homes and the remaining 13.6% rent from others²⁶.

The residential units of the East of the Riverway are slightly older and somewhat smaller than those of Asheville overall.

Housing Stock Comparison		
	Asheville	East of the Riverway
Median year of house construction	1962	1952
Percent of houses built before 1980	67.0%	67.2%
Median square footage	1,320	1,192

Table 2: EOR housing stock older and smaller than Asheville's²⁷

²⁶ Milstead et al, Appalachian State University Graduate Planning Studio, *Transportation and Energy Community Survey 2012*.

²⁷ Data acquired from the Buncombe County Tax Department, <http://www.buncombetax.org/>

Methodology

Initially the methodology for establishing a carbon footprint for the residential sector of the East of the Riverway was to use a combination of data sources, including building information from the Buncombe County Tax database, survey results from the ASU study, and voluntarily provided utility billing data from East of the Riverway residents. The voluntarily provided information was vital to this method but turned out to be a barrier. When the canvassers finished with their survey questions, they asked residents to share their electric and natural gas billing histories in exchange for a \$10 gift card to a local grocery store. Unfortunately the number of voluntary respondents was not high enough to draw any statistically meaningful conclusions about energy usage in the area.

Thus, an alternate method outlined in the GPC had to be employed. For electric usage, aggregate utility data showing energy use by sector within Buncombe County received from Progress Energy was used and scaled down to the level of the East of the Riverway. For natural gas usage, statewide averages had to be used.

The Housing Authority of the City of Asheville (HACA) pays for the utilities at the majority of their units within the East of the Riverway. HACA shared this electricity and natural gas consumption data, which was used to determine the contribution to energy usage from public housing in the region. For the purposes of these calculations, the Livingston Street Apartments HACA community is included in the Non-HACA residences, because the Livingston Street residents pay their own utility bills and thus their information was not included in the rest of the HACA data.

For the non-HACA houses, a Buncombe County average residential electricity usage of 11,186 kWh/year was applied. The assumption is that all non-HACA homes within the East of the Riverway use about the same amount of electricity as the typical Buncombe County home.

To estimate natural gas consumption for non-HACA homes, statewide statistics were used. Per capita NC natural gas consumption, population, number of households, and percent of houses that use natural gas data was used to determine an average natural gas consumption for homes that heat with natural gas of 829.3 therms/year^{28,29}. This is lower than the US average of 930.5 therms/year, as expected³⁰.

Outcome

On a per household basis, non-HACA residences consumed more electricity and natural gas than HACA residences. However within the HACA communities, there is quite a bit of variability between the low and high end of the spectrum. These differences can be attributed to unit size and number of bedrooms, age and current state of buildings, and to some degree user behavior. The units at Bartlett Arms, for example, are mostly single bedroom units with an average square footage of 521, while at Lee Walker Heights the units have more bedrooms and average 817 square feet³¹.

²⁸ US DOE, Energy Efficiency and Renewable Energy, *Energy Consumption in North Carolina Homes*, <http://apps1.eere.energy.gov/states/residential.cfm/state=NC>, accessed August 22, 2012

²⁹ EIA, State Profiles and Energy Estimates, Table C5. Residential Sector Energy Consumption Estimates, 2010, http://www.eia.gov/state/seds/hf.jsp?incfile=sep_sum/html/sum_btu_res.html

³⁰ US EPA, Clean Energy, *Calculations and References*, <http://www.epa.gov/cleanenergy/energy-resources/refs.html>, accessed August 22, 2012.

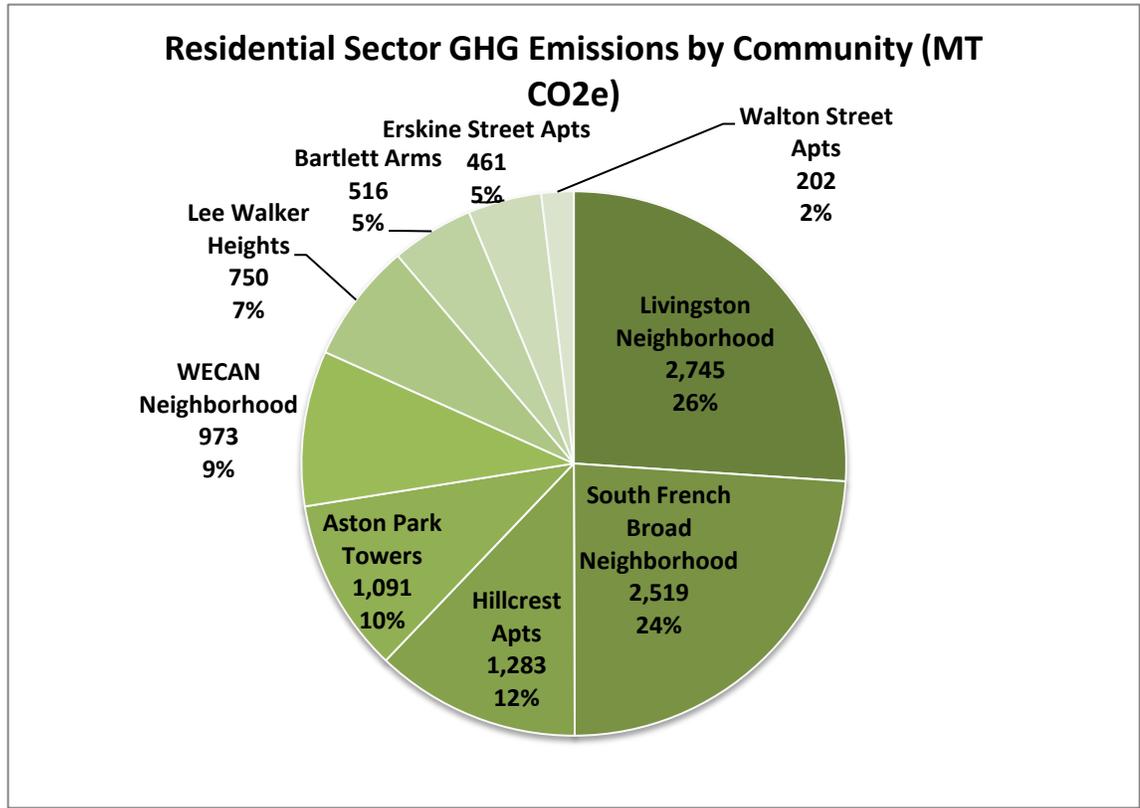
³¹ Housing Authority of the City of Asheville, "Summary of Available Units and Net Square Footage per Unit", August 21, 2001.

