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"Greening" Worcester: Municipal Best Practices for Sustainability

Erin McKeon
Clark University

Charline Kirongozi
Clark University

Jared Duval
Clark University

Antannia Greene
Clark University

Qianshu Sun
Clark University

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Author

Erin McKeon, Charline Kirongozi, Jared Duval, Antannia Greene, Qianshu Sun, and Zewei Yao



CHALLENGE CONVENTION.
CHANGE OUR WORLD.

**“Greening” Worcester:
Municipal Best Practices for
Sustainability**

A final report submitted by:

Erin McKeon
Charline Kirongozi
Jared Duval
Antanina Greene
Qianshu Sun
Zewei Yao

Clark University
Advisors: Mary Piecewicz
Joseph O’Brien

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Executive Summary

In response to the urgent threat posed by climate change, more and more cities, including Worcester, are attempting to become more environmentally responsible and sustainable. Worcester is attempting to develop ways to become more sustainable; both to strengthen their communities and to protect the planet. The Green Worcester Working Group (GWWG) tasked the Clark Capstone Team with researching best practices for municipal sustainability. The GWWG has set the following priorities: climate change mitigation, resilience, open spaces, sustainable resource management, education and awareness. Taking these into account, the Clark Capstone Team researched the sustainability practices of cities in New England, across the U.S., and around the world, gathering and synthesizing the information found. Through careful data evaluation, the team selected six cities to recommend: Portsmouth, NH; Cambridge, MA; Bridgeport, CT; Somerville, MA; Seattle, WA; and New York, NY.

Along the way, the team identified some interesting recurring themes and salient issues to be considered for future research. The challenges presented included: outdated plans, website accessibility, geographic location, and infrequent reference to environmental justice. Despite the importance of environmental justice, and its priority for the Green Worcester Working Group, not many cities had reference to environmental justice policies. The applicability of some of the programs to Worcester will also vary due to the climate and geographical location of the cities researched. With these themes in mind, it is our contention that this information on the best municipal sustainability practices will be useful to the GWWG in their goal of making Worcester a sustainable city.

Introduction

Sustainability. How do you define it? Most have heard the term used before, perhaps on an increasingly more frequent basis, as the issue of global climate change becomes more prevalent in politics and everyday media. Everyone has heard what is oftentimes considered a synonymous term, ‘green,’ used in similar discussions. But what exactly does sustainability mean? According to Dictionary.com the definition of ‘sustainability’ is expressed in two primary ways - first, “the ability to be sustained, supported, upheld, or confirmed;” and second, “the quality of not being harmful to the environment or depleting natural resources, and thereby supporting long-term ecological balance.” It is the latter definition that embodies the conversation amongst many cities and towns today, not just nationwide, but globally on how they too can become stewards of the environment. While this definition helps to understand the fundamentals of sustainability, it is also very broad and can be applied to various disciplines that continue to make the concept somewhat misunderstood. However, The Environmental Protection Agency (EPA) sums up sustainability nicely - “Everything that we need for our survival and well-being depends, either directly or indirectly, on our natural environment. To pursue sustainability is to create and maintain the conditions under which humans and nature can exist in productive harmony to support present and future generations” (Rachelson, 2018).

But why then, is sustainability such a “buzz” word nowadays? And why are cities and towns allocating significant time, energy, and resources to becoming greener? To answer these questions is to first look at a brief history of the modern sustainability movement. While the modern sustainability movement may appear to be a trendy undertaking in the last decade or so, it has been underway since the early 1900s and Theodore Roosevelt’s presidency in which the

noted conservationist established the U.S. Forest Service and established 150 national forests, 51 federal bird reserves, 4 national game reserves, 5 national parks, and 81 national monuments. Since that time popular sustainability initiatives include the Air Pollution Act of 1955, the first “Earth Day” in 1970 along with the formation of the EPA and enactment of the Clean Air Act, the Clean Water Act in 1972, and culminating in a sense with the U.N. General Assembly’s 17 Sustainable Development Goals (SDGs) published in 2015 with the goal of achievement in 2030 (Rachelson, 2018). In the wake of the U.N. SDG’s, sustainability professionals now consider the movement to be mainstream, which explains why many cities and towns are throwing their hat in the ring and adopting sustainability initiatives of their own.

Cities may have a number of motives for being more sustainable. According to the UN many cities are suffering from environmental degradation, traffic congestion, and sprawling footprints (“Sustainable Cities,” 2019). While there are obvious environmental benefits for a city to become more sustainable, there are also social and economic benefits to consider as well. This concept is typically referred to as the triple bottom line; people, planet, and profit. Sustainability can simply be about ‘doing good,’ both for your community members and the environment. Sustainability can also lead to economic benefits as well. One of the biggest challenges facing cities today is maintaining economic growth while creating a sustainable place to live.

According to an NPR article published late last year and many who currently live and work in Worcester, the City is booming, both economically and in popularity (Schachter, 2018). While Worcester may be undergoing a revitalization of sorts, Grant Welker of the Worcester Business Journal points out that Metro Worcester still falls behind 10 national peers (based on population) in key economic indicators including new housing, per-capita income growth, size of its economy, and population growth (Welker, 2018). How does sustainability factor in? Cities

labeled as sustainable are more desirable places to live and the economy usually benefits as a result. Young people also tend to want to live in green communities. Welker states that Worcester is still struggling to attract young people to the region. A 2018 survey of Worcester college students found that 49% did not intend to stay in Worcester after graduation. Perhaps transforming Worcester into a sustainable community is the catalyst to launch Worcester from the cusp of a renaissance to the midst of one (Welker, 2018).

Worcester City Manager, Edward Augustus, has a proclamation to make Worcester one of the greenest cities in America. This initiative led to the creation of the Green Worcester Working Group (GWWG). The GWWG is an assemblage of City officials from various departments whose charge is to spearhead the sustainability movement in Worcester. One of the first steps in this movement is for the GWWG to understand and fully realize what initiatives are taking place in other communities, both locally, nationally, and internationally. Who is leading the charge in this area? What communities have sustainability plans in place and how are they implementing and evaluating these plans? How are they engaging the public on these matters and are they factoring social equity into the equation? To assist in the early efforts the Clark Green Worcester Capstone Team was tasked with performing the ‘ground-floor’ research of various cities and towns to assist the GWWG and their consultant in developing Worcester’s own sustainability plans. The Clark Team set out to research a multitude of municipalities, some similar in size and demographics to Worcester, and some not so much, to find out which cities have quality plans, effective implementation, and best practices for community engagement and environmental justice. The following report details the Clark Team’s means and methods for conducting the research and present the findings and recommendations for the GWWG and their consultant.

Trends in Industry

This section systemizes and assesses the existing research on sustainability and the environmental, legal, economic, and social trends associated with sustainability. As defined by the United Nations in 1987, sustainability is “meeting the needs of the present without compromising the ability of future generations to meet their own needs” (United Nations General Assembly, 1987, p. 43). While the threat of global warming is rising, economic, legal, environmental and social trends have transfigured and reshaped the world order. Corporations, consumers, government, and citizens are pushing for a more sustainable environment in order to redress the effects of climate change. There is also a growing debate on sustainable development globally. In this section, the contested definition of sustainability, the case for corporate sustainability, and other existing research on sustainability are presented.

Sustainability Definitions:

The definition of sustainability varies from different entities, stakeholders, and actors as stated in the aforementioned paragraphs (Refer to table 1 for a more comprehensive list of sustainability definitions). One of the most commonly accepted definitions of sustainability is the United Nations Brundtland Commission definition, “meeting the needs of the present without compromising the ability of future generations to meet their own needs” (Brundtland 1987). However, for the context of this research, our project team came up with our own definition and defined sustainability as *“People and communities interacting with both the natural and built environment in a manner that does not come at a detriment to said environments and their resources now, and in the future”* Sustainability has many different lenses and components as well. Corporate sustainability is a widely used term in Corporate America. It refers to “efforts a company makes related to conducting business in a socially and environmentally responsible

manner”. Corporate sustainability contains elements including sustainable development, corporate social responsibility (CSR), stakeholder concerns, and corporate accountability (Caramela, 2018). Current research provides a greater understanding of sustainability as a topic.

Appendix F: Sustainability Definitions

Sustainability Definition	Author(s)	Source
Meeting the needs of the present without compromising the ability of future generations to meet their own needs	Brundtland (1987)	World Commission on Environment and Development
Any state of a business in which it meets the needs of its stakeholders without compromising its ability also to meet their needs in the future	Hockerts (1999)	Greener Management International
Consumption of natural resources at a rate that can be naturally replenished and the emissions of waste at a rate that can be absorbed by nature	Dyllick and Hockerts (2002)	Business Strategy and the Environment
The possibility that all forms of life will flourish forever	Ehrenfeld (2005)	Sloan Management Review
Securing long-term economic performance by avoiding short-term socially detrimental and environmentally wasteful behavior	Porter and Kramer (2006)	Harvard Business Review
Achievement of an organization's social, environmental and economic goals	Carter and Rogers (2008)	International Journal of Physical Distribution & Logistics Management
Activities that attempt to improve the environmental performance of purchased inputs, or of the suppliers that provide them	Walker, Di Sisto and McBain(2008)	Journal of Purchasing and Supply Management
Performing well on not only traditional measures of profit but also in social and natural dimensions	Pagell and Wu (2009)	Journal of Supply Chain Management
An effort to conserve natural resources and avoid waste in operations	Pfeffer (2010)	The Academy of Management Perspectives
Intersection of economic, environmental and societal superiority	Paulraj (2011)	Journal of Supply Chain Management

Over the last century, there has been an increasing interest in sustainability in academia. The concept of sustainability and sustainable development remains ambiguous and contested in literature. Sustainability and its allied forms have become a worldwide concern (Adams, 2006; Fiksel, 2006; World Commission on Environment and Development, 1987). Local government has been considered as the primary actor in galvanizing policy changes, education, organized

change, and recommendation. The local government plays a critical role in environmental issues; in fact, experts even believe that they there are leading the conversation on promoting and implementing sustainability in the United States (Jepson, 2004; Saha & Paterson, 2008). Administrators’ role in local sustainability is attributed to their ability to articulate, form, and recommend concrete policy actions to be considered by elected officials and community members. This demonstrates the important role the Green Worcester Working Group (GWWG) administrators can play to invigorate changes and implement policies for the reform of our current environmental and sustainability practices in the City of Worcester.

Cities will continue to adopt sustainability planning or initiatives to promote municipal goals or priorities. However, there have also been critiques of the incorporation of sustainability in certain cities. In a research conducted by Sasha & Paterson (2008), a respondent noted “*Words such as sustainable and sustainability and concepts such as development in a socially just manner do not appear in our comprehensive plan. Our plan promotes ‘growth’ with the minimization and mitigation of environmental impacts where possible.*” Furthermore, this supports our findings that most of the cities we research did not have a comprehensive sustainability plan. One way cities can commit to sustainability is to create a “sustainability” office or hire staff devoted to carrying out sustainability activities. This solidifies the cities’ commitment to concentrate resources in implementing the city’s sustainability plan. Portland’s Office of Sustainable Development (OSD) is an example of a city’s commitment to sustainability practices. Corporations are also seeking ways to becoming more sustainable despite their role in exponentially increasing Carbon Dioxide levels in the atmosphere.

Economic Trends

Corporations and “big” businesses have been perceived as the main actors in exploitation for centuries; human exploitation, environmental exploitation, wealth exploitation, etc. Classical economic theory has validated and justified this exploitation through the concepts of free trade and competition. However, in the early 1960s, as environmental movements gained a platform however, advocates for Corporate Social Responsibility (CSR) began to demand a business approach that contributes to sustainable development. CSR seeks to advance socio-environmental aspects in business activities by delivering economic, social, and environmental benefits for all stakeholders. The driving theory for this was Freeman’s stakeholder theory which presumed that corporations have a responsibility to their shareholders and different interest groups. (Freeman, 1984). However, business leaders often think about financial payoff and rationale for corporate social responsibility.

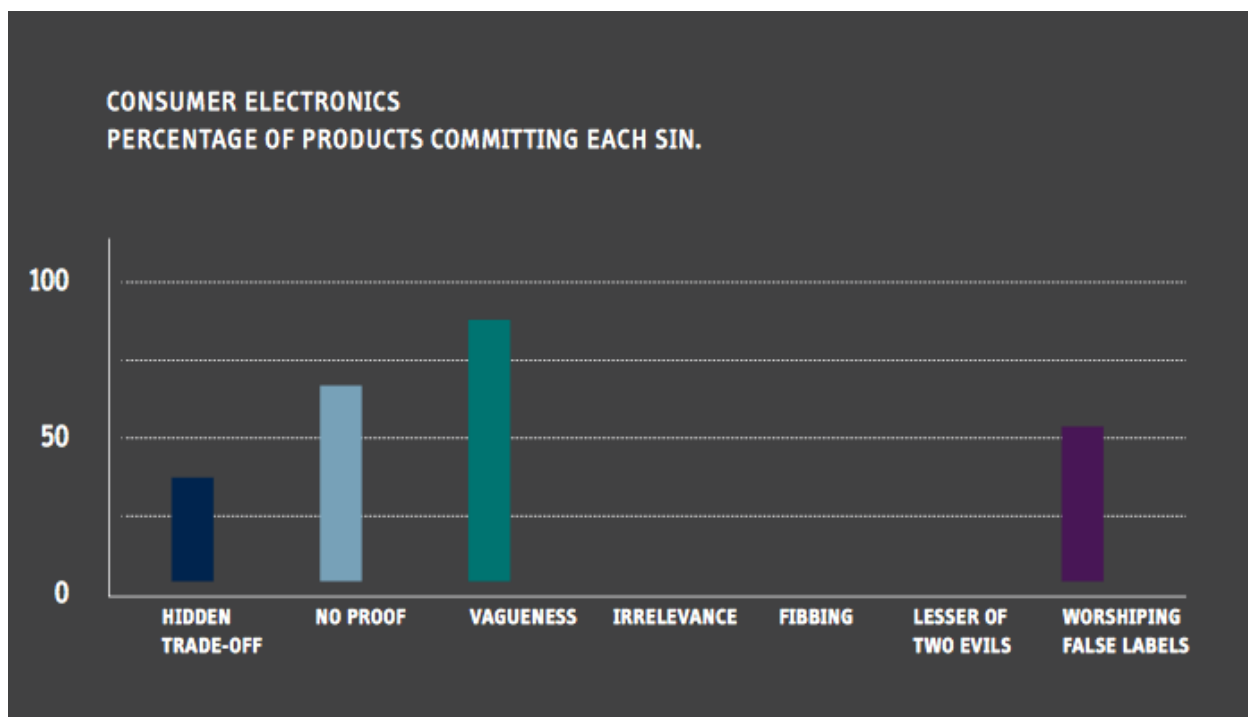
While this is theorized, it is important to analyze and examine the effect of Corporate Social Responsibility movements empirically, as well as its connection with sustainability. Ninety-five percent of the 250 largest companies in the world (G250 companies) now report on their sustainability activities and sixty-two percent of these companies offer sustainable products (KPMG, 2011). These corporates are concerned with human rights, employee’s health, and safety, measures to minimize waste and emissions. Despite its past supply chain issues in 2015 (Patagonia has been creditably overt and transparent about this issue and took measurable steps to address its supply chain issues); Patagonia has become a renowned company that has been named one of the most sustainable and ethical companies in the world. Patagonia is an American apparel company that sells outdoor clothing and products. The company is taking an impressive lead to reduce environmental impact. It is a member of Sustainable Apparel Coalition and 1%

For The Planet and continues to revolutionize CSR and sustainability. Patagonia’s CEO Rose Marcacio in early 2019 announced the company is making efforts to neutralize its supply chains carbon emissions by the year 2025 and encourages other retailers to take action (Bell, 2019). Patagonia’s response to the existential threat of climate change is multifaceted and is well integrated into the company’s mission.

While certain federal agencies are legally required to protect the environment, and allocate funds to do so, corporations are also taking a bigger role in demanding strict regulations. As stated in the aforementioned paragraphs, corporates have been historically scrutinized over their over-exploitation of the environment. Yet as a result of growing concerns and demands from socially aware consumers and customers, that is beginning to change. In a “Business Manifesto” presented at Davos last month, for example, chief executives from SAB Miller, KPMG, Philips, Yara, GSK, DSM, Sumitomo Chemical, AkzoNobel, Novozymes, Unilever, and others demanded better government policies to address global climate change and sustainability practices (Gittsham, 2015). This trend in increased demand for sustainability policies is reflected in consumers and corporation on a global, federal, state, and local level.

While companies such as Patagonia are seeking to address climate change head-on, other companies are luring consumers into their “sustainability” practices through greenwashing. Greenwashing or “green sheen” is a marketing tactic that deceptively promotes the perception that a company’s products or policies are sustainable and environmentally friendly. Greenwashing can be done by changing the color, name, logo of a product, irrelevance, vagueness, rebranding and more; this is often referred to as “sins.” Many corporations are engaging in this practice to redress former perceptions of their brand or appeal to changing consumer demographics which supports sustainable companies.

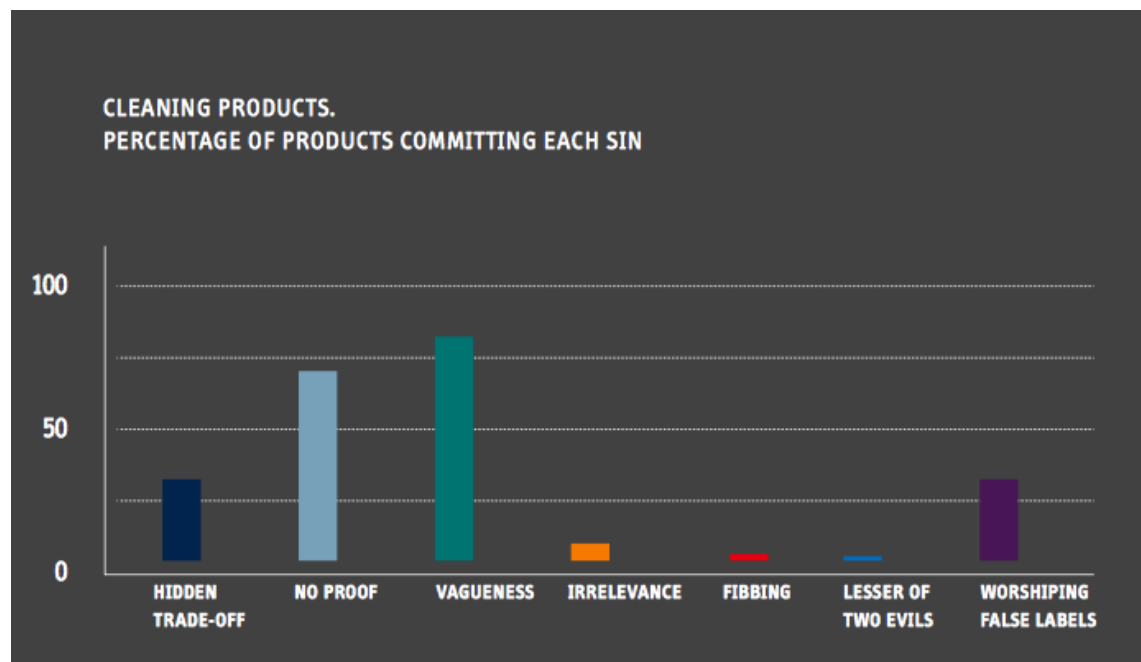
Appendix G: Consumer Electronics Greenwashing



As the environmental movement gained momentum in the 1960’s companies sought ways to deceive consumer as demands for sustainable products surged. In a report conducted in 1991, the American Marketing Association 58% of environmental ads had at least one deceptive claim. A more recent study in 2010 found that 95% of consumer products that claimed to be green were not green at all (Roos, 2010). There are many inaccurate interpretations by U.S. consumers when it comes to words such as “green” and “environmentally friendly.” More than two-in-five Americans (41%) erroneously interpret these terms as a product has a positive (i.e., beneficial) impact on the environment. Corporation vastly exploits consumer demands for “environmental” certifications with false labels or advertising. Refer to Appendix G: Consumer Electronics Greenwashing and Appendix H Cleaning Products Greenwashing which outlines the way in which electronic and cleaning companies “greenwash” their products; the main one

being vagueness. Apart from the electronics industry, the automobile industry plays a prominent role in greenwashing. Volkswagen and Mercedes are notorious for greenwashing/ecolabeling. Corporations are feeling pressure to be sustainable from consumer and are doing so deceptively.

Appendix H: Cleaning Products Greenwashing



In addition, the government has also viewed the demands for sustainable practices and invest in clean energy. However, funding for science and environmental research are threatened under the current presidential administration. President Trump seeks to reduce the Environmental Protection Agency (EPA) funding by 31% (Green, 2019). However, members of Congress are still fighting to increase this cap. A coalition of bipartisan congressional leaders voted to boost a cap on defense and domestic spending, which would include more funding for sustainable energy research (Wernick, N.D). This funding is important because it serves as grants to state and local governments in their efforts to become more sustainable. Current environmental funding is insufficient to meet the demands for better sustainable practices.

Legal Trends

Growing concerns over climate change call for the need of the law to protect and restore ecological integrity. Legally, there are a few federal agencies responsible for developing incentives for renewable energy and encourage sustainability practices. The Department of Energy (DOE), is concerned in the advancement of energy technology in the United States. It has taken some actions in the development of wind energy, as well as other renewable energy. They have developed as a plan called “ 20% wind energy by 2030 (“20%”) Elected officials are recommending 20% of energy to come from wind by the scheduled year. Although, there is potential for more energy to come from wind. In order for this to happen, there needs to be more funding the development of wind energy technology. The U.S Department of the Treasury (DOT) is responsible for formulating and recommending economic, financial and tax law. The DOT has enough capital to finance better sustainable practices. The Department of the Treasury could retrieve some of the fundings from fossil fuels to better finance wind energy development. Ultimately there is a lot the federal government could do for wind energy development. Legal agencies responsible for sustainable energy and renewable energy sources are holding companies responsible for their unsustainable practices.

The automobile company, Volkswagen often claim that they produce “clean diesel automobiles.” However, their diesel engines spew pollutants over the legal limit. While marketed as “Earth-friendly” these automobiles release nitrogen oxides at levels more than 65 times higher than what the EPA allows (“Class Action,” 2016). Volkswagen has also been involved in multiple class action lawsuits in its emission scams. The Volkswagen Emission scandal lasted from 2008-2018 and began when the United States Environmental Protection Agency (EPA) issued a notice of violation of the Clean Air Act to German automaker Volkswagen. It is clear

that there is an economic demand for sustainability as the world is becoming more environmentally conscious. Federal, state, and local agencies are now holding businesses accountable for being unsustainable.

Environmental Trends

One major issue of sustainability is food production because of its impact on the environment, individual and public health, social cohesion, and the economy. Food consumption and production have attributed to various environmental problems such as climate change, water pollution, water scarcity, soil degradation, eutrophication of water bodies, and loss of habitats and biodiversity (Reisch, Eberle, and Lorek, 2013). Consumer policy has implemented techniques that induce a shift toward healthier diets and lifestyles. These techniques softly and voluntarily shift consumers to make better choices with regards to food consumption. Efforts include creating sustainable choice defaults in public dining facilities, and access to affordable, healthier alternatives for all income groups, such as requiring students to pay cash for sweets while presenting healthier options more attractively. This has proven more effective than simply banning junk food or sugary beverages from school cafeterias (Reisch, Eberle, and Lorek, 2013). It is vital to develop integrative, cross-sectoral, population-wide policies that address issues of agriculture and food supply, access to food, physical activity, and welfare and social benefits (Reisch, Eberle, and Lorek, 2013).

Solar power has been growing much faster than any other power source with an average growth rate of 50 percent a year for the past six years (Penner and Rogers, 2015). Innovations in regulations, industry, technology, and financing have spurred the popularity of solar power. The International Energy Agency has predicted that by 2050, solar energy could be the biggest source

of power, generating as much as 27 percent of electricity worldwide. If the use of solar energy continues to spread, this will result in lower prices of electricity, and lower emission of particulates, sulphur, and greenhouse gases (Penner and Rogers, 2015).

Social Trends

In the last five years, there has been a worldwide push to decrease the use of plastic, specifically, plastic water bottles, plastic shopping bags, and plastic straws. The global prevalence of single-use plastic bags, in particular, allows for a number of environmental concerns. Plastic is not biodegradable, therefore, these plastic bags can last for up to 1000 years, as they sit in landfills releasing toxic additives which can harm ecosystems (Equinox Center, 2013). These plastics propose a global pollution problem with regards to marine debris, since they are portable by ocean currents and have a long lifespan. Marine animals confuse plastic bags for food, which can lead to blocked digestive tracts and death. It is reported that plastics negatively impact between 180 and 660 species of animals, including birds, fish, turtles, and marine mammals, with a portion of these plastics presumably comprised of plastic bags (Equinox Center, 2013).

While this trend is largely focused on the environmental benefits of decreased plastic waste, it is also a social trend for cities and towns that have eliminated plastic shopping bags. Cities worldwide have imposed a bag tax on paper bags, in hopes that shoppers will use their own reusable bags. Companies like Starbucks, American Airlines, Disney, and Ikea have announced that they are ditching plastic straws and moving away from single-use plastic products (La Shier, 2018). In the U.K., the 7-cent tax on plastic bags has resulted in an 80 percent decrease in plastic bag use across England, as well as a 30 percent decline in plastic bags

found in local ocean trawls (Waste360, 2018). Washington DC charges customers for paper and plastic bags and has reported a combined 60 percent reduction (Equinox Center, 2013). It is clear that the ban of single-use plastic materials has been successful in decreasing plastic waste in many cities across the world, but it’s also important to consider the social implications of this contemporary trend.

For those who live in cities where single-use plastic bags have been banned, it is now a social event to bring your reusable shopping bags to the grocery store. Some may feel pressured to purchase and use reusable shopping bags in order to be seen by other shoppers as environmentally conscious. In addition, companies have taken advantage of decreasing plastic use by creating reusable straws and shopping bags that display their brand. Now, those who wish to be seen as environmentally conscious will advertise these brands for them. Blog sites like Refinery29 have written about the trend of using tote bags and reusable shopping bags as fashion statements, and the “emergence of the canvas tote as a cool kid fashion statement rather than a frugal necessity” (Bergstein, 2017). Ikea, famous for their large, blue shopping bags, have been collaborating with high fashion designer Virgil Abloh on an update of their bag to keep up with the latest trends.

Urban agriculture has been a recent trend amongst community groups, food justice advocates, environmentalists, city planners, and gardeners. Urban Farming is growing or producing food in a city or heavily populated town or municipality (GreensGrow, 2018). Not to be confused with community gardening, urban farming assumes a level of commerce, where the product is grown to be sold. For many, urban farming is seen as a way to increase access to locally grown food, and a way to reintroduce the public to aspects of growing food that has been overlooked. Some urban farms are built for educational purposes, while others are built to

improve food access in a specific community, or to continue traditional culinary cultures (GreensGrow, 2018).

Methodology

Team findings were the result of in-depth qualitative research on assigned cities and towns that are in the midst of developing and/or implementing their own sustainability plans. The Clark Capstone Team conducted its research using city resources and secondary sources. 35 cities and towns, both nationally and internationally, were the focus of the team’s research based on initial feedback from the client and the team’s capstone advisor. The 35 cities identified were known to have some level of sustainability initiatives in the works, although the extent was unknown. Each team member was assigned a subset of these cities and towns and tasked with researching each municipality’s current sustainability plans. The cities were divided equally amongst all group members. Group members were then tasked with choosing 1 to 2 additional *international* cities they either had a specific interest in, or were aware of their sustainability efforts.

In researching each city and their plans, each group member was tasked with the same scope - thoroughly research each municipality’s sustainability efforts and plans relative to the domains provided by the client, compile said research, and evaluate each city based on team established criteria, and feedback from the client. While researching each city, group members were responsible for identifying all planning efforts surrounding sustainability for each assigned city and reviewing available plans to assess the quality.

Research was gathered primarily via internet searches including accessing the municipalities’ official websites and all web pages therein applicable to their sustainability

planning, and documenting information that pertained to the subject domains the Green Worcester Working Group is interested in. Pertinent information was documented on a city/town research template form and compiled in a shared drive that will be a deliverable to the client. The same information was also summarized on a “Master Spreadsheet” to provide a synopsis of the Team’s research. The Master Spreadsheet also serves as a directory for the client to quickly determine which plans each city/town possesses so they can easily refer to the more detailed research provided on the template form for the respective city/town in the share drive.

Team findings and discussions were also incorporated into a ‘Decision Making Matrix’ that aided the Clark Capstone Team in analyzing the research in an objective manner; recognizing the fact that team members may be subjectively engrossed with their assigned cities. The decision making matrix served as a tool for the team to reaffirm discussions on which cities and towns should be recommended as the focus for further research by the Green Worcester Working Group and its consultant. It also laid out an evaluation framework for key domains that are important to the client. The evaluation criteria were used to “score” each city in the spreadsheet and were incorporated into team discussion. The matrix was not necessarily the sole determinant in terms of arriving at recommendations, but helped the group compare all cities across each group members’ subsets of cities and vet the best ones for recommendation. The matrix also facilitated group discussions on high scoring cities, such as how and why each group member scored the city the way they did. For instance, Copenhagen and Hong Kong scored higher than cities such as Portsmouth and Bridgeport, however, you will see the latter cities were recommended over the former based on similar geographic location, cultural/demographic similarities presumed to aid community engagement, and similar climate conditions. Also, a key

element to the team’s methodology was that each team member would have to recommend the “best” city from their subset of cities regardless of that city’s overall weighted score and ranking.

Cities were evaluated for recommendation based on the following priority domains: environmental justice, community engagement, sustainability plans, evaluation of initiatives, and demographics. With respect to environmental justice, cities were evaluated based on the extent to which they enacted an environmental justice policy and whether they incorporated principles thereof into their sustainability efforts or plans. In evaluating a city for environmental justice the team asked the following questions - 1) does the city have an environmental justice policy?; 2) does the city’s sustainability plans and/or mission incorporate environmental justice principles?; and 3) does the city provide equal access to decision making and equitable community engagement?