Energy Consumption and GHGs per household			
	Electrical Use in kWh/household/year	Natural Gas Use in therms/unit/year	GHG/household/year (MT CO2e)
Non-HACA Residences*	11,186	462	8.2
Lee Walker Heights	4,969	1,015	7.9
Erskine Street Apts	3,566	636	5.2
Walton Street Apts	5,396	619	6.0
Hillcrest Apts	7,143	382	5.7
Bartlett Arms	8,787	131	5.2
Aston Park Towers	15,119	0	7.7

* includes Livingston Street Apartments

Table 3: Residential carbon footprint. Total = 10,540 MT CO2e

Looking at the total residential sector GHG contributions by community, we see that while the number of HACA residences and non-HACA were very close, the non-HACA residences (Livingston neighborhood, South French Broad neighborhood, and WECAN neighborhood) make up the majority of the impact for the sector. This is due to the relative energy intensities of the two types of residences.



Commercial/Industrial/Governmental (CIG) Sector Energy Usage

The CIG sector of the East of the Riverway includes buildings that are zoned commercial such as office buildings, retail spaces, health services, industrial operations, churches, restaurants, schools and colleges, as well as municipally-owned

buildings such as fire stations, community centers, parks and maintenance facilities. The CIG sector does not include condos or apartment buildings, as these are included in the residential sector.

Methodology

A combination of localized datasets and national averages were used to arrive at a commercial sector carbon footprint.

1. Several public institutions within the East of the Riverway actively record their energy consumption information. Actual electricity, natural gas and fuel oil consumption for Asheville Middle School, Asheville High School, and AB Tech Main Campus were collected from those institutions and the NC State Energy Office. Additionally, the City of Asheville owns buildings on seven different properties within the area and provided energy consumption data for those.
2. To estimate energy consumption of other commercial properties, the City's GIS team compiled a list of all commercial properties and buildings within the East of the Riverway region, using Buncombe County Tax information. This data included use descriptions and square footage information for every building.
 - a. Housing Authority properties, condos and other apartment buildings were eliminated because they were accounted for in the residential sector.
 - b. All unheated spaces were eliminated, assuming negligible energy consumption in these areas.
 - c. The institutions mentioned in 1 above were also removed.
3. This list included every property zoned commercial, whether the properties were occupied and functioning or not. In order to estimate which properties were actively consuming energy, the addresses in the list were compared to the City's list of active business licenses, which are updated yearly. Every property address that did not have an active business license was eliminated. Exceptions to this include churches and properties where it was evident that one business license covered multiple addresses. 7.5% of properties were eliminated with this method.
4. Next, building uses from the EPA's 2003 Commercial Buildings Energy Consumption Survey³² (CBECS) list were assigned to every property. The CBECS gives median energy consumption for different building uses in kBtu per square foot, and average percentage of energy that is electricity, so estimates for kWh of electricity and therms of natural gas can be estimated per square foot of commercial buildings. Because CBECS only includes data for a limited number of building uses, many buildings still had to be assigned an "other" designation.
5. Using the CBECS energy consumption data and the East of the Riverway commercial square footage and building use information, energy consumption and greenhouse gas emissions were assigned for all commercial buildings on the list. These estimates were added to the institutional data to arrive at a total commercial sector carbon footprint.

Outcome

The East of the Riverway commercial sector building carbon footprint for 225 eligible addresses is 42,973 MT CO₂e per year. When we examine the data by building type, we see that the Health, Other and AB Tech sectors make up over three quarters of the footprint.

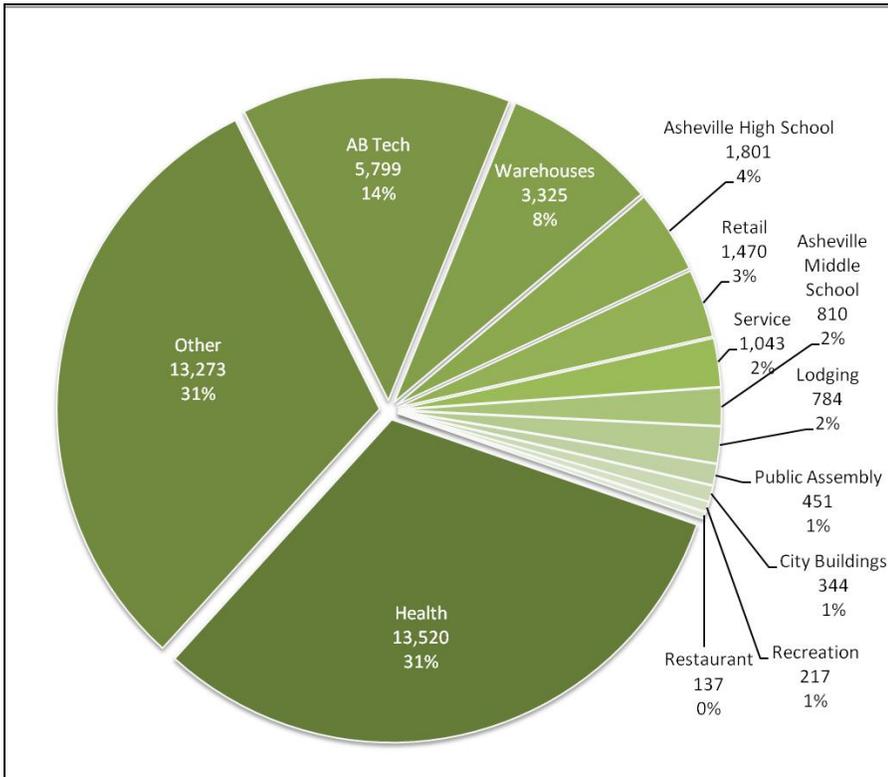
While the East of the Riverway boundaries exclude most of the Mission Hospital campus, there is still a high amount of building square footage dedicated to hospital buildings, urgent care, doctors' offices and outpatient care, which makes the Health category the largest in terms of energy usage and carbon footprint.

The "Other" category includes multi-use buildings, offices, banks, industrial and light industrial facilities, oil storage/distribution, funeral homes, parking structures, beauty shops and an ice plant. While these building uses certainly vary greatly in their energy intensity, because specific CBECS data did not exist for these building types they had to be combined and use a common average energy usage factor.

³² US EPA, Energy Star. *2003 CBECS National Median Source Energy Use and Performance Comparisons by Building Type*. http://www.energystar.gov/ia/business/tools_resources/new_bldg_design/2003_CBECSPerformanceTargetsTable.pdf

Asheville-Buncombe Technical Community College, with over 7,700 students³³, takes third place by building type, but is the highest single user of building energy in the East of the Riverway.

Figure 3: Commercial/Industrial/Governmental GHG Emissions by Building Type
Total = 42,973 MT CO2e



Discussion

The CIG sector, accounting for 80% of the East of the Riverway’s carbon footprint, draws our attention the most. Figuring out ways to reduce energy consumption and environmental impact from this sector will be an important area to focus efforts in the coming years.

The residential sector, while accounting for only 20% of the total building carbon footprint, must not be ignored. Many residents in these neighborhoods are low income and thus are affected more heavily by the cost of energy. Low income residents are also less able to afford weatherization and other home energy conservation efforts, thus we must continue the effort to reduce energy consumption in this sector.

³³ “A-B Tech enrollment at record-breaking high”, A-B Tech Community College website, News, September 1, 2011. <http://www1.abtech.edu/news/articles/a-b-tech-enrollment-record-breaking-high>

Energy Reduction Policy Opportunities

Best practices descriptions

Local governments can provide tremendous support to communities interested in improving their energy future. This section will explore local policy opportunities through evaluating national best practices and locally applied practices in the context of City of Asheville (COA) decision making power. The six (6) policy areas that the COA can influence include: financial incentives, goal setting, technical assistance, education, economic development, and regulations.

Financial Incentives

- ***Provide access to capital for renewable and energy efficiency projects.*** Local governments can support strategic priorities through providing access to capital in the form of grants or loans. This infusion of resources can quickly stimulate energy efficiency retrofits and upgrades. The town of Chapel Hill, NC has implemented a retrofit buy down program that can reduce the cost of qualified retrofits by 20-40%. Chapel Hill started the WISE program in 2010 with ARRA funding. To date this program has conducted 162 energy audits resulting in 90 energy retrofits. The average annual energy savings per retrofit is \$585.³⁴

The design of a grant or loan program, including eligibility criteria, would be a critical factor in the East of the Riverway neighborhoods. Providing access to assist the 70% residential rental population and the large amount of businesses who do not own their place of business would be essential. A program designed to attract public housing administrators and large commercial property owners would help to support the large population of renters in the area.

- ***Create a density bonus for green and/or affordable infill development.*** A density bonus is a zoning tool that increases the allowable housing units to be developed on a parcel of land in exchange for that development achieving specific policy objectives. This zoning tool is often used to incentivize affordable housing and or green/sustainable building practices. Infill development is an urban planning method that focuses development on underutilized, obsolete or blighted areas. Higher density housing developments have associated resource efficiencies. From a land use perspective, higher density developments help preserve agricultural and forested land and can help create more walkable communities. Multi-family apartments are generally smaller and consume less energy per square foot than single family homes. Their stacked nature reduces heat losses to the outside and they can benefit from shared infrastructure such as large boilers or chillers.

Density and infill incentives that support public policy priorities like affordable housing and green building standards reward the developer through higher profitability for supporting the values in the public policy. The City of Asheville adopted a density bonus incentive called the Sustainable Developments Bonus in October 2012. This tool incentivizes dense infill development located within 1/8 of a mile from a transit line. This tool was designed in collaboration with the Sustainability Advisory Committee on Energy and the Environment (SACEE), a City Council appointed advisory committee. To date this incentive hasn't resulted in any projects, although six project developers have discussed the use of this tool with the City planning department.

³⁴ Personal communication with Nora Barger, Chapel Hill WISE Program Manager November 2012

- **Offer cash incentives tied to property taxes.** Cash incentives tied to property taxes can be viewed as a reduction in the annual tax a property owner pays. This can be in the form of a grant refund after taxes are paid or a grant to reduce costs up front. Cash incentives tied to property taxes can also be recurring over a period of time or a one-time incentive. Essential to a successful tax-related incentive program is research and design that understands the financial investments required and provides a financial incentive that can really transform a non-starter project into one that is financially feasible and attractive for the property owner.

In the East of the Riverway Neighborhoods single-family homeowners represent 30% of property owners. Federal and state tax credits (although not local property tax incentives) are valuable to these homeowners in making energy retrofits or building new efficient homes. No local incentive tied to property taxes is currently available for owners of multi-family or commercial/industrial property for energy reduction or alternative energy improvements to existing developments.

Public Benefit Element	5	10	15	20	30	40	50
Energy Star Certified	X						
Leed Bronze/ Healthy Built Silver		X					
Leed Silver/ Healthy Built Gold				X			
Leed Gold/ Healthy Built Platinum					X		
Leed Platinum						X	
10%+ Affordable		X					
20%+ Affordable				X			
30%+ Affordable					X		
40%+ Affordable						X	
25%+ Workforce	X						
50%+ Workforce		X					
75%+ Workforce			X				
Mixed-Use (20% non-residential)	X						
Located w. in Sustainability Bonus area	X						
Brownfield Redevelopment	X						

Asheville does provide an incentive to developers of new affordable housing or mixed use developments that are focused on sustainability goals. The Land Use Incentive Program was approved by the Asheville City Council in March 2011. This incentive comes in the form of a grant equal to the City share of property tax once the project is complete and all eligible certifications are obtained. Every 10 points earned provides one year of the incentive and a 10% reduction in applicable permit fees. The chart above depicts the points available for each public benefit. More information on this program is available at <http://www.ashevellenc.gov/Portals/0/city-documents/planning/LandUseIncentiveResolution.pdf>

- **Provide building permit fee rebates for projects meeting an energy stretch code.** An energy stretch code is a voluntary code established by a local government that sets energy standards above and beyond the state established building code. The stretch code is designed to significantly improve the energy efficiency of a project by a percentage threshold. Projects that successfully implement the stretch code are then eligible for permit fee rebates. This policy tool should be designed to incentivize sustainable building practices above and beyond the state building code and reduce the overall cost for these types of projects.

Measure	Current Fee Rebate
Healthy Built Home Certification, Energy star rating	\$100.00
Geo Thermal installation, solar panel installation, wind generation installation, grey water collection device	\$50.00

In the City of Asheville there are currently fee rebates ranging from \$50-100 when a project includes a variety of renewable energy components or achieves a third party energy certification such as NC Green Built (formerly NC HealthyBuilt) or Energy Star³⁵. Permit fee rebates are valuable because they can reduce overall costs associated with building retrofits or new construction. However, there are challenges with this tool alone moving the needle in community energy reductions. The primary obstacle is that a variety of highly impactful energy efficiency actions do not require a permit to implement; therefore, there are no permit fees to rebate in the first place. See the table below to see what common energy efficiency improvements require a permit through the city of Asheville, and some that do not.