Community engagement for each city was evaluated based on the extent to which the municipality engages the public amidst their sustainability efforts. Evaluation of community engagement was based on the following questions - 1) does the city implement listening sessions, public forums, and/or surveys during their planning efforts?; 2) does the city proactively educate and raise awareness on sustainability matters?; and 3) does the city have any committees dedicated to sustainability and/or volunteer opportunities for the community relating to sustainability efforts?

The team was also tasked with evaluating all of the sustainability plans and planning efforts for each community. The team’s evaluation of each city’s sustainability plans was guided by the following questions - 1) does the city have a comprehensive sustainability plan?; 2) how many of the priority sustainability domains does the city have plans for (e.g. climate change, resilience, transportation)?; 3) what are the quality of said plans?; and 4) are the plans adaptable

to Worcester? Additional criteria for evaluation of sustainability plans included that the plans must be within 10 years old. This threshold was set by the client and is rational considering developments in the sustainability field year after year. Assessing the quality of the plans was a subjective endeavor. Team members were tasked with reviewing each plan, but said review was not intended to be exhaustive per recommendations from the client and team adviser. It was outside the scope of this project to go through the entirety of each substantive planning document to assess quality. Team members instead thoroughly scanned available documents to judge quality and to ensure information was present that would be of value to the client and their consultant when they perform a deeper dive into the literature in subsequent phases of the project.

The team also assessed each city based on the extent to which the municipality is evaluating the sustainability plans that have already been implemented. Team members considered the criteria within the following guiding questions to rank the each city’s evaluation efforts - 1) for how many priority domains does the city have an evaluation plan or process? 2) for how many priority domains is the city benchmarking/goal setting?; 3) for how many priority domains is the city performing monitoring activities?; and 4) for how many priority domains is the city collecting and analyzing data?

The demographics for each city were also identified as a priority consideration in recommending the focus cities to the client. Each team member evaluated how similar each city’s demographics were to Worcester’s. Team members considered what the team coined the ‘diversity indicator’ for each community, or the percentage of non-white ethnicities by population. Therefore, the higher the diversity indicator percentage, the more ethnically diverse the community. City population was also compared for the sake of determining how similar the

subject community is relative to Worcester. The team also considered median household income and median home value, which provided insight into the resources available to the community to focus on sustainability initiatives. The idea being that a community with higher median household incomes and home values, the more tax base and potential revenue they have to allocate resources to sustainability efforts.

Beyond individual team member review and collective team discussion, the criteria mentioned above was also incorporated into the aforementioned recommendation matrix to score each community relative to one another. A weight factor was applied to each criteria, or priority domain, based on the priorities of the client. The weight factor varied in number from 1 to 5, 1 indicating lowest priority, and 5 indicating highest priority relative to the other domains (e.g. environmental justice, evaluation). A weight factor of 3 was applied to the environmental justice criteria. Environmental justice received a weight factor of 3 because the client expressed a desire to understand the cities’ commitment to environmental justice policy and principles, however it was not prioritized as heavily as the available sustainability plans, community engagement, and evaluation. The latter criteria were each applied a weight factor of 5 as they were core to the task of the client. If the ultimate goal is to make Worcester the greenest community in the country, then identifying best practices around sustainability planning/implementation and evaluation of such initiatives is paramount to the mission. It is also of utmost priority to engage the public during the process to ensure there is shared commitment, that the community values sustainability, has a say in the process, and is educated. The demographics criteria received a weight factor of 2. While demographics were identified as a priority in early meetings, especially in assessing the adaptability of community engagement efforts elsewhere to Worcester, the team decided that cities leading the charge with both quantity and quality of plans should be weighted

more heavily for recommendation, regardless of how similar their demographics to Worcester were. This ensured that smaller or much larger communities relative to Worcester that had quality plans for numerous sustainability domains and exhibited best practices in community engagement, would still be considered for recommendation to the client.

One can identify both pros and cons for almost any research methodology. Pros of the team’s methodology described previously include the following - first, the team’s methodology was primarily qualitative in nature. Qualitative research is ideal at the earlier phases of projects, and considering this project’s scope was phase 1 of subsequent efforts to be undertaken by the client and their consultant, a qualitative research approach was a pro (“Quantitative and Qualitative,” 2009). Next, primary sources for the team’s research were derived from each city’s official websites; directly from the source. What better way to assess a city’s sustainability efforts than to research the main forum in which they propagate information to the public? This also allowed team members to compare the quality of each local government website and their community outreach efforts. Researching municipal websites and webpages also provided insight to the community’s perspective with respect to finding sustainability information and educating oneself on the subject. The research team had the same access to information as residents which further helped to evaluate cities’ community outreach. Finally, the Recommendation Matrix provided an objective measure on a large pool of qualitative research. The matrix was an efficient tool to compare all cities on an even keel. As mentioned earlier, the matrix also facilitated group discussion in analyzing which cities to recommend, providing a deeper understanding of each team member’s thought process in evaluating their cities.

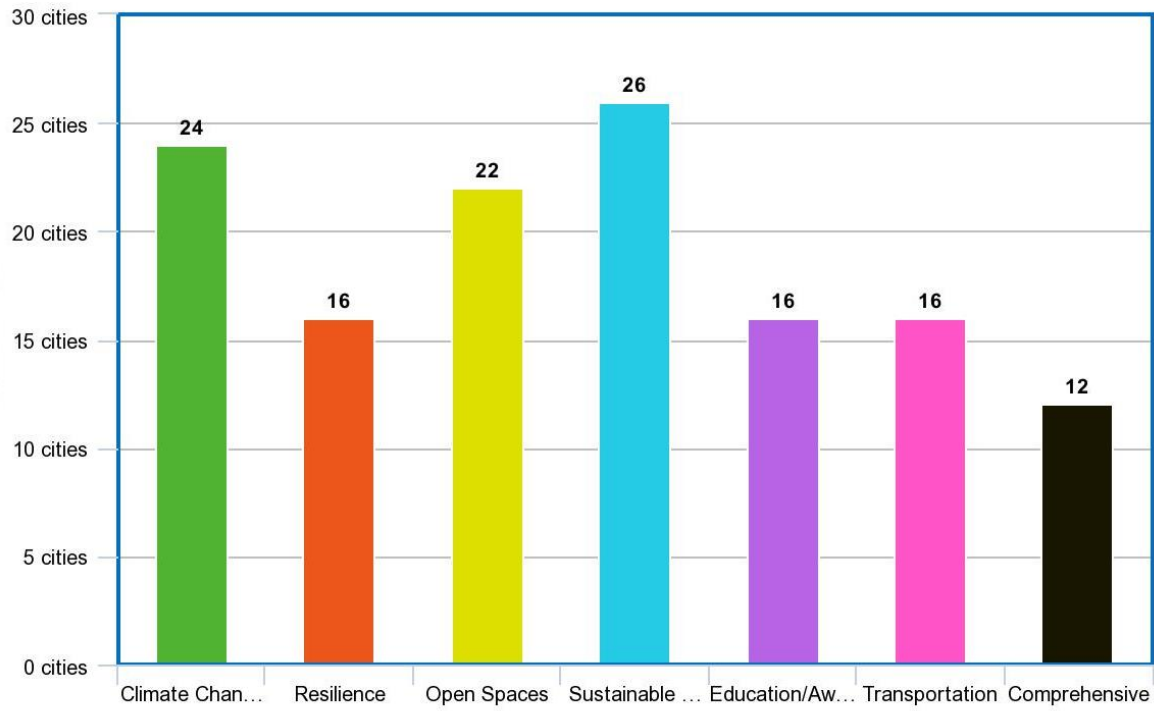
The research methodology applied for this project is not without flaws. Cons of the methodology include the fact that while a threshold was set for the maximum age of

sustainability plans (10 years), plans approaching 10 years old are still quite old. Also, since the team’s research focused primarily on official city websites, said websites may not be current as well, or at least not updated regularly. Next, the team realized that trying to apply objective measures on qualitative research findings is difficult. This was especially evident in establishing criteria to analyze the environmental justice undertakings of a city. In the end, the team arrived at criteria for environmental justice that made sense to the group in order to analyze it numerically for the sake of comparison to other cities. Another flaw of the research methodology is that the group did not engage community members to assess whether they feel the city is doing a good job with their sustainability efforts and public involvement. Public surveys were determined to be outside the scope of this project given the number of cities researched and their widespread location both nationally and internationally.

Team findings are summarized on the Master Spreadsheet attached in the appendices. A summary of the sustainability plans for all cities/towns is presented in the table and graph below:

Appendix I: Types of Sustainability Plans by Cities

<i>Domain</i>	<i># of Cities Researched with Plan</i>	<i>% of Cities Researched</i>
Climate Change Mitigation	24	61%
Resilience	16	44%
Open Spaces	22	61%
Sustainable Resource Management	26	67%
Transportation	16	44%
Education/Awareness	16	47%
Comprehensive	12	36%



Appendix J: City Rank by Matrix Score

<i>Rank</i>	<i>City</i>	<i>Score</i>
1	Somerville, MA	151
2	Hong Kong, China	149
3	Copenhagen, Denmark	146
4	Boston, MA	144
5	Seattle, WA	129
6	Vancouver, Canada	129
7	New York, NY	124
8	Portland, OR	122
9	Waterbury, CT	114
10	Zurich, Switzerland	113
11	Newton, MA	112
12	Portsmouth, NH	110
13	Bridgeport, CT	105
14	Tokyo, Japan	104
15	Cambridge, MA	104
16	Brookline, MA	97
17	Lowell, MA	95
18	Portland, ME	88
19	Marion, MA	83
20	Warwick, RI	77
21	Manchester, NH	62
22	Nashua, NH	53
23	Hartford, CT	51
24	New Haven, CT	51
25	Providence, RI	50
26	Pittsfield, MA	48
27	Danbury, CT	47
28	Augusta, ME	43
29	Fall River, MA	40
30	Pawtucket, RI	39
31	New Bedford, MA	36
32	Burlington, VT	31
33	Lawrence, MA	31
34	Kigali, Rwanda	20
35	Springfield, MA	17

Findings for the cities and towns that are recommended by the Clark Team for further research by the Green Worcester Working Group and their consultant will be evaluated more thoroughly herein. Cities for recommendation to the GWWG and their consultant were vetted based on the quantity and quality of their plans, information pertinent to community engagement and environmental justice, best practices for public outreach, and the extent of monitoring and evaluation of the plans after implementation.

Recommended Cities

Portsmouth, NH

Portsmouth is without a doubt one of the leaders of the sustainability movement in New England. You do not have to spend much time on Portsmouth’s main webpage to realize that becoming a sustainable city is a high priority for them. Large banner links, front and center on their website, provide access to water supply status reports, earth month celebrations, and public outreach on bicycle lane projects. Community members do not have to search very hard to find out which department is responsible for the sustainability efforts in town as the municipality has formed a separate sustainability department headed by a dedicated Sustainability Coordinator. As a result of Portsmouth’s 2005 Master Plan, the community decided they wanted to become more sustainable and in 2007 the City Council voted unanimously to declare Portsmouth an “Eco-Municipality,” signing a resolution to commit the city to sustainable practices (“Being an Eco-Municipality,” 2019).

Portsmouth adheres to the sustainability framework set forth by the The Natural Step International, a global network of non-profit organizations committed to accelerating the

transition to a sustainable society (“The Natural Step,” 2018) . The Natural Step principles include: reducing dependence on fossil fuels and extracted underground minerals and metals, reduce the need for chemicals and man-made substances that accumulate in the environment, decrease human activity that degrades eco-systems, and meeting the needs of humans presently, in a manner that does not detract from or negatively impact future generations. Portsmouth’s commitment to sustainability is also apparent based on their membership to the International Council on Local Environment Initiatives (ICLEI), joining a select few in the New England Area. The ICLEI, representing local governments for sustainability, provides resources and support to their municipal members across the globe, helping them achieve their sustainability goals.

Portsmouth’s demographics, however, are not very similar to those of Worcester. The city’s diversity indicator, or the percentage of non-white ethnicities by population, is 10.2% based on a 2014 population estimate. Worcester’s diversity indicator is 42%, representing a 121% difference. Portsmouth’s population of 21,598 is also considerably lower than Worcester’s at 183,677. Portsmouth’s median household income, \$69,096, is 52% higher than Worcester’s median household income of \$45,599. The home values in Portsmouth are also considerably higher than in Worcester. The median home value in Portsmouth is \$383,163 while Worcester’s is \$206,500, a nearly 60% difference. While Portsmouth’s demographics do not closely mimic those of Worcester the city’s initiatives pertaining to sustainability could not be ignored by the Clark Team. The Team decided early on that while a comparable city to Worcester in terms of statistics is important, that the quality and abundance of plans and best practices surrounding public engagement were most important regardless of demographics. The thought being that plans and community outreach could be adapted in Worcester despite population or median

home value. As evident in the recommendation matrix, Portsmouth scored considerably low in the demographics section, but achieved higher marks in the more heavily weighted categories of community engagement and sustainability plans.

As for sustainability plans, Portsmouth’s shining document is their comprehensive 2025 Master Plan published in February 2017. The city’s latest Master Plan highlights community interests and focuses on several sustainability topics. Sections of the plan are devoted to natural resource conservation and park and open space preservation. The Plan points to City initiatives to enhance city-owned properties and parks and to coordinate partnerships with local schools and community organizations to create conservation stewardship programs. The Master Plan also touches on considerations for natural hazards, climate change, and planning themes including the topic of resiliency. The city intends to implement best management practices and site design standards to ensure sustainability and resiliency of public and private infrastructure moving forward.

Beyond Portsmouth’s comprehensive Master Plan the city has separate plans and programs for various sustainability domains including their C.R.E.A.T. Climate Resiliency report, Green Building, and Energy Efficiency Program, Water Efficiency Program, and transportation initiatives such as their 2014 Bike and Pedestrian Plan, 8 electrical vehicle charging stations and Complete Streets design policy.

Portsmouth’s public outreach and community engagement are superior to many of the other New England Towns similar in size included in this study. The city’s website is sophisticated and professional, while also easily navigable. Information relative to public meetings, including those pertaining to sustainability plans, is accessible front and center on their home page. The city also has a department and web page devoted specifically to their

sustainability initiatives. There is a specific sustainability news section located on the sustainability webpage. In developing Portsmouth’s latest comprehensive Master Plan the city launched their public outreach campaign “Portsmouth Listens...,” which convened several study circles to discuss community vision and goals. This community engagement effort was guided by a simple question - “what makes Portsmouth the best place to work, live, and play for everyone?” While Portsmouth does not have a specific Environmental Justice policy, the last words of the previous question provide insight into the city’s inclusivity - *for everyone*. This theme was evident in many of the plans reviewed as part of the Team’s research. The city has also formed a Committee on Sustainable Practices, established by the Mayor and City Council, a primary task of which is raising awareness of the significance and value of sustainable practices for all stakeholders.

In terms of evaluation and monitoring of the aforementioned plans, Portsmouth is utilizing data collection and analysis to measure sustainability performance for water and energy efficiency. Water efficiency is measured using residential and commercial water usage via automatic meter reading implemented from 2008 to 2010. Energy efficiency is measured in heating and electricity cost savings for municipal infrastructure. The city also has committed to measuring its greenhouse gas emissions. Portsmouth has performed carbon emission studies on a 6-year cycle since 2006. Findings from the studies indicate the city has reduced government emissions by 15%.

Cambridge, MA

The Community Development Department of Cambridge has a division called the Environmental and Transportation Planning division that is specifically tasked with “addressing

climate change by developing policies and programs to reduce energy use, protect natural resources, and reduce pollution”. It is unusual that a city would have a specific division set aside for environmental issues, and it shows a citywide commitment to sustainability. If sustainability is the purview of a larger department, they might have a lot on their plate, and environmental issues might not always make it onto that plate. Having a dedicated division means that the environment is never off the plate – at least within that department is concerned.

In 2002, the city council of Cambridge adopted a climate protection plan, with the goal of an 80% reduction in greenhouse gas emissions by 2050. Energy usage is, therefore, the primary concern of the plan, with goals to increase energy efficiency, build green buildings, and offer sources of renewable energy taking center stage. As indicated in the division name, transportation is also a major concern. The plan discusses how to promote and facilitate biking and walking, as well as how city buses and municipal vehicles will be replaced with greener options. Many of the initiatives showcased on their website reflect those focuses, including the Cambridge Community Electric Program, and SunnyCambridge, which both offer renewable energy. The city is currently working on an update of the plan in preparation for 2020.

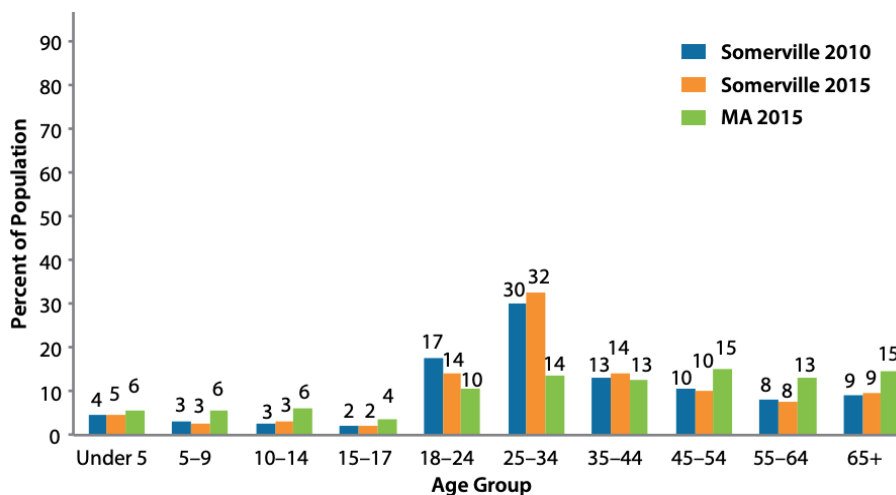
Even if a city manages to agree on a sustainability plan, its implementation and evaluation may fall by the wayside. However, Cambridge made a commitment to track their greenhouse gas emissions in their 2002 plan, and according to their website, they continue to track their emissions both on a municipal and community-wide level. They have also recently unveiled a dashboard where citizens can view progress on specific initiatives, participate in surveys, and find ways to get involved in making their community greener. That transparency and intention for community involvement speak to why their plan has lasted since 2002.

Not only is Cambridge committed to reducing the impacts of climate change, they are also concerned about how to respond to its effects. In 2017, the city has conducted a Climate Change Vulnerability Assessment, to begin preparing a Climate Change Preparedness & Resilience Plan. The full plan is expected to be completed by the summer of 2019 and will include pieces on flood risk and the benefits of urban forestry for climate resilience. Cambridge also has a comprehensive open space program including natural resource protection, community gardens, and park maintenance.

Somerville, MA

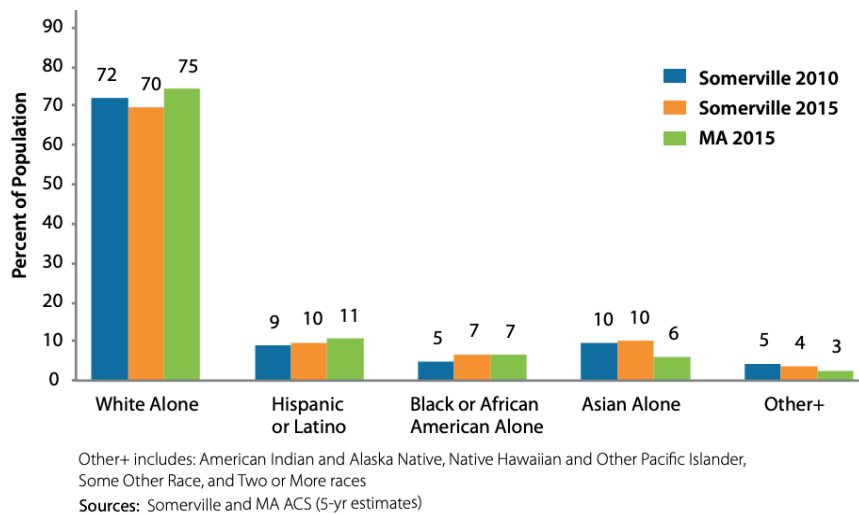
Although its demographics are not necessarily comparable to Worcester, the city of Somerville Massachusetts has a comprehensive sustainability plan that encompasses many areas that the GWWG should take into consideration. With a high standard for sustainability, certain aspects of Somerville’s comprehensive plan can be modeled by Worcester, especially the aspects relating to transportation, energy efficient buildings, and community engagement.

**Appendix L:
Somerville
Population by Age
Group (2010 and
2015)**



Sources: Somerville and MA ACS (5-yr estimates)

Appendix M: Diversity of Somerville Population (2010 and 2015)



With a population of 81,360 in 2017, a 30.10 percent diversity indicator, and a median home value of \$512,500, Somerville’s demographics are dissimilar to Worcester. Worcester has a population of 183,677 and a median home value of \$206,500. Somerville is a designated Massachusetts Green Community and has reduced municipal energy use by 15 percent in four years (City of Somerville, 2019).

With that being said, their comprehensive plan, Somerville Climate Forward, touches on a number of the Green Worcester Strategic Plan priority areas. Somerville Climate Forward references climate change mitigation, resilience, sustainable resource management, education,

and transportation. In addition, this plan includes techniques for community engagement, as well as evaluation processes for each action, annually.

As stated on the city website, “Somerville’s first comprehensive climate change plan is a set of implementable actions that will reduce Somerville’s contribution to climate change and prepare the city for the unavoidable impacts of climate change” (City of Somerville, 2019). Somerville Climate Forward prioritizes thirteen action areas that were selected based on the impacts they can have, the co-benefits they can provide, and the feasibility of implementing them in Somerville. The priority areas are categorized by the following titles: buildings, mobility, environment, community, and leadership. Somerville Climate Forward is the framework for how action on climate change will be taken in Somerville over the next 5-10 years (City of Somerville, 2019).

The following priority actions from Somerville Climate Forward are recommended for Worcester to explore:

- Assess parking supply and policy to meet transportation needs
- Improve energy performance in existing buildings
- Consider feasibility of net-zero and resilient new building standards
- Organize community climate action and preparedness leadership programs to educate the public and increase participation in climate programs

As interest in development is booming in Worcester, the city must meet the expectations of its new and existing residents. As Worcester becomes more and more of a commuter city, parking and transportation will become increasingly important in addressing these demands. In

addition, Worcester’s housing stock is scarce and aging. As new and existing housing is built, sustainability and energy efficiency must be at the forefront of design. Not only is this critical for the well-being of the environment, but it will also help keep energy bills low, allowing for housing to remain affordable for low income residents. Informational sessions and community meetings will educate the public in how to maximize efficiency. Lessons learned from Somerville Climate Forward’s priority actions can be used a guide as Worcester transitions into having similar policies on sustainability.

Bridgeport, CT

In our research, we attempted to find whether or not other cities had plans surrounding sustainability under the following criteria: climate change mitigation, resilience, open spaces, sustainable resource management, and transportation. According to our Focus Cities Recommendations Decision Matrix, Bridgeport scored an overall 105 points in terms of its relationship with GWWG priority areas and comparability to Worcester. Bridgeport Connecticut with a population of 146,579 people as of 2017 and a population of non-white at 59% the city has incorporated aspects of environmental justice in its sustainability plans. In addition, Bridgeport’s demographic, median household income, and median home value is comparable to that of Worcester. On April 2, 2018, the Mayor of Bridgeport’s submitted proposed budget for the fiscal year 2018- 2019 to the City Council (O. 2018). The proposed budget suggests \$334,990 for environmental health and \$11,700 proposed budget for sanitation and recycling. The city has a median household income of about \$43,000 (compared to \$72,000 statewide); 18% of its 147,000 residents have a four-year college degree (against 38% statewide); and the median owner-occupied home value is \$168,000 (compared to \$269,000 statewide). 22% of

residents live in poverty, as compared to 10% statewide. In terms of demographic, Bridgeport will have challenges having an extensive budget dedicated to sustainability.

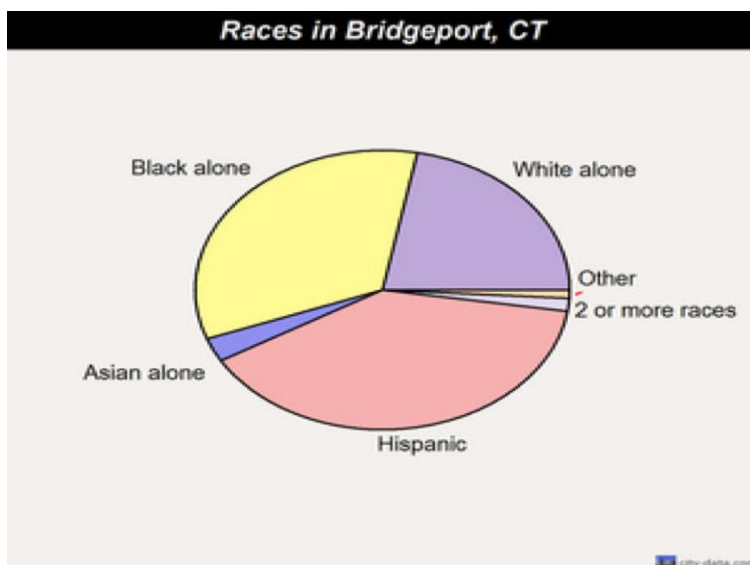
Bridgeport, Connecticut’s Sustainability Plan also referred to as the “BGreen2020” involves a holistic plan for addressing climate change. Its key sustainability plans include land use and transportation, green building waste and recycling, and water resources. BGreen2020 is a public-private partnership with the city of Bridgeport alongside the Bridgeport Regional Business Council. Bridgeport, CT scored considerably high in the demographics section as well achieved higher marks in the more heavily weighted categories of community engagement and sustainability plans. This makes Bridgeport comparable to Worcester as well as a city to consider for best practices for municipality sustainability practices.

The BGreen2020 plan relates to Green Worcester Strategic Plan priority areas, most specifically transportation, climate change mitigation, sustainable resource management. “Bridgeport will become the first city in the United States to establish a municipal low-temperature district thermal heating loop using cutting-edge technology already employed in Europe that has been shown to drastically reduce energy costs and the carbon footprint in urban areas”(Bridgeport, 2017). The thermal loop will result in an estimated \$130 millions in economic development and \$3 million in property tax revenue. Bridgeport BGreen2020 plan can be adapted to Green Worcester Strategic Plan by implementing a 10 year with incremental evaluations. Performance assessment and incremental evaluation is important for quality and efficiency improvement. However, as the threat of climate change looms over, incremental changes would not be enough in this context.

Bridgeport, unlike most of the cities that we researched, has made references to environmental justice and developed an environmental justice program as part of its

sustainability plan. Environmental Justice (EJ) is an important concept that emerged in the United States refers to the involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. As such, extensive research was conducted to review cities that had the best EJ program and what its implementation resembled. With more than half of its population being non-white, Bridgeport sustainability plan makes many references to environmental justice and attempts to implement certain domains. Environmental justice is an important component that the Green Worcester Working Group should take into consideration.

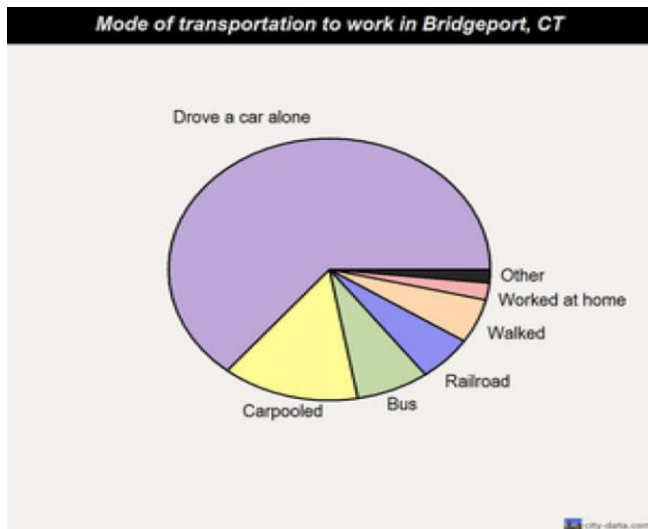
Appendix N: Race Distribution in Bridgeport, CT



The City of Bridgeport, designated by the U.S. Environmental Protection agency as Showcase Community and an Environmental Justice Area of Concern (“End”, 2015). Communities of low-income and people of color have disproportionately carried the environmental health burdens. This has been attributed by coal plants that continue to operate in the city. The coal plants carbon dioxide, nitrogen oxide, and sulfur dioxide emissions “can exacerbate health problems in Bridgeport where nearly 15 percent of school-aged children suffer from asthma and are ten times more likely to die from an asthma attack than children elsewhere in Connecticut” (“End”, 2015). The Bridgeport Harbor Stations has even been cited by the NAACP as one of the top ten environmental justice offenders in the country. Since then, Bridgeport has made efforts to address its environmental justice challenges.

While Bridgeport has its own local BGreen2020 plan, Bridgeport Connecticut is also part of Connecticut’s Department of Energy and Environmental Protection (DEEP) plan. Connecticut’s DEEP comprehensive energy strategy plan seeks to assess and plan for all energy needs in the state, including, but not limited to, electricity, heating, cooling, and transportation. DEEP have established an Environmental Justice program (“Protection”,n.d). This program seeks to evaluate and assess the effectiveness of the DEEP plan. The environmental justice program is responsible with assessing and responding to environmental problems in low-income and minority communities; developing strategies to increase public participation in the agency's decision-making process; identifying community health concerns in consultation with local and state departments of health; enhancing public participation in administrative proceedings; educating the public on CTDEEP regulations, policies and procedures; and decreasing language barriers.

Appendix O: Mode of Transportation to work in Bridgeport, CT



The City of Bridgeport wants to make strides in improving transportation systems to decrease pollution and CO2 emissions. Currently, the main mode of transportation for its residents is driving. This is attributed to the fact that the city does not have a proper and efficient transit system. Currently, the Greater Bridgeport Transit is responsible for providing the transportation system to its citizens. The city has buses which allow residents to travel to popular destinations typically departing every 30 minutes to an hour. In hopes of tackling the issue, Bridgeport mayor Joe Ganim has recently drafted a 10-year master plan on Conservation and Development which includes a train station. This demonstrates a path towards a greener and sustainable Bridgeport, CT.