Building Type	Measure	Permit Requirement Status
Residential One and Two Family Homes	Duct and air sealing, adding insulation, HVAC tune up, lighting upgrades, programmable thermostats	No permit required for projects under \$5,000
	HVAC upgrade, window replacements, establishing zoned heating	Permit Required
Multi-family and Commercial Businesses	HVAC tune up	No permit required
	Duct and air sealing, adding insulation, window replacements, HVAC upgrade	Permit Required

³⁵ Green Built North Carolina, <http://wncgbc.org/greenbuilt/>; Energy Star Homes, http://www.energystar.gov/index.cfm?c=new_homes.hm_index

Goal Setting

Policy goal setting includes six basic steps:

1. Research existing dynamics and data. This step often includes setting a baseline.
2. Set a time bound, quantifiable goal.
3. Plan a long term strategy and establish an action plan.
4. Implement action plan.
5. Monitor, track, and report performance.
6. Adjust goal and action plan over time as necessary.

- ***Establish community carbon footprint reduction goal***

In 2008 the City of Asheville established a municipal carbon footprint reduction goal of 2% annually with an overall reduction of 80% by the year 2050. In the first three years the city reduced its footprint 8.4% leading City Council to double the goal and shorten the timeframe. Now the city aspires to annual carbon reductions of 4% to reduce the overall footprint 80% by the year 2030. This powerful and successful act of goal setting demonstrates leadership by example. The opportunity for local policy makers to establish a similar goal for carbon reductions that apply community-wide would take municipal goal setting to the next level. Across the nation hundreds of cities have set community carbon reduction goals with tremendous success. In the city of Winston-Salem, NC, city sustainability staff conducted a community greenhouse gas inventory in 2008 which included an action plan to reduce emissions³⁶. This policy leadership spurred coalition building among various government agencies, Wake Forest University, the Piedmont Triad Research Park, non profits and business leaders who shared a role in carbon reduction efforts³⁷. The critical element in this coalition was the shared learning when the various partners aligned.

Technical Assistance

- ***Provide free energy audits and/or renewable energy assessments.*** An energy audit is an assessment of a building to identify and prioritize opportunities to reduce energy usage and generally improve the building's efficiency. The scale and scope of energy audits vary significantly between residential and commercial properties and between different commercial uses. Generally, energy audits will evaluate the energy performance of the HVAC system, the building envelop, lighting, and electrical equipment (e.g. refrigerators in a home or diagnostic equipment in a medical office). A renewable energy assessment evaluates factors like wind speed, solar exposure, and available space as well as financial incentives or business models to move a renewable energy project forward. Expert assessment and analysis is the first step in any renewable or efficiency project.

Local government can stimulate resident and business pursuit of these projects by subsidizing these assessments. A primary barrier to implementing these types of energy projects is lack of information. These assessments teach property owners or tenants what the building needs are and how to prioritize the options based on a cost (upfront investment)/benefit (reduced energy usage, and reduced energy expenses) analysis. All too often people make decisions about building investments based on their perceptions. For example a home

³⁶ City of Winston-Salem, "Greenhouse Gas Inventory and Local Action Plan To Reduce Emissions," August 2008, http://www.cityofws.org/Assets/CityOfWS/Documents/Green/GreenhouseGasInventoryRecommended_www.pdf

³⁷ Winston-Salem Community Sustainability Program Committee, "Short Term Accomplishments and Long-Term Strategies," January 2010, http://www.cityofws.org/Assets/CityOfWS//Documents/Green/EnvSustAdoptedCSPC_Program_jan2012.pdf

owner might believe their home is especially cold in the winter due to leaky windows and take out a loan for \$20K to replace their windows. That same home owner might have learned through an energy audit that the problems they are experiencing with temperature in the winter would have been best fixed through insulation and caulking (potentially as low as \$1500).

Through work by Green Opportunities and Community Action Opportunities, 11 households in the East of the Riverway neighborhoods have already received energy audits and weatherization services. Waste Reduction Partners (WRP) is a group of retired professionals who volunteer to provide energy audits for government and institutional buildings. WRP conducted an energy audit for Asheville Middle School, which has implemented towards of 50% of WRP's recommendations thus far. WRP also performed measurement and verification work for a lighting retrofit at AB Tech that is showing savings of 813 million BTU/year³⁸.

- **Facilitate scaling energy projects across the community.** Bulk purchasing, a Living City Block project, and Zero Energy Districts are three examples of how to aggregate multiple community projects and magnify their impact. Bulk purchasing can reduce project costs by combining purchasing for multiple projects across a community. Project cost reductions could come in the form of bulk purchasing discounts for equipment and materials as well as potentially more favorable finance packages. Living City Block (LCB) is an organization that redevelops existing city neighborhoods to be “culturally thriving, energy and resource hyper-efficient, and economically sustainable³⁹.” LCB launched a successful redevelopment of Lower Downtown Denver in 2010, and is now working on the Gowanus neighborhood in Brooklyn. FortZED exemplifies a zero energy district and is the massive undertaking currently unfolding in Fort Collins, Colorado. The goal of FortZED is to achieve a completely energy self-sufficient downtown and Colorado State University campus through conservation, efficiency, renewables and smart technologies⁴⁰. A City could coordinate interested parties and provide technical assistance in the design and implementation of scaled energy projects.

Education

- **Implement a community engagement/education campaign.** Community education campaigns can range from billboard campaigns to one-on-one educational lessons with youth. It is important for local governments to learn about what educational services are already provided and design programming that can help fill in the gaps. Focus group meetings in the East of the Riverway neighborhoods suggested that a program to make it easier for people to access the information on how to improve their energy usage would be of great value when coupled with basic education about on where energy comes from and the impact on home economics and the environment.