Seattle, WA

According to Almanza et. al., “Greenness describes level of vegetation, ranging from sparsely-landscaped streets to tree-lined walk-ways to playfields and forested parks” (2012). In

this sense, one can say which cities or urban areas are more “green” than others. Such cities as Seattle, for example, are often referred to as green cities and sometimes are given special names to this effect like “the evergreen city.” With parks, gardens, and arboretums, the City of Seattle has valued green spaces within the city since the early 1900s. In fact, the city is ranked number seven in the world for canopy cover, which is a way to measure green spaces in cities. The City of Seattle aims to increase its current 20% of canopy cover, compared to Singapore’s (ranked number one) 29.3%, to 30% by 2037. Plus, the Green Seattle Partnership plans to restore 2,500 acres of forest parklands by 2025. (Dierwechter, 2017)

Over the past decade, transportation trends have changed in Seattle, with an increased interest in multimodal transportation solutions. The Seattle Department of Transportation (SDOT) has been conducting intercept surveys over the last several years to get a sense of people’s travel behaviors when visiting neighborhood business districts. This information is useful in describing recent transportation trends.

To combat greenhouse gases and to keep up our air quality index, the state of Washington has a Clean Car Law, measured by a required, regular emissions test. Cars that do not pass the test cannot be legally driven in the state of Washington. Even better though, Seattle is one of five cities in the nation in which more than half of the commuters don’t drive to work alone. In order to support or even increase this statistic, the city has added electric forms of public transportation in the 21st century, including two lines of streetcars and the Light Rail.

In 2009, Washington State was ranked third for best air quality. With help from the likes of the Puget Sound Clean Air Agency, which strives to “protect public health, improve neighborhood air quality, and reduce our region’s contribution to climate change,” the City of Seattle was awarded the Leading Public Fleet in 2016 at the Alternative Clean Transportation

Expo. (Dierwechter, 2017) Sponsored by the Government Fleet Magazine, the Leading Public Fleet award is given to a “government fleet demonstrating leadership in the procurement and deployment of alternative fuels and advanced vehicle technology.”

In 2012, Seattle’s single-family households recycled nearly 70% of their waste compared with the nation averaged a recycling rate of 34.3% the following year. Currently, Seattle recycles and composts about 58.8% of its waste. Let’s look at a singular aspect of recycling: bags. As of July 1, 2017, the City of Seattle’s bag requirements, which have been evolving over the past several years, has been officially updated. First, retail stores may not provide plastic carryout bags; they may only offer recyclable paper bags or reusable bags, the latter of which is to be promoted. Second, each large paper bag provided costs the customer an extra five cents. Third, any violation of these regulations may result in a \$250 fine. (Dierwechter, 2017)

New York, NY

New York City, one of the oldest and largest cities in the nation, differs greatly from Worcester in terms of city size, GDP, population composition and per capita income, but this does not affect that Worcester can learn from New York City's sustainable development plan, because some part of the plans are not necessarily related to population or city size.

New York City (NYC), under the leadership of Mayor Michael Bloomberg, has been at the forefront of a growing urban sustainability movement through its groundbreaking sustainability strategy PlaNYC 2030. PlaNYC (New York City Mayor’s Office of Long-Term Planning and Sustainability) is a comprehensive, long-term sustainability plan comprised of 127 initiatives in six key areas: Land, Water, Transportation, Energy, Air, and Climate Change. PlaNYC addresses the physical barriers to maintaining and improving New Yorker’s quality of

life over the next 25 years. These barriers include three key challenges that the City will face in the future: 1) The City’s population is expanding. By 2030, the City’s population is projected to expand by one million people. 2) The City’s infrastructure is aging. By 2030 nearly all of the City’s major infrastructure networks will be more than a century old. 3) The City’s environment is increasingly at risk and has already experienced the effects of climate change, including rising sea levels and temperatures. (Cohen, 2011)

Since the launch of PlaNYC, the City has added nearly 182 acres of parkland, bringing the total to 571.7 acres added since 2002. (Cohen, 2011) However, adding land to the park system alone will not be enough to meet the city’s open space needs. That is why PlaNYC’s initiatives focus on making better use of existing open spaces, including schoolyards, streets, and parks, as publicly accessible areas for recreation. These efforts to create more usable open space can not only improve the quality of life for all New Yorkers but also make the city a more attractive place for tourists to visit and for businesses and workers to locate. To date, according to report, they have planted over 322,000 trees on way to a million, created 224 new green streets, opened 113 schoolyards as local playgrounds, and broken ground at three of regional parks. These efforts have brought the number of New Yorkers living within a 1/4 mile walk of a park from 76 percent in 2007 to 84 percent in 2010. (Sustainability Report, 2018)

Collectively, every initiative in PlaNYC addresses the great challenge of global warming. Scientists have predicted that unless greenhouse gas emissions are substantially stemmed by the middle of the century, the impacts of climate change will be irreversible. Coastal cities like New York are especially vulnerable. As a result, their climate change strategy is the sum of all of the initiatives in this plan. All of PlaNYC’s strategies, from reducing the number of cars to building cleaner power plants to addressing the inefficiencies of buildings will help them to reduce

emissions. PlaNYC also calls for New York City to embark on a long-term effort to develop a comprehensive climate change adaptation strategy, to prepare New York for the climate shifts that are already unavoidable. To date, PlaNYC has put in place initiatives to achieve a 21% reduction in emissions, developed the city’s first official climate change projections, and completed an assessment of climate change impacts on infrastructure. (Sustainability Report, 2018)

PlaNYC’s initiatives for climate change that could be adopted by Worcester:

- Create an intergovernmental task force to protect our city’s vital infrastructure
- Work with vulnerable neighborhoods to develop site-specific strategies
- Launch a citywide strategic planning process for climate change adaptation

Recommended Plans for GWWG

As the research analysis above outlines six best cities’ sustainable plans, we have extrapolated specific recommended plans or components that should be included in the Worcester sustainability plan. After consulting with sustainability plans from 35 cities across the United States and internationally, the capstone team recommends the following for the Green Worcester Working Group:

- Prioritize sustainability initiatives in Worcester’s new Master Plan
 - Community Engagement
 - Community gardening and public/town hall meetings
 - Education
- Assess parking supply and policy to meet transportation needs,
- Consider feasibility of net-zero and resilient new building standards
- Continue to prioritize multi-modal transportation

- Evaluate the feasibility of EV charging stations
- Create or modify an existing webpage dedicated to sustainability
 - Worcesterenergy.org
 - One-stop shop for residents to learn about Worcester’s sustainability efforts
- Decrease language barriers
- Implement an environmental justice program or office

Decreasing language barriers is highly important, especially in a community with a high immigration concentration. Environmental justice programs should aim to reduce injustices across races, but also carefully acknowledge the background of its respective community. For example, Worcester has a large number of immigrant communities, ranging from El Salvadorans to Burmese. Decreasing language barriers ensures that no member of these immigrant communities is left behind. GWWG should take its immigrant population into consideration while drafting its sustainability plan. The city of Worcester needs to ensure that it is taking proper measures to make its plan accessible to all members of the community, despite language barriers. This can be done effectively by having its plan drafted in English and other popular languages that are spoken throughout, as well as inclusive community engagement events.

This consensus and conclusion was reached based on the Capstone team research and the Decision Making Matrix. The Matrix was instrumental in guiding our research and concluding thoughts because of the rating system we implemented. The Matrix also considered GWWG’s priority areas and concerns for its Worcester sustainability plan. While our recommended plans inclusively support GWWG’s priority areas, there were also challenges and gaps in the research.

Salient Issues

Sustainability research and development have undergone a drastic change in the last few years. While sustainability practices and activities in municipalities are becoming more inclusive, certain shortcomings in the research remain salient and noteworthy. Throughout the research, there were recurring themes and issues reported by the Clark Capstone Team. These salient issues also present limitations and gaps in the research of municipal sustainability. One of the salient issues highlighted throughout the research was that not many cities referenced environmental justice in their sustainability plans. This presents a gap in our research as environmental justice is one of Green Worcester Working Group’s priority areas. Other areas of concerns and areas of focus include geographic location, “plans in progress,” and website accessibility. All mentioned areas of focus and concerns should be considered by the GWWG as a research gap and limitation.

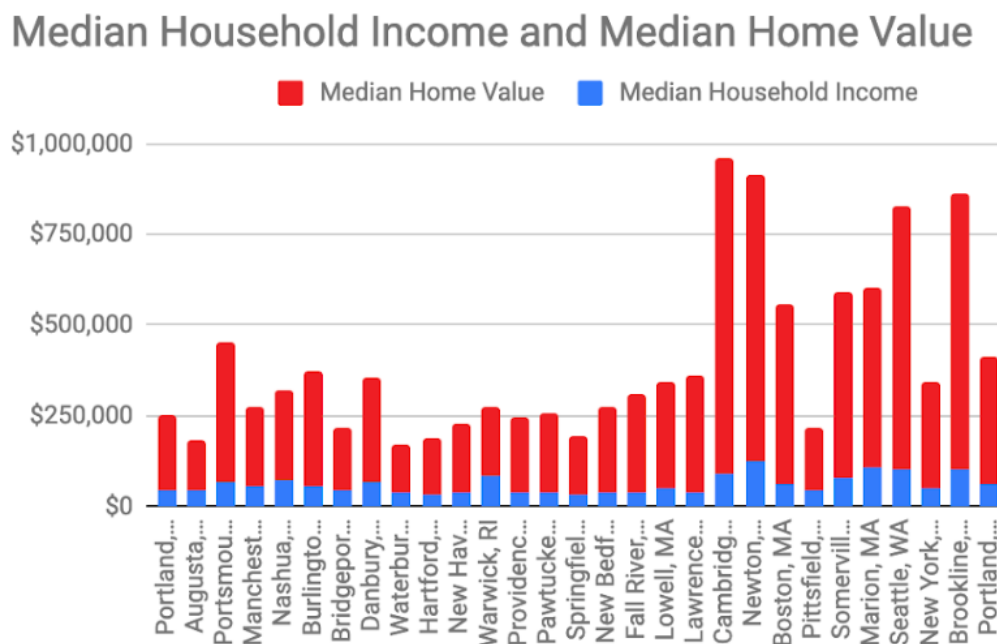
Environmental Justice

Throughout our research, we compiled a list of 35 cities with sustainability plans. One of the issues that we ran into was that not many plans had a comprehensive environmental justice plan. Out of the 35 cities, only 9 cities that researched had references most of the plans that we researched had references to environmental justice, however, environmental justice was not a top priority for many cities. We hypothesized that cities with a higher diversity indicator would have a more comprehensive sustainability plan referencing environmental justice. However, our research concluded that cities with a low diversity indicator had more reference to environmental justice in their sustainability plans. This is could be attributed to median household income and median home value. Tax revenue is one of the many ways that local government generate revenue for resources. In addition, lack of state support for economic stimuli, such as

renewable energy portfolio and tax incentives can also be cited as barriers to sustainability activities. Most of the time, funding is not keeping up with the increasing needs and demands for sustainability. Lastly, politically, issues such as affordable housing, low wages, racism, gang-related issues, high poverty rates, and increasing crime rates take precedence over sustainability activities.

Please refer to Appendix I. for the median household income and median home value for the cities within the scope of our research. Cities with a low median household income and median home value do not have the resources to implement an extensive and comprehensive environmental justice plan. Environmental justice is an important component that should be a part of every sustainability plan. Especially in areas with high diversity rate such as Waterbury, CT, Pawtucket CT, etc. Communities of color are often disadvantaged by environmental issues. Sustainability can be well comprehended through environmental justice. Sustainability is defined by dealing with infinite natural resources and encourage policymakers, citizens to stop being overly dependent on non-renewable resources. Environmental justice encourages people to be accountable according to their needs and rights as it redistributes benefits and burdens. The lack of reference to environmental justice in most of the cities we researched suggests a gap in research. It also suggests that there should be further consideration for environmental justice in the future.

Appendix K: Median Household Income and Median Home Value by Cities



Geographic Location

Throughout the Clark Team’s research, it became apparent that Cities’ priorities surrounding sustainability varied depending on their geographic location. For instance, Portsmouth, New Hampshire, a seacoast community, clearly allocated significant time and resources in developing the City’s Coastal Resilience plan and resilience plan in general. Therefore, Portsmouth’s resilience plan likely will not be as adaptable to Worcester as another inland-urban community. A City’s location obviously determines the local climate conditions and presents unique challenges for that particular community to face. Therefore, adaptability of sustainability plans to Worcester, particularly climate change adaptation/mitigation plans and

water and energy efficiency plans, will be more difficult depending on the location of the subject City. Cities’ in hotter, dryer communities will have unique challenges surrounding energy efficiency and cooling of buildings, and water conservation in times of drought. On the other hand, wetter communities, such as Seattle, may have unique challenges with stormwater management. New England communities’ plans will be most adaptable as they share the same climate conditions as Worcester.

Plans in Progress

During the research process, our team came across a few issues that seemed to be consistent with many of the cities being researched. One issue we found was that some cities were still updating sustainability plans from years ago. Since these plans were still in the works, the information available to us was old, and the city websites did not provide the most recent plans. Boston, for example, is currently updating their 2014 climate action plan, Greenovate Boston for 2019. The 2014 plan is not up to date, but it is the only comprehensive sustainability plan accessible to the public. Once the 2019 version of Greenovate Boston is released, the Green Worcester Working Group will be able to refer to this updated plan for the latest trends in sustainable cities.

Website Accessibility

Our city research was conducted entirely online, drawing all our information on the cities’ plans and programs from municipal websites. This process was not as straightforward as it might seem, because every website is different. Some cities have their environmental plans on the front page, some don’t. Cities without comprehensive plans – which made up the majority – often had different domains underneath different departments (e.g. parks and rec having open

space and public works having climate change mitigation). The design of each program page varied, emphasizing different parts of the program and enabling different forms of viewer engagement. These design choices have implications regarding community engagement and city priorities.

In the article “E-Government Portal Information Performance and the Role of Local Community Interest”, authors Wirtz, Piehler, Rieger, and Daiser identify four components of website quality: information attractiveness, information usefulness, information awareness, and ease of navigation. Specifically, the authors assert that strength in these areas helps people with low community interest become more interested in using the municipal website. People who already had a high degree of community interest weren’t as impacted by website design, instead, “informational usefulness, ease of use, and attractiveness are more relevant to users of e-government portals when they have not built an emotional bond to the municipality” (Wirtz et al. 2016). For obvious reasons, information awareness was the most influential component – if no one knows about the website, they’re not going to use it – but each component was shown to have an impact.

Overall, cities that scored higher on our Decision Matrix (Appendix #) had websites that had some of those key components. The authors particularly highlight how informational attractiveness was incredibly impactful, and how that means that administrators should look to do more with their websites than simply convey useful information. Most city websites have local news stories, events, and photos spotlighted on their homepage, and many cities currently have some articles related to environmentalism or sustainability events. It could just be seasonal because Earth Day is in April (Portsmouth is currently advertising an Earth Month celebration),

but the front-page news could certainly be a tool to spotlight the city’s sustainability plan in an eye-catching way that’s immediately visible to visitors of the website.

Even though it might make sense to share the work of sustainability amongst different city departments, 8 out of our top 10 highest-scoring U.S. cities, including all of our recommended cities, had either a dedicated department or division for sustainability, which meant that all the information was gathered in one place. Even if that isn’t a possibility, having a central hub for sustainability-related activities makes it easier to navigate and engage with – as long as there are opportunities for engagement. Providing links to how to get involved, promoting events or a newsletter, and offering online public opinion surveys are just a few of the ways that cities encouraged community participation in government. City websites aren’t the be-all end-all of community engagement, but they do have an impact.

Professional Development

Throughout the course of this project, the Clark Capstone Team achieved several major accomplishments, both individually and as a team. While all members had prior research experience, not all of us were familiar with the literature on sustainability. As students of communication and public administration, our prior knowledge in the field of sustainability was limited, which made this project a daunting task initially. As the project continued, we developed the analytical skills to identify sustainability trends and initiatives that have been successful, and brainstormed ways to apply these to Worcester, as well as our own hometowns.

Working with Joe O’Brien and the Green Worcester Working Group, our team experienced collaboration with professionals in the field of sustainability and city government. Through this partnership, each team member developed the necessary skills required to

successfully work in collaboration with a team and client on a major project. Partnership between a client and a project team requires constant communication with regards to all aspects of the project, and patience between all parties.

Not only did our team gain communication skills, we also learned valuable time management skills in preparing for the completion of the project. Our team had to follow a strict schedule each week in order to complete the necessary tasks leading up to the final deliverables. Each member of our team will harness these skills as we embark on our journey in our respective professional fields.

Conclusion and Summary

At the beginning of the semester, the Clark Capstone Team was tasked with helping the Green Worcester Working Group begin the process of developing sustainability plans for the city of Worcester. We researched 35 cities around the world and evaluated them for the quality of their programs and their applicability to Worcester, attempting to narrow down some definable best practices. The six cities we recommend for consideration are Portsmouth, NH; Cambridge, MA; Bridgeport, CT; Somerville, MA; Seattle, WA; and New York, NY. 4 out of these 6 cities are mid-size cities in New England, cities fairly comparable to Worcester whose sustainability plans could, therefore, be very adaptable. 2 out of these 6 represent high standards for sustainability, what can be done when a city has the resources to fully commit. We make both types of recommendations to demonstrate that cities like Worcester are able to implement sustainability plans, and that there is a gold standard to aspire to.

While we did synthesize a vast amount of information, we also noticed some gaps that merit further examination. The GWWG was interested in environmental justice, and it is

increasingly being seen as an important part of environmental activism. However, we had trouble finding cities that highlighted environmental justice policies. Future best practices research could delve deeper into this topic, expanding to cities beyond the ones we researched. Future research could discover if there are any best practices, where they came from, and how they can be implemented in Worcester. In addition, some of the cities with the most comprehensive climate change plans were coastal cities specifically preparing for flooding, and those plans will not apply to inland Worcester. Not only that, if more research is to be conducted, consideration needs to be paid to how that information is found. Some plans are still in progress and websites are therefore outdated, and every website has a different layout. These concerns, however, do not diminish our findings or change our recommendations. Instead, we simply see them as an opportunity for future exploration.

Our research and recommendations cannot offer the full answer to the question “what are the best sustainability practices for Worcester?”, but they can provide a solid foundation. We have offered a starting point that the Green Worcester Working Group and their consultant can build upon as they continue their work. Now more than ever, it is imperative that we all consider how we can contribute to saving our planet – and ourselves – from the effects of climate change and environmental degradation. We are proud to have a role in creating a healthy and sustainable future for the city of Worcester.

Appendices

- A. Project Charter
- B. Master Spreadsheet
- C. Decision Matrix
- D. Research Template
- E. Presentation Slides
- F. Sustainability Definitions
- G. Consumer Electronics Greenwashing
- H. Cleaning Products Greenwashing
- I. Types of Sustainability Plans by Cities
- J. City Rank by Matrix Score
- K. Median Household Income and Median Home Value by Cities
- L. Somerville Population by Age Group (2010 and 2015)
- M. Diversity of Somerville Population (2010 and 2015)
- N. Race Distribution in Bridgeport, CT
- O. Mode of Transportation to work in Bridgeport, CT
- P. Benchmarks and Deadlines Table
- Q. Meeting Notes
- R. Monthly Reports
 - a. January
 - b. February
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PROJECT CHARTER

CLARK
UNIVERSITY



CHALLENGE CONVENTION.
CHANGE OUR WORLD.

School of Professional Studies

Project Charter
Worcester Sustainability

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1 Project Overview

1.1 Introduction

In response to the urgent threat posed by climate change, more and more cities, including Worcester, are attempting to become more environmentally responsible and sustainable. Worcester City Manager Edward Augustus has launched an effort that is seeking to make Worcester the “Greenest” city in America. His goal is to make Worcester a model city for sustainability and environmental stewardship. To accomplish this task, he has created a working group comprised of city officials, representatives of community organizations and environmental experts. This group will work with all parts of the community to create a comprehensive “action plan” to accomplish this goals. Sustainability is the avoidance of the depletion of natural resources to maintain an ecological balance.

The key elements and economic plans in the Green Worcester Strategic Plan include climate change mitigation, resilience, open spaces, sustainable resources management, education, and awareness. Our role is to provide research on successful plans that have been created by other cities, with a emphasis of cities similar in size to Worcester. As part of this research, we will also create a series of recommendations on which plans are worthy of replication, as well as exploring best practices for engaging the community and promoting the plan when it is finished. This research will be instrumental in gathering diverse data to analyze how the city should implement its sustainability plan. The final deliverable, a Google Drive, Decision Matrix, and a master Excel sheet with all of our project related research documents will serve as a resource source for the Green Worcester Strategic Plan.

1.2 Major Stakeholders

- Project Advisors
 - Mary Piecewicz (Capstone Advisor)
 - Joe O’Brien (“Contractor”)
- School of Professional Studies
- Green Working Group
- City Manager, *Edward Augustus*
- Mayor, *Joseph Petty*
- City of Worcester
- City Council
- Community-Based Groups
- Environmental groups
- Community at-large

1.3 Document Purpose

The objectives of this project include analyzing the best sustainability practices from similar cities. Best practices is a method which has been generally accepted as it produces the best and most efficient results. Our project will encompass researching cities to determine whether or not they have adapted a sustainable or climate change plan. Once the plan has been identified, team members will need to analyze how the respective plan can be related to any of the Green Worcester Strategic Plan and how it can be adapted to Worcester. Lastly, we will explore best practices for engaging the community and promoting the plan when it is finished.

The project desired end date is the culminating presentation scheduled for April 22nd, 2019. The Green Working group has identified key elements for the research project which include Climate Change Mitigation, Resilience, Open Spaces, Sustainable Resource Management, Education and Awareness.

2 Project End State and Scope

2.1 Required End State

Our group was tasked with researching sustainability plans in cities of similar size to Worcester. Our focus will be on cities that have implemented successful sustainability plans related to the following key elements: Climate Change Mitigation, Resilience, Open Spaces, Sustainable Resource Management, Education and Awareness. From this research, our team will analyze how the Green Worcester Strategic Plan can implement similar techniques in the city of Worcester, in hopes of becoming a more sustainable city.

Once we look at cities in the New England area of similar size to Worcester, we will begin researching other cities in the U.S. of varying sizes. In addition, we will be looking at international cities of varying sizes that have sustainability plans Worcester can model. The research will be completed based on the city research template we created, and research for each city will follow the same template. This template was generated from the initial meeting our group had with Joe O'Brien, where he provided us with a checklist of information he requires from our research. Research for each city will follow the same template.

The research template will include the following information:

- City name
- Name of stability plan
- Key elements of the plan

- Address any of the 5 issues we are studying (climate change mitigation, resilience, open spaces, sustainable resource management, education and awareness)
- Where did you find the plan, is there a website?
- Is the plan adaptable to Worcester?
- Is there an evaluation tool on the website, how are they gauging this?
- How have they involved the community?
- Include links

The preliminary list of cities we will be researching is as follows:

Portland, ME Augusta, ME Portsmouth, NH Manchester, NH	Nashua, NH Burlington, VT Bridgeport, CT Danbury, CT	Waterbury, CT Hartford, CT New Haven, CT Warwick, RI
Providence, RI Pawtucket, RI Springfield, MA New Bedford, MA	Fall River, MA Lowell, MA Lawrence, MA Cambridge, MA	Newton, MA Boston, MA Pittsfield, MA Somerville, MA
Marion, MA Austin, TX Seattle, WA New York, NY	Portland, OR Brookline, MA Kigali, Rwanda Tokyo, Japan	Copenhagen, Denmark Zurich, Switzerland Vancouver, Canada Hong Kong, China

Our research will also include evaluating how each city has implemented these sustainable plans into the community. We will take into consideration which cities are doing the most community outreach and engagement, and how this is being executed. Lastly, we will be searching for the means of evaluation, or how each city calculates the success of their sustainability plans.

The final product will be a master excel spreadsheet given to the Green Working Group, as an additional source of information. This excel spreadsheet will detail each city we researched, their sustainability plans, as well as the other information outlined in the research template. The spreadsheet will accompany the Google Drive folder with all of our project related research documents, which will serve as a source for the Green Worcester Strategic Plan.

2.2 Project Scope

Work Area	In Scope	Out of Scope
Process	Google Drive	Not in Google Drive
Process	Descriptive/relevant data	Vague/undefined data
Research	Plans relating to key elements of GWSP project	Plans not relating to key elements of GWSP project
Research	Plans are relevant to Worcester	Plans are not relevant to Worcester
Process/Research	Information included in city research template	Information not included in city research template
Research	Cities who are involving the greater community	Cities who are not involving the greater community
Research	Cities that have a means of evaluation	Cities that do not have a means of evaluation
Process	Google Sheets	Not in Google Sheets

2.2.1 Change Management

As the project progresses the scope of the project will almost certainly evolve naturally from the original scope established herein as per the requests of our client, advisors, and/or other pertinent stakeholders. This section of the Project Charter intends to establish a change management process that embraces changes to the project scope as they arise, however vets their appropriateness as it relates to the desired outcome of the project. The change management

process should also ensure that changes are fully understood by pertinent stakeholders such that any transition in tasks and/or roles within the project team to accommodate the changes are accepted.

Should a change to the scope of the project be requested the change management process should:

- Provide an overview of the requested change
- Provide an explanation of the reason for the request
- Include an analysis of the impact of the change
 - Time/schedule
 - Resources
 - Cost
 - Quality
 - Other project specific considerations
- Include a recommendation to the major stakeholders for the course action that should be taken
 - Mary Piecewicz
 - Joe O'Brien
 - Project Team
- No change should be executed unless approved by the stakeholders

3 Assumptions

- Assumptions are required at the onset of the project to facilitate project planning. Some assumptions listed below may endure for the duration of the project, while others may change as the project progresses. The Project Manager should take note of assumptions that are either validated or adjusted during the detailed planning and execution phases of the project. The following assumptions are based on the Project Team's understanding of the project scope at the inception of this Project Charter:
 - Clark University Worcester Sustainability team and the City of Worcester Green Working Group will work collaboratively to research and compile information pertaining to sustainability efforts and initiatives in cities similar in size to Worcester.
 - The Clark University team will assemble information gathered from various cities and towns throughout New England with respect to sustainability plans in an organized Google drive as the primary deliverable for the Green Working Group.
 - The Clark University team will respond to all project related correspondence with the client, project advisors, and pertinent stakeholders in a timely manner.

- There will be a collective and sustained the best effort on behalf of the Clark University team to carry out and deliver on the project objectives throughout the duration of said project.
- The Clark University team will make a concerted effort that all team members will be present for client meetings and regular advisor meetings.
- The Clark University team will research existing documents produced by the cities or towns or their consultants, available via city/town webpages and/or direct correspondence with appropriate representatives of each city/town. The Clark University team will not be involved in the production of any specific sustainability plans for any city or town, including the City of Worcester.
- Key elements with respect to Worcester's sustainability plans that the Clark University team will focus their research on include climate change mitigation, resilience, open spaces, sustainable resources management, education and awareness.

4 Constraints

Strategic priorities, organizational structure, and environmental factors will impose constraints on this project. The following list of items have been identified as limiting factors on the project that cannot be subject to change:

- Time:
 - The duration of the project is constrained to the length of the spring semester and deadlines for presentations and deliverables at the culmination of said semester.
 - A majority of the Clark University team have day jobs that limit their ability to communicate and/or meet regularly on project related matters, especially during normal business hours.
- Cost:
 - It is assumed the Clark University team has little to no funds to carry out the scope of work established herein. Therefore, research efforts will be limited to information that is readily available at no cost, either on the internet, publications, or direct correspondence with cities and towns.
 - Cost is typically tied to other project constraints including time, scope, and quality.
- Quality:
 - The quality of the end product is typically influenced by other constraints, most notably time and cost. Generally speaking, the higher the quality of the end product, the higher the costs and more time required. Oftentimes compromises between cost, quality, scope, and time must be made during the course of a project.

- Resources:
 - The Clark University team will use any and all resources at their disposal, at little to no cost, to perform the research and carry out required tasks. Since there is virtually no project budget, resources will likely be limited to public information on the internet, other free publications, city/town professionals with their consent to participate in the project effort, and project advisors.
- Organizational Processes and Structures:
 - The project team may be subject to constraints imposed by local government functions, procedures, bureaucracy, and organizational hierarchy.
 - This is especially true in gathering research directly from municipalities. Representatives from cities/towns identified in this project have many other responsibilities and providing information to the project team may not be the top priority.
 - There may be approval processes required to request information from cities and towns with respect to their sustainability plans.
 - Questions from the project team may have to be transmitted to multiple parties throughout the organization to receive the desired information which may impact scheduling (time).