A “one-stop shop” for energy improvement opportunities is a single place, either physical or virtual, that gathers and maintains relevant information and provides access to the variety of partners who participate in the one-stop shop. A one-stop shop might include a community calendar for all relevant educational events. The one-stop shop could compile all information and trainings available in the community for do-it-yourself energy improvements in addition to general environmental education relating to energy. The one-stop shop could also provide start-to-finish guidance and information for persons pursuing energy improvements: energy audits,

³⁸ Personal communication with Russ Jordan of Waste Reduction Partners, September 24, 2012

³⁹ Living City Block, Mission and Vision, <http://www.livingcityblock.org/about-2/mission-and-vision/>

⁴⁰ FortZED, <http://fortzed.com/>

installation vendors, banking partners for financed projects, equipment vendors, rebates and tax incentives, etc. For people who are not immersed in the energy industry, sourcing reputable vendors and analyzing financial decisions about energy improvement investments might otherwise be out of reach. The City of Miami used ARRA funds to convert an old fire station into a green building resource center to host demonstrations, educational events and serve as a best practice model open to the public⁴¹.

Economic Development

- **Leverage public infrastructure and property to catalyze green business development.** Local government stewards various infrastructure elements that are essential to business expansion and/or business relocation including water, roads, sidewalks, greenways, bike lanes, and storm water mitigation elements. Oftentimes governments decide when and where to invest in public infrastructure based on operational and maintenance needs. Local government can expand their selection criteria beyond operational considerations to include prioritizing projects that fall in strategic locations or that support green business development opportunities. In Asheville, the East of the Riverway area, including the River Arts District, has been prioritized for growth opportunities. The recent decision of New Belgium Brewery to expand to the River Arts District demonstrates this kind of public infrastructure prioritization. The city agreed to initiate the [Craven Street Improvement Project](#) to demonstrate municipal investment in support of the significant private investment committed by New Belgium Brewery. Although this project is in its earliest phases, public investment will likely include storm water mitigation, road widening, on street parking, bike lanes and greenways.

Infrastructure cost sharing is a second form of public investment. In 2008 the City of Asheville created an incentive to support strategic development by providing a cost share for a developer to install needed water infrastructure. In order to be eligible for this incentive the developer needs to demonstrate a degree of energy efficiency in the project and or provide affordable housing. Eligibility is assessed through a checklist submitted for evaluation by the water department.

- **Incentivize green jobs.** A “green job” is work in any sector that contributes substantially to preserving or restoring environmental quality. The focus on green jobs in North Carolina of late has largely been on trades that improve the efficiency of our buildings.

There are two basic approaches to green job development: creating a skilled work force, and creating a market that demands the goods and services delivered by people with green jobs skills. Green job training programs build upon the successful tenets of traditional work force development programs but with special focus on developing the skills and providing experience for opportunities in local green businesses. A local economy with a robust green workforce helps:

- Local under-employed people gain a competitive advantage in the local economy.
- Existing businesses expand into greener products and services.
- New businesses relocate or expand to the area due to this workforce resource.

⁴¹ Brinkmann, P., “Miami launches new green building resource center,” South Florida Business Journal, October 3, 2012, <http://www.bizjournals.com/southflorida/news/2012/10/03/miami-launches-new-green-building.html>

The Asheville area is fortunate to have significant existing investment in green job training programs with much of the focus on residents in East of the Riverway neighborhoods. Although cities are not often the lead agency in work force development, the city of Asheville has demonstrated leadership in this arena through using valuable Community Development Block Grant (CDBG) resources to support green job training programs. Green Opportunities has led the local charge in green job training since 2008. This successful non-profit has benefitted from CDBG funding and has now expanded their training focus to include: weatherization, renewable energy, sustainable agriculture, and the hospitality service industry. As a result of Green Opportunities work, 11 homes in the East of the Riverway area have received energy audits and weatherization. A partnership of community organizations, including Green Opportunities, and led by the Asheville Housing Authority successfully sought and was awarded a \$4 million HUD grant to rehabilitate the WC Reid Center and turn it into a Green Jobs Education and Training Center.

A second local leader in green job training is the Asheville Buncombe Community Christian Ministries (ABCCM). This group has provided underemployed city residents with valuable green job training in the following career tracks: weatherization certified technician, biofuels technician, solar thermal certified installer, building analyst or LEED Green Associate.

Supporting green job training may very well be the most effective local government investment in our community. Policy tools such as providing access to capital, property tax grants and marketing and attracting programs can incentivize green business development, entrepreneurship, and clean technology businesses in the East of the Riverway area. .

- ***Establish a local green business certification.*** Green business certification programs establish voluntary standards that serve as a roadmap for greening a company's operations. The scale and scope of the certification requirements can vary depending on the level of greening or on business sectors. Certification of restaurants will likely focus on areas that include energy, water efficiency, sustainable food, waste reduction, disposables, sustainable furnishings, and chemical pollution reduction as is evidenced in the Green Restaurant Association's Green Restaurant Certification Program⁴². The Asheville area currently has 14 restaurants achieving this certification.

Local government can play a role by promoting existing certification programs and partnering with the administering agencies, or by designing and administering certifications for sectors that currently lack a certification program. In the East of the Riverway area the health sector represents about 1/3 of the businesses. In the absence of third-party program, local government could design and administer a green business certification for the health sector focusing on energy conservation, waste reduction, and healthy indoor air quality. As with any certification program, continual measurement and verification is essential to validate the business' achievement. The purpose of setting policy to establish a program of this nature is to provide direction and leadership for local businesses in the form of the certification road map. This educational activity supports economic development by encouraging sectors to strive for increasing green activities allowing them to have better marketability to existing and potential customers.

⁴² Green Restaurant Association, <http://www.dinegreen.com/>

Regulations

- ***Participate actively as leaders in the NC code development process.*** The City of Asheville has actively engaged and demonstrated leadership for energy efficiency during the NC code development process. It can continue to do this when relevant policy conversations are presented to the NC General Assembly. An active way to pursue leadership in code development is through coalition building with other elected officials across the state and/or empowering staff as municipal ambassadors. Working together to advocate for local government preference to have local authority over energy code is critical to influencing the code policies.

A demonstration of this comes from 2011 when North Carolina hosted the International Code Council hearings. Municipal delegates from across the country participated in the code creation process. The city of Asheville sent 12 delegates who successfully participated in voting to improve efficiency of the ICC 2012 Energy Conservation Model Code by a net 30%. City Council member Cecil Bothwell attended as a delegate and said, “Participating in the ICC code creation process might be the single biggest thing I will do in my career!” This 30% improved energy conservation code is currently enforced in NC.