5 Risks

- Risk of miscommunication and/or misinterpretation between stakeholders, client, and/or advisors especially with respect to expectations and project endstate.
- The number of files and research generated may overwhelm the Green Working Group and cause extraction of the most valuable and pertinent information in the documents to be cumbersome.
- On the contrary, information from other cities/towns may be sparse and/or not detailed enough to aid the Green Working Group in producing actionable sustainability plans.
- The efforts of other cities and towns may not be easily transferable or applicable (eg. coastal communities) and the Green Working Group may still have to weed out information that is not of substantial value within the compiled documentation. Conducting research with the “City Research Template” should help prevent this.
- Potential that client expectations for the outcome of the project are not met resulting in low client satisfaction.
- Potential for conflict of interest between the project team and client

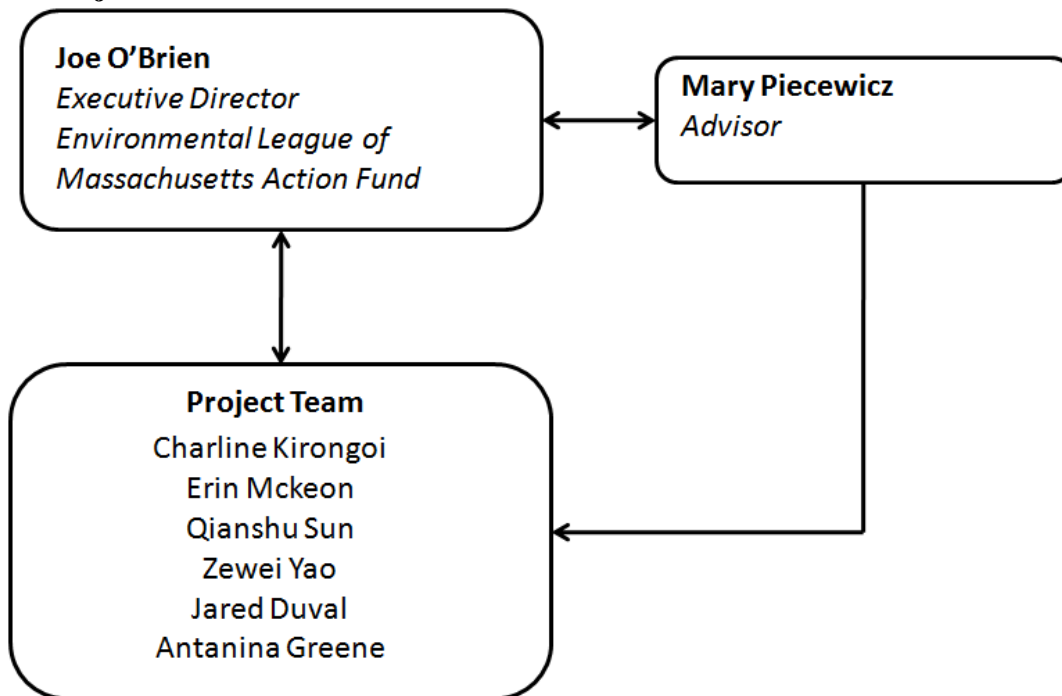
6 Communication Strategy

Communication between team members will take place in-person during our regularly scheduled meeting period, over Facebook Messenger, and by email. Communication with Joe

O'Brien will primarily occur by in-person meetings, email and phone contact as an aid. Communication with Capstone Advisor, Mary Piecewicz, will occur in-person during our scheduled meeting period or office hours. Official project documents will be submitted for approval to the Green Working Group by email and to Mary Piecewicz in person. An in-class status report will occur on April 22nd with regular status report submitted biweekly.

Teams members will be responsible for all the research work and all in-progress. Research findings and soon-to-start tasks will be in regular communication with Joe and Mary in order identify and address any concerns as soon as they appear. All team members will contribute their own ideas and project management will focus on the creation of an environment that encourages open, two-way communication focused on problem resolution.

7 Project Structure



8 Stakeholder Commitments

Communication between Charline Kirongozi, Mary Piecewicz, Joe O'Brien, and the project team should be clear, honest, and timely. If one stakeholder feels the communication is unclear, they will ask for clarification to prevent misunderstandings. For the purpose of this project, time is defined as responding within three business days. Charline Kirongozi, Mary Piecewicz and Joe O'Brien will be accessible (by phone, email, or in person) and will provide assistance as needed throughout the project. All decisions and revisions to the project charter

require consensus from the Project Team and Mary Piecewicz, and Joe O'Brien. Any revisions to the project charter must follow the change management procedures outlined in section 2.2. All sign-offs must be made within three business days of submission. If a stakeholder is unable to provide sign off within this timeframe, this must be communicated to other stakeholders within three business days so a solution can be met. If a stakeholder is unavailable, they will provide an alternate or agree to the remaining stakeholders making decisions on their behalf.

9 Roles & Responsibilities/RASCI Chart

	Roles / Responsibilities				
	Project Team	Project Team Leader	Capstone Advisor - Mary Piecewicz	Joe O'Brien	Green Worc. Working Group
Responsible Accountable/Approver Supports Consulted Informed					
Project charter including end state and scope	R	R	C	C, A	C
Project management and control	R	R, A	S	I	N/A
Project communication	R, A	R, A	S	R, A	N/A
Project planning	R, A	R, A	S	C, I	C, I
Resource allocation	R	R	A	I	I
Problem identification and analysis	R	R	S	A	C
Problem resolution	R	R	I	I	I

There are five different functions in the RASCI chart:

- **Responsible:** The role(s) that are expected to complete the work.
- **Accountable:** The role that is expected to ensure that the work is completed.
- **Consulted:** The role(s) that is consulted on and contributes to the completion of the work.
- **Informed:** the role(s) that receive the output of the work and receives status reports on the progress of the work.
- **Sign-Off:** The role that is expected to approve the work

10 Measures of Success

This section of the project charter should detailed measurements that will indicate that the project is a success. The following table provides examples of measures of success that teams can decide are appropriate for their projects.

Project Performance Dimensions by Project Success Factor	
Project Outcomes	Measure of Success
Spreadsheet and Google drive of research on sustainability practices in New England cities (possibly cities outside of NE if helpful)	Client satisfaction
Recommendations for the city of Worcester (environmental plans, community engagement, etc.)	Client satisfaction
Final essay	Grade

Final presentation	Grade, attendance at presentation
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11 Stakeholder Sign-off

This project charter has been signed off by the following stakeholders:

Mary Piecewicz	Capstone Advisor	Date
----------------	------------------	------

Joe O'Brien	Title	Date
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Project Teams Members:

Charline Kirongozi	Project Co-lead	Date
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Erin Mckeon	Project Co-lead	Date
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Quianshu Sun	Project Member	Date
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Zewei Yao	Project Member	Date
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Jared Duval	Project Member	Date
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Antanina Greene	Project Member	Date
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MASTER SPREADSHEET																			
City/State	Lead Project Contact	SUSTAINABILITY PLANS							DEMOGRAPHICS				CONTACT INFO.			COMMUNITY ENGAGEMENT		IMPLEMENTATION	
		Climate Change Mitigation	Resilience	Open Spaces	Sustainable Resource Management	Education/Awareness	Transportation	Comprehensive	Population	Diversity Indicator (% Non-White)	Median Household Income	Median Home Value	Name	Title	Phone	Email	Best Practices	Environmental Justice	Evaluation/Monitoring
Portland, ME	Jared Duval	X		X	X	X	X	66,194 (2010)	14.70%	\$45,865	\$206,200	Troy Moon	Sustainability Coordinator	(207) 756-8362	thm@portlandmaine.gov			X	
Augusta, ME	Jared Duval						X	18,705 (2014)	7.30%	\$43,062	\$140,555	Matt Nazar	Director of Development Services	(207) 626-2336	matt.nazar@augustamaine.gov				
Portsmouth, NH	Jared Duval	X	X	X	X	X	X	21,598 (2014)	10.20%	\$69,096	\$383,163	Peter Britz	Env. Planner/Sustainability Coordinator	(603) 610-7215		X		X	
Manchester, NH	Jared Duval				X	X		110,499 (2016)	23.00%	\$54,664	\$219,300	Highway Dept./Facilities Div.		(603) 624-6444		X		X	
Nashua, NH	Charline Kirongozi		X		X	X		88,341 (2017)	24.80%	\$70,316	\$248,200	City Hall		603-589-3095		X			
Burlington, VT	Charline Kirongozi	X				X		42,239(2017)	5.30%	\$57,513	\$316,800	City Hall		(802) 865-7000		X		X	
Bridgeport, CT	Charline Kirongozi	X			X	X		146579 (2017)	59.90%	\$44,841	\$170,300	Joseph P. Gresko	Sustainability Coordinator	203-696-3438	joseph.gresko@bridgeportct.gov		X	X	
Danbury, CT	Charline Kirongozi	X	X		X	X		85246 (2017)	37.20%	\$68,068	\$289,700	Katie Dykes	Commissioner	860-424-3000	deep.webmaster@ct.gov			X	
Waterbury, CT	Qianshu Sun	X		X	X	X		108600 (2017)	60.60%	\$39,681	\$129,500	City Hall	Citizens Service Center	(203) 597-3444				X	
Hartford, CT	Qianshu Sun	X		X	X	X	X	123400 (2017)	25.70%	\$32,059	\$159,100	City Hall	Community Engagement Cor	(860) 757-9500					
New Haven, CT	Qianshu Sun	X		X	X	X	X	130,405 (2017)	69.20%	\$38,126	\$190,700	City Hall	Community Services Info	203-946-7907					
Warwick, RI	Qianshu Sun	X		X	X		X	81,881 (2017)	11.20%	\$81,881	\$195,700	City Hall	Planning Department	(401) 738-2009		X			
Providence, RI	zewei yao			X				180393(2017)	37.60%	\$37,366	\$211,300	City Hall	city of providence	401-680-5000				X	
Pawtucket, RI	zewei yao	X		X				72001(2017)	50.40%	\$40,578	\$215,900		Rhode Island Housing Energy Specialist and Liaison			X		X	
Springfield, MA	zewei yao	X		X		X		154758 (2017)	48.20%	\$34,731	\$160,300	City Hall		413-736-3111				X	
New Bedford, MA	zewei yao			X				95032 (2016)	46.70%	\$36,813	\$238,000	City Hall		(508) 979-1400				X	
Fall River, MA	Nina Greene			X	X			89,420 (2017)	22.00%	\$39,328	\$268,254	City Hall		(508) 324-2000					
Lowell, MA	Nina Greene		X	X	X	X	X	111,345 (2017)	51.10%	\$48,581	\$295,931	Department of Planning and Development		978-674-4252		X			
Lawrence, MA	Nina Greene			X				80,162 (2017)	45.30%	\$39,627	\$322,983	City Hall		978-620-3000					
Cambridge, MA	Nina Greene	X	X	X	X			113,630 (2017)	33.10%	\$89,145	\$871,752	Susanne Rasmussen	Director of Environmental and Transportation Planning	617-349-4607	srasmussen@cambridgema.gov	X		X	
Newton, MA	Erin McKeon	X	X		X			87,018	25.90%	\$127,402	\$788,500		Metropolitan Area Planning Council		climateplanning@newtonma.gov		X	X	
Boston, MA	Erin McKeon	X	X	X	X	X	X	672,840	54.60%	\$63,621	\$495,400		City of Boston: Environmental Department	617-635-3850	environment@boston.gov	X	X	X	
Pittsfield, MA	Erin McKeon			X	X			42,591	14.70%	\$45,206	\$170,900	James McGrath (Parks and Open Space Manager)	Open Space and Recreation Project Team	413.449.5600		X		X	problems with accurate GPS locations for parks
Somerville, MA	Erin McKeon	X	X		X	X	X	81,360	30.10%	\$78,673	\$512,500	Oliver Sellers-Garcia	Director of Office of Sustainability and Environment		ogarcia@somervillema.gov	X	X	X	
Marion, MA	Erin McKeon	X		X	X		X	5,232	10.60%	\$106,396	\$496,407	Gil Hilario	Town Planner	508-748-3513	ghilario@marionma.gov	X		X	
Seattle, WA	zewei yao							724745 (2017)	66.30%	\$100,630	\$730,000								
New York, NY	Qianshu Sun	X	X	X	X			8623000	33%	\$50,711	\$294,200	City Hall	Office of the City Clerk	212-NEW-YORK					
Brookline, MA	Jared Duval	X	X	X	X	X	X	59180	28.40%	\$102,175	\$758,400	Bureau of Planning and Sustainability	Director of Planning & Community Development	617-730-2130	asteinfeld@brooklinema.gov	X		X	
Portland, OR	Charline Kirongozi	X	X		X	X	X	647,805 (2017)	23.90%	61,532	352,700			503-823-7700	bps@portlandoregon.gov	X	X	X	
Kigali, Rwanda	Charline Kirongozi	X	X		X			859,332 (2012)	Broken up by ethnic groups	64678 RWF (\$730)	Unreliable data	Okechukwu Daniel Ogbonnaya	Acting Country Representative - Lead Advisor			@oakdanny			
Hong Kong, China	zeweiyao							7448900 (2018)	92% Chinese	\$345,240	\$38,218.50	Zheng FU		(852)2921 2840	hkch@csd.gov.hk		X	X	
Tokyo, Japan	Qianshu Sun	X	X	X	X	X	X	9273000 (2015)		¥325000	\$394,000	City hall		03-5321-1111					
Copenhagen, Denmark	Jared Duval	X	X	X	X	X	X	5760694 (2017)		\$28,950	n/a	Simon Kaerup	Press Officer			X	X	X	
Zurich, Switzerland	Erin McKeon	X			X			402,762	N/A	6,502 Swiss francs (\$6,497)	1.64 million Swiss francs (1.59 million US dollars)		Office for Urban Development	41 444123663		X	X	X	
Vancouver, Canada	Nina Greene	X	X	X	X	X	X	2,463,431 (2016)	48% (does not include Aboriginal)	\$65,327 (CD)	\$1,102,843 (CD)	Sustainability Group		604-873-7748		X		X	

Worcester Demographics (DataUSA):
 Population: 183,677
 By Race:
 White 57.40%
 Hispanic 20.80%
 Black 12.20%
 Asian 7.06%
 2 or more races 1.94%
 Diversity Indicator 42.00%
 Median Household Income: \$ 45,599.00
 Median Home Value: \$ 206,500.00

% Difference Calculator
 Input Your City Data: % Diff. **100.00%**
100.00%
100.00%
100.00%

- Sustainability Domains:**
- 1 Climate Change Mitigation
 - 2 Resilience
 - 3 Parks-Open Space Preservation
 - 4 Sustainable Natural Resource Management/Energy Conservation
 - 5 Transportation
 - 6 Comprehensive Plan

Instructions:

1. Green Worcester Working Group (GWWG) sets priority weight for each category/domain on scale of 1 to 5, 5 indicating highest priority - 1 indicating lowest priority
2. Clark Team's lead researcher for each City/Town scores each of their assigned communities for each category below on scale of 0 to 3 based on score breakdowns below
3. Weighted scores are calculated for each domain/category for each City/Town
4. Total Score at right for each City/Town represents total weighted score across all categories/domains for comparison to other Cities/Towns
5. Matrix results should be used in conjunction with Team discussions on recommended Cities for further research

ENVIRONMENTAL JUSTICE (EJ)	COMMUNITY ENGAGEMENT	SUSTAINABILITY PLANS	EVALUATION	DEMOGRAPHICS
Score Breakdown: 0 - City/Town does not have or address or no information available 1 - City/Town provides limited and/or vague information 2 - City/Town provides moderate amount of information w/respect to category/domain 3 - City/Town provides extensive information, specific to category/domain via website, document links, etc.	Score Breakdown: 0 - City/Town is not implementing this function or no information available 1 - City/Town is implementing for 1-2 domains 2 - City/Town is implementing for 3-4 domains 3 - City/Town is implementing for 4+ domains or for comprehensive plan	Score Breakdown: 0 - City/Town has no sustainability plans or plans w/in last 10 yrs (climate change, resilience, etc.) 1 - City/Town has plans/web-links for 0-3 domains w/in last 10 yrs, no comprehensive plan 2 - City/Town has plans/web-links for 4+ domains w/in last 10 yrs, no comprehensive plan 3 - City/Town has plans/web-links for 4+ domains and comprehensive plan w/in last 10 yrs	Score Breakdown: 0 - City/Town is not implementing this function or no information available 1 - City/Town is implementing for 1-2 domains 2 - City/Town is implementing for 3-4 domains 3 - City/Town is implementing for 4+ domains or for comprehensive plan	Score Breakdown: 0 - City/Town's demographics not comparable to Worcester's (>90%± difference) 1 - City/Town's demographics not very comparable to Worcester's (50-90% difference) 2 - City/Town's demographics comparable to Worcester's (10-50% difference) 3 - City/Town's demographics closely comparable to Worcester's (<10%± difference)