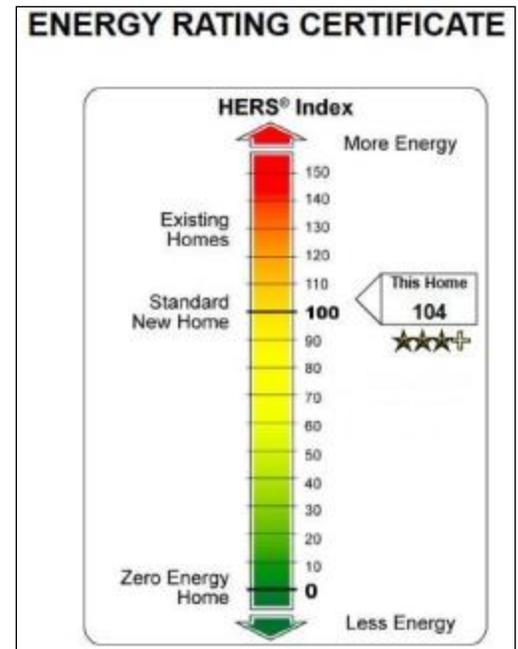
- ***Incentivize green building practices through fast tracking the permitting process.*** The amount of time required to pass all inspections to obtain permits is often an unknown variable of the building, construction, and renovation process. The permitting process timeframe can influence many stages of a building project and add overall cost uncertainty. The old adage, “Time is money” is very meaningful in the building industry. A guaranteed permit time frame or an expedited permitting process (like in Gainesville, Florida⁴³) can incentivize and reward green building. Gainesville provides this incentive for projects that meet a statewide green building certification as well as LEED building projects. Green building and sustainable development standards and incentives can be developed to meet the East of the Riverway’s sustainable building needs while providing that same incentive.
- ***Create an energy use fee in the building permit process.*** Energy usage fees can be used to increase the energy efficiency of building projects above and beyond the existing state energy code. The city of Asheville could establish an energy usage fee, and what is called either a stretch energy code or a green energy code that creates high energy standards for efficiency. The state of Massachusetts, for example, has adopted an Energy Stretch Code that local governments can adopt. The city of Asheville could adopt the Massachusetts stretch code standards, and then exempt qualified projects from paying the energy use fee. Projects that choose to meet only the basic state energy code would be required to pay the energy use fee. The money accumulated through the energy use fee could fund other key energy related policy initiatives.

Policy Tools Requiring State or Federal Enabling Legislation

It is important to note that municipalities across the country use a variety of policy tools that are not currently available to the City of Asheville to significantly reduce community energy use. North Carolina is a state where municipalities are required to receive enabling legislation from the state legislature for a wide variety of permissions ([Dillon’s Rule](#)). Dillon’s Rule dictates that local governments need state enabling legislation for a variety of activities that are not already specifically expressed in the general statutes. The following is a non-exhaustive list of policy tools that could be available to Asheville in the future if the necessary state enabling legislation was passed.

⁴³ Gainesville Green Building Program, <http://www.usgbc.org/ShowFile.aspx?DocumentID=1979>

- **Establish energy performance standards at point of sale.** This tool requires a building meet a minimum energy performance standard, for example a Home Energy Rating System (HERS) score of 85, before it is allowed to be sold. The home owner would then be held accountable to provide documentation from a HERS energy auditor that the home meets that standard. If the property did not meet the standard the property owner would be required to make the necessary improvements to achieve the energy standard before the deed to the property can be transferred. The City of Asheville had a similar program, via local ordinance, called the Minimum Housing Standards Program. Among other requirements this program required 6 inches of insulation, unless knob and tube wiring was present, in every home before point of sale. However, recent changes in the state legislature resulted in the 2011 NC General Assembly restricting local governments' ability to enforce these types of ordinances.



- **Mandate a green energy code in new construction and renovations.** Building codes are rules and regulations that govern how new buildings are constructed and existing buildings renovated. Building codes are designed to ensure the health and safety of building occupants by establishing one set of rules for construction. Some communities have used the building code as a tool to improve the energy performance of the built environment. In July 2012 Fayetteville, Arkansas mandated a green energy code for new residential construction above and beyond their neighboring cities and counties in Arkansas. This action improved the efficiency requirements by 30% through building elements like insulation R-value and heating and cooling efficiency standards.

The Building code in North Carolina is developed and implemented via a tiered structure. The International Code Council, made up of member code officials, establishes the international code each year through voting on a myriad of line items adjustments. The North Carolina Governor then reviews and adopts a North Carolina specific code based off of the ICC model code. Municipalities in North Carolina are then responsible for *implementing* the adopted state code. State legislation dictates that municipalities in North Carolina are not authorized to establish and mandate local code above and beyond the state code. Therefore local governments do not have access to the tool of mandating a green energy code that is more stringent than what the state approves. The upside to this restriction is that currently NC currently requires a relatively high energy standard for energy, which is equivalent to the ICC 2009 Energy Conservation Model Code⁴⁴.

- **Community Choice Aggregation** .Community choice aggregation (CCA) is when a local government directly negotiates rates with a utility for the bulk purchase of renewable energy within their jurisdiction. This tool is typically applied to areas that are served by non-regulated utilities, which means that citizens can choose their electricity or natural gas company. To do this, a city posts a request for proposals (RPF) and the local utilities compete to have access to the entire citizenry within the municipal boundaries. In 2011 the city of Cincinnati

⁴⁴ International Code Council, International Energy Conservation Code 2009, <http://publicecodes.cyberregs.com/icod/iecc/2009/index.htm>

pursued community choice aggregation. In the RFP, Cincinnati asked utilities to give a quote for 100% traditional power as well as 100% renewable energy. The result of this effort was an average of 20% cost savings to each citizen and 100% renewable energy city-wide. The Asheville area is served by regulated utility Duke Energy Progress, the resulting company from the July 2012 merger of Duke and Progress Energy. The State Utility Commissions oversees their rate setting and therefore supersedes municipal authority to negotiate price for renewable energy supply on their citizens' behalf. There is currently no legislation from the NC general legislature to expressly allow this type of activity.

- **Property Assessed Clean Energy (PACE) Loans.** Through a PACE program, local government provides low interest, long term loans to interested property owners who then repay the loan through a special assessment added to their property taxes. This special assessment assumes the first lien on the property. PACE loans would be available to property owners interested in making energy improvements to their property. The annual assessment on the property would theoretically be less than or equal to the amount of energy savings that result from the efficiency improvements to the property thus creating a cost saving incentive for the property owner.

The PACE model ran into significant barriers when the Federal Housing and Finance Administration (FHFA) wrote directives in July 2010 and February 2011 to Fannie Mae, Freddie Mac and the Federal Home Loan Banks to “continue to refrain from buying mortgage loans secured by properties with outstanding first-lien PACE obligations and carefully monitor through their seller-servicers any programs that create such first-lien obligations.” The FHFA’s stated primary concern is that these type of loans “pose unusual and difficult risk management challenges for the (banks)”.

Municipalities across the country, including Asheville are working to address the federal financial barriers through two primary routes: HR 2599, a federal legislative fix, and an Advanced Notice of Rulemaking (ANRM) a judicial fix.

1) HR 2599: This bill is to prevent Fannie Mae, Freddie Mac and other Federal residential and commercial mortgage lending regulators from adopting policies that contravene established state and local property assessed clean energy laws.

2) Advanced Notice of Rulemaking (ANRM): The FHFA was challenged in federal court regarding the legality of the FHFA’s ability to intervene in PACE without following the required process of rulemaking. As a result from this case, the FHFA is seeking public comment regarding whether their previous directive should be maintained, changed, or eliminated and whether other restrictions or conditions should be imposed.

Best practices prioritization

Priority	Policy Area	OPPORTUNITY
1	Economic Development	Prioritize green job creation in municipal economic development
2	Education	Implement a community engagement/education campaign
3	Financial Incentives	Offer cash incentives tied to property taxes
4	Economic Development	Leverage public infrastructure and property to catalyze sustainable economic development
5	Financial Incentives	Provide access to capital for renewable and energy efficiency projects
6	Financial Incentives	Create a density bonus for green/affordable infill developments
7	Regulations	Incentivize green building practices through fast tracking the permitting process
8	Financial Incentives	Provide building permit fee rebates for projects meeting an energy stretch code
9	Technical assistance	Provide free energy audits and/or solar assessments
10	Goal Setting	Establish CO2 reduction goals
11	Technical assistance	Facilitate bulk purchasing agreements
12	Regulations	Participate actively as leaders in NC code development process
13	Economic Development	Establish a local green business certification
14	Financial Incentives	Create an energy use fee in the building permit process
15	Regulations	Mandate a green energy code in new construction and renovations
16	Regulations	Establish energy performance standards at point of sale
17	Technical assistance	Facilitate community choice aggregation
18	Financial Incentives	Provide Property Assessed Clean Energy (PACE) Loans

Recommendations for Municipal support of Community Energy Reduction

Staff completed a prioritization matrix examining all the tools outlined above. The following are the top recommendations from the prioritization process.

(1) Incentivize Green Job Creation- Economic Development

Recommended Goal: Create additional benefits that are attractive to employers to motivate green businesses and businesses with green jobs to relocate and expand in Asheville.

Recommended Action Steps:

A. Create an economic development strategy that incorporates green job creation and green business development as a top priority: Design an economic development strategy to address “green” economic development, infrastructure services, finance and sustainability. High priorities from the sustainability perspective would focus on job creation activities that support specific sector job growth such as weatherization, home energy efficiency, commercial energy retrofits and renewables. The green businesses development priorities would strive to align with the Evolve Energy Partnership clean tech goals⁴⁵. The Evolve Energy Partnership is a regional coalition working across 31 Western North Carolina counties to stimulate the green economy specifically: clean vehicles, building efficiency, and renewables.

B. Evaluate the Economic Development Incentives Policy⁴⁶ (EDIP) for opportunities to better incentivize green job creation and green business development: The EDIP is an economic development grant program designed to incent businesses to build new or expand their facilities and/or create new jobs. The incentive comes in the form of a cash incentive tied to property taxes once the existing property is improved or the new facility is built. The potential grant is a maximum of 90% of the increased City property tax revenue generated for up to five years. The threshold of private investment that must be met in order to meet minimum eligibility is \$250,000. See rebate example below;

Initial Annual Property Tax Payments for Business	Estimated Annual Property Tax Payments After Business Invests in Improvements	Difference between before and after of property assessed value	Total Rebate Potential for Business
\$10,000	\$12,000	\$2000	Up to \$1,800 for up to 5 years

The eligibility and selection criteria should be rewritten to include measurements that support green jobs and green businesses. Additionally, these incentives should be available for small businesses who contribute to green job creation and green business expansion. This could help the development of a greener business community in the East of the Riverway. Small businesses play an essential and vital role in the continued growth and development of the East of the Riverway.

⁴⁵ Evolve Energy, <http://evolveenergyp.com/>

⁴⁶ City of Asheville Economic Development Incentives Policy, <http://www.ashevillenc.gov/Portals/0/city-documents/EconomicDevelopment/IncentivePolicy.PDF>

(2) Implement Community Engagement/Education Campaign- Education

Recommended Goal: Improve understanding in the community about opportunities for energy reduction through fortifying existing energy programming.

Recommended Action Steps:

A. Establish a coalition of community efforts that align under one brand for community energy reductions: Throughout this report a variety of non profits, government programs and businesses are highlighted for their efforts implementing programs to reduce community energy use. Government could coordinate a coalition of these implementation groups to establish an umbrella brand for community energy programs across Asheville. This coalition would align to support one communications strategy that is easily accessible for the implementation groups while allowing them to focus on delivering their programs.

B. Establish a One-Stop Shop Resource for Information: A one-stop shop for energy improvement opportunities is a single place, either physical or virtual, that gathers and maintains relevant information and access to the variety of partners who participate in the one stop shop. A one-stop shop might publish community calendars for all relevant educational events. The one-stop shop would be able to compile all information and trainings available in the community for those interested in do-it-yourself energy improvements, as well as provide general environmental education relating to energy. The one-stop shop would be able to provide start-to-finish guidance and information for anyone pursuing energy improvement: energy audits, installation vendors, banking partners for financed projects, equipment vendors, rebates and tax incentives, etc. For people who are not immersed in the energy industry, sourcing reputable vendors and analyzing financial decisions about energy improvement investments might otherwise be out of reach without the customer focused one- stop shop resources.

(3) Offer cash incentives tied to property taxes

Recommended Goal: Create valuable financial incentives for property owners to invest in renewable and energy efficiency improvements to their property.