GWWG PRIORITY WEIGHT FACTOR:		3			5		5			5			2				TOTAL WEIGHTED SCORE										
CITY/TOWN	LEAD RESEARCHER	EJ Policy? Score	Plans and/or Score	Equal Access to Decision Score	Subtotal Score	Subtotal Wgt'ed	Listening Score	Education Score	Committees Score	Subtotal Score	Subtotal Wgt'ed	Sustainability Plans based on Score	Subtotal Score	Subtotal Wgt'ed	Evaluation Score	Benchmarking Score		Monitoring? Score	Data Score	Subtotal Score	Subtotal Wgt'ed	Diversity Score	Population Score	Median Score	Median Score	Subtotal Score	Subtotal Wgt'ed
Portsmouth, NH	Jared Duval	0	1	2	3	9	3	3	3	9	45	2	2	10	2	2	2	2	8	40	0	0	2	1	3	6	110
Manchester, NH	Jared Duval	0	0	2	2	6	0	2	1	3	15	1	1	5	1	1	1	1	4	20	1	2	2	3	8	16	62
Portland, ME	Jared Duval	0	0	2	2	6	1	2	3	6	30	2	2	10	0	2	2	2	6	30	0	0	3	3	6	12	88
Augusta, ME	Jared Duval	0	0	1	1	3	1	1	2	4	20	1	1	5	0	1	0	0	1	5	0	0	3	2	5	10	43
Brookline, MA	Jared Duval	0	0	2	2	6	2	2	3	7	35	2	2	10	2	2	2	2	8	40	2	0	1	0	3	6	97
Copenhagen, Denmark	Jared Duval	3	3	3	9	27	2	3	3	8	40	3	3	15	3	3	3	3	12	60	N/A	0	2	N/A	2	4	146
Nashua, NH	Charline Kirongozi	0	0	1	1	3	0	2	1	3	15	2	2	10	2	0	1	0	3	15	1	0	2	2	5	10	53
Burlington, VT	Charline Kirongozi	0	0	1	1	3	0	1	0	1	5	2	2	10	1	0	0	0	1	5	0	0	2	2	4	8	31
Bridgeport, CT	Charline Kirongozi	3	3	3	9	27	1	1	3	5	25	2	2	10	1	2	1	1	5	25	2	2	3	2	9	18	105
Danbury, CT	Charline Kirongozi	0	0	1	1	3	1	1	1	3	15	1	1	5	1	1	0	0	2	10	1	2	2	2	7	14	47
Portland, OR	Charline Kirongozi	3	2	3	8	24	2	2	3	7	35	3	3	15	2	2	2	2	8	40	1	0	2	1	4	8	122
Kigali, Rwanda	Charline Kirongozi	0	0	0	0	0	1	0	N/A	1	5	1	1	5	1	1	0	0	2	10	N/A	0	0	N/A	0	0	20
Waterbury, CT	Qianshu Sun	0	0	1	1	3	2	2	1	5	25	3	3	15	3	3	3	2	11	55	2	2	2	2	8	16	114
Hartford, CT	Qianshu Sun	0	0	1	1	3	0	0	0	0	0	2	2	10	1	2	2	1	6	30	1	1	1	1	4	8	51
New Haven, CT	Qianshu Sun	0	0	1	1	3	0	0	0	0	0	2	2	10	1	2	2	1	6	30	1	1	1	1	4	8	51
Warwick, RI	Qianshu Sun	0	1	2	3	9	2	2	1	5	25	2	2	10	1	2	1	1	5	25	1	1	1	1	4	8	77
New York, NY	Qianshu Sun	2	2	2	6	18	2	2	2	6	30	3	3	15	3	2	3	3	11	55	1	0	1	1	3	6	124
Tokyo, Japan	Qianshu Sun	2	1	2	5	15	2	3	2	7	35	3	3	15	1	1	3	2	7	35	0	0	1	1	2	4	104
Providence, RI	Zewei Yao	0	0	1	1	3	0	1	1	2	10	1	1	5	1	0	2	1	4	20	2	1	0	3	6	12	50
Pawtucket, RI	Zewei Yao	0	0	1	1	3	1	1	1	3	15	0	0	0	0	1	0	0	1	5	3	2	1	2	8	16	39
Springfield, MA	Zewei Yao	0	0	1	1	3	0	0	0	0	0	0	0	0	0	1	0	1	2	10	1	0	1		2	4	17
New Bedford, MA	Zewei Yao	0	0	1	1	3	0	1	2	3	15	1	1	5	0	0	1	0	1	5	1	0	3	0	4	8	36
Seattle, WA	Zewei Yao	1	2	3	6	18	2	3	3	8	40	2	2	10	1	3	2	3	9	45	2	1	3	2	8	16	129
Hong Kong, China	Zewei Yao	3	2	3	8	24	2	3	3	8	40	3	3	15	2	3	2	3	10	50	3	2	2	3	10	20	149
Fall River, MA	Antanina Greene	0	0	1	1	3	1	1	1	3	15	1	1	5	1	0	0	0	1	5	1	1	2	2	6	12	40
Lowell, MA	Antanina Greene	0	2	2	4	12	3	3	3	9	45	3	3	15	1	0	0	0	1	5	2	2	3	2	9	18	95
Lawrence, MA	Antanina Greene	0	0	0	0	0	1	0	1	2	10	1	1	5	0	0	0	0	0	0	3	1	2	2	8	16	31
Cambridge, MA	Antanina Greene	0	1	2	3	9	2	2	2	6	30	3	3	15	2	2	2	2	8	40	2	2	1	0	5	10	104
Vancouver, Canada	Antanina Greene	0	0	3	3	9	3	3	3	9	45	3	3	15	3	3	3	3	12	60	N/A	0	N/A	N/A	0	0	129
Newton, MA	Erin McKeon	2	2	3	7	21	3	2	2	7	35	2	2	10	2	2	2	2	8	40	2	1	0	0	3	6	112
Boston, MA	Erin McKeon	2	3	3	8	24	3	3	3	9	45	3	3	15	3	3	2	2	10	50	2	0	2	1	5	10	144
Pittsfield, MA	Erin McKeon	0	0	1	1	3	1	2	2	5	25	1	1	5	0	1	0	0	1	5	0	0	3	2	5	10	48
Somerville, MA	Erin McKeon	2	3	3	8	24	3	3	3	9	45	3	3	15	3	3	3	2	11	55	2	1	2	1	6	12	151
Marion, MA	Erin McKeon	0	1	2	3	9	2	1	2	5	25	3	3	15	1	2	1	2	6	30	0	0	1	1	2	4	83
Zurich, Switzerland	Erin McKeon	2	3	2	7	21	2	3	3	8	40	2	2	10	2	2	2	2	8	40	N/A	1	N/A	N/A	1	2	113

City Research Template

City: _____

Economic Plans/Key Elements: _____

Do the plans relate to any of Green Worcester Strategic Plan's priority areas? (Climate Change Mitigation, Resilience, Open Spaces, Sustainable Resource Management (air, water, waste), Education and Awareness, Transportation)

Where is the information/Website link: _____

How can we adapt this to Worcester? _____

Is there an evaluation tool/How are they measuring this? _____

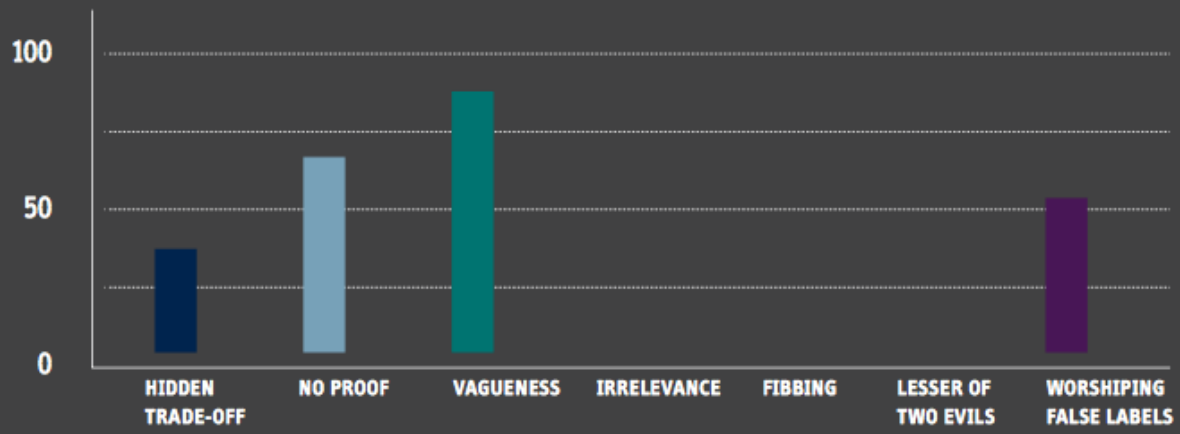
Sources: _____

Charts and Tables

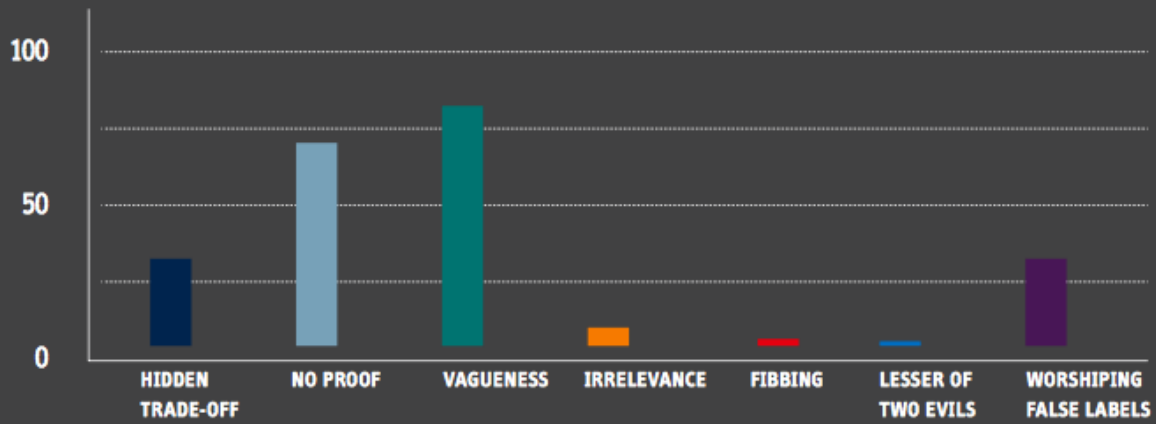
Table 1: Sustainability Definitions

Sustainability Definition	Author(s)	Source
Meeting the needs of the present without compromising the ability of future generations to meet their own needs	Brundtland (1987)	World Commission on Environment and Development
Any state of a business in which it meets the needs of its stakeholders without compromising its ability also to meet their needs in the future	Hockerts (1999)	Greener Management International
Consumption of natural resources at a rate that can be naturally replenished and the emissions of waste at a rate that can be absorbed by nature	Dyllick and Hockerts (2002)	Business Strategy and the Environment
The possibility that all forms of life will flourish forever	Ehrenfeld (2005)	Sloan Management Review
Securing long-term economic performance by avoiding short-term socially detrimental and environmentally wasteful behavior	Porter and Kramer (2006)	Harvard Business Review
Achievement of an organization's social, environmental and economic goals	Carter and Rogers (2008)	International Journal of Physical Distribution & Logistics Management
Activities that attempt to improve the environmental performance of purchased inputs, or of the suppliers that provide them	Walker, Di Sisto and McBain(2008)	Journal of Purchasing and Supply Management
Performing well on not only traditional measures of profit but also in social and natural dimensions	Pagell and Wu (2009)	Journal of Supply Chain Management
An effort to conserve natural resources and avoid waste in operations	Pfeffer (2010)	The Academy of Management Perspectives
Intersection of economic, environmental and societal superiority	Paulraj (2011)	Journal of Supply Chain Management

**CONSUMER ELECTRONICS
PERCENTAGE OF PRODUCTS COMMITTING EACH SIN.**



**CLEANING PRODUCTS.
PERCENTAGE OF PRODUCTS COMMITTING EACH SIN**



<i>Domain</i>	<i># of Cities Researched with Plan</i>	<i>% of Cities Researched</i>
Climate Change Mitigation	24	61%
Resilience	16	44%
Open Spaces	22	61%
Sustainable Resource Management	26	67%
Transportation	16	44%
Education/Awareness	16	47%
Comprehensive	12	36%

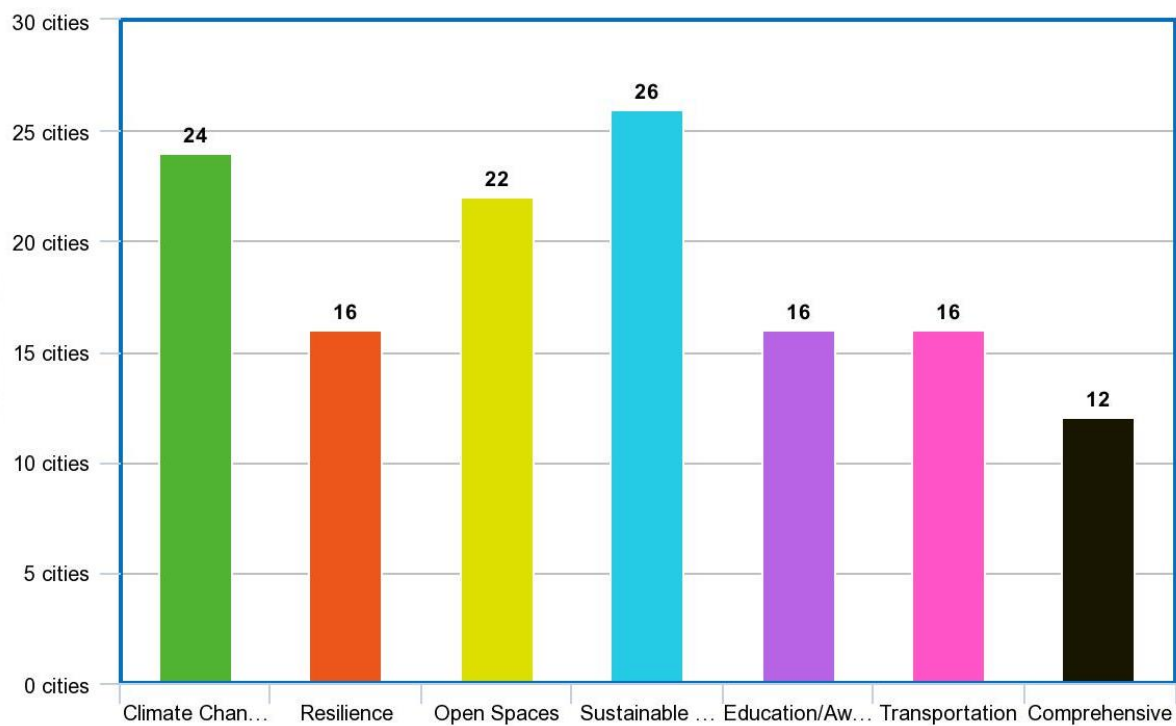