Recommended Action Steps:

A. Expand current incentives that tied to property taxes by creating incentives that apply to existing buildings in addition to new construction: Cash incentives tied to property taxes can be viewed as a reduction in the annual tax a property owner pays. This can be in the form of a grant refund after taxes are paid or a grant to reduce costs up front. Cash incentives tied to property taxes can also be recurring over a period of time or a one-time incentive. The first steps to explore this would be for staff to work with the Sustainability Advisory Committee on Energy and the Environment (SACEE) to research program designs to better understand the ranges of financial investment required to have significant impact on energy usage in a neighborhood. Additionally staff and SACEE would work with community partners to assess the incentive thresholds that influence local property owners and for what types of renewable and energy efficiency related projects.

(4) Leverage Public Infrastructure and Property to Catalyze Green Business Development- Economic Development

Recommended Goal: Improve the quality of life for East of the Riverway residents and businesses by improving the quality of public infrastructure.

Recommended Action Steps:

A. Create an evaluation tool for long term planning and prioritization of capital improvement project selection across city departments: Transportation (both multi-modal and traditional), water and stormwater infrastructure are valuable assets that contribute to the quality of life in a community. Integration of infrastructure improvement projects based on similar goals can contribute to area revitalization. For example, a roadway expansion project adding street parking should be evaluated for the need for bike lanes. A further step towards integration would be to utilize permeable pavement in the parking areas as a method to mitigate stormwater. Asheville should develop an evaluation tool in order to incorporate these strategies in the decision making process. The tool or process would allow key decision-makers to evaluate infrastructure improvement projects in the context of a variety of scenarios. These could include:

- What is the life cycle cost analysis?
- What council strategic goals does this support?
- What plans have been developed by the community stakeholders?
- What public-private partnerships are involved in the project?
- Is there a positive impact on revenue generation and/or return on investment through property taxes?
- Would combining infrastructure projects reduce costs through eliminating duplication (.i.e. street paving or planning design work)?
- What is the location selection and place making potential?

(5) Provide Access to Capital for Renewable and Energy Efficiency Projects – Financial Incentives

Recommended Goal: Make home and commercial energy retrofits in the East of the Riverway neighborhoods accessible to more people through providing access to capital to supplement commercially available loans.

Recommended Action Steps:

A. Incorporate energy efficiency standards into existing programs that provide access to capital: In Asheville, existing resources for this purpose are the Community Development Block Grant (CDBG)⁴⁷, HOME Investment Partnership Program⁴⁸, and the Housing Trust Fund⁴⁹. These funding sources are either federal grant programs with resources allotted to the city of Asheville or existing general-funded municipal programs. The city administers the distribution of these funds by providing grants or loans. Access to each of these programs is through an annual competitive application process. A wide range of activities are eligible for funding. Energy performance standards for all grants made for physical building improvements should be incorporated into these funding programs.

B. Use CDBG Section 108 Loan Funding to establish a loan pool for energy efficiency and renewable energy retrofits in the community: An additional resource to consider is called the CDBG Section 108

⁴⁷ City of Asheville, Community Development Block Grant,
<http://www.ashevilenc.gov/Departments/CommunityDevelopment/FundingPrograms/CommunityDevelopmentBlockGrant.aspx>

⁴⁸ City of Asheville, Home Investment Partnership Program,
<http://www.ashevilenc.gov/Departments/CommunityDevelopment/FundingPrograms/HomeInvestmentPartnershipProgram.aspx>

⁴⁹ City of Asheville, Housing Trust Fund,
<http://www.ashevilenc.gov/Departments/CommunityDevelopment/FundingPrograms/HousingTrustFund.aspx>

Loan Program⁵⁰, available through the Federal Department of Housing and Urban Development (HUD). CDBG entitlement communities and states are eligible to borrow future CDBG allocations for use now. This program offers very low interest rates, up to 20 year repayment term, and allows the local government to use current and future CDBG allocations as the security to HUD for the loan. The City of Asheville will use Section 108 to support the Eagle Market Place Project that is currently underway. The City of Asheville could develop a program to lend capital to community members who are interested in making energy efficiency improvements to their property. The benefits of HUD's loan terms could then be passed on to community members. Weatherization activities would need to be managed by a Community Based Development Organization (CBDO).

C. Utilize any excess general fund revenue to establish a revolving loan fund for energy efficiency and renewable energy retrofits in the community: This type of program would provide access to capital in small loan amounts (\$1,000- \$15,000) with competitive terms for the purpose of energy efficiency and/or renewable energy.

⁵⁰ US Dept of Housing and Urban Development, Section 108 Loan Guarantee Program, http://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/communitydevelopment/programs/108

Appendix A: Prioritization Matrix Scoring Guide

Criteria Scoring Guide	
Stakeholder Concerns: Stakeholder perspectives regarding sustainability.	
0	Stakeholders do not prioritize opportunity, or do not perceive any benefit.
3	Minimal priority to stakeholders, or only one stakeholder moderately prioritizes opportunity.
6	Moderate priority to stakeholders, or multiple stakeholders moderately concerned with issue.
9	High priority for majority of stakeholders.
Environmental Benefit: Environmental benefits derived from implementing opportunity.	
0	No environmental benefits realized from implementing opportunity.
1	Minimal environmental benefits realized.
2	Partial benefits realized from implementing opportunity.
3	Significant benefits to the environment from implementing opportunity.
Social Benefits: Benefits to society from implementing the opportunity.	
0	No benefit to society from implementing opportunity.
1	Minimal benefit to society from implementing opportunity.
2	Moderate benefit to society from implementing opportunity.
3	Significant benefits to society from implementing opportunity.
Economic Benefits: Financial impact from implementing opportunity.	
0	No development of local/regional/global economies and/or no rate of return.
1	Minimal development of local/regional/global economies and/or minimal rate of return.
2	Moderate development of local/regional/global economies and/or moderate rate of return.
3	Significant positive impact local/regional/global economies and/or a high rate of return.
Existing Program or Activity: A program or activity currently exists and can be further improved upon.	
0	A program to implement the opportunity does not exist.
1	A program to implement the opportunity has been developed but not implemented.
2	A program to implement the opportunity is in place however improvement in performance is needed.
3	A comprehensive program to implement the opportunity is currently underway.
Existing Municipal Resources: Resources of personnel currently exist	
0	No personnel available to implement opportunity.
1	Minimal personnel available to implement opportunity.
2	Partial personnel available to implement opportunity.
3	Significant personnel available to implement opportunity.
Technical Feasibility: Availability of knowledge or technology resources to implement opportunity.	
0	No resources available to implement opportunity.
1	Emerging resources available to implement opportunity.
2	Resources available to implement opportunity.
3	Proven resources available to implement opportunity.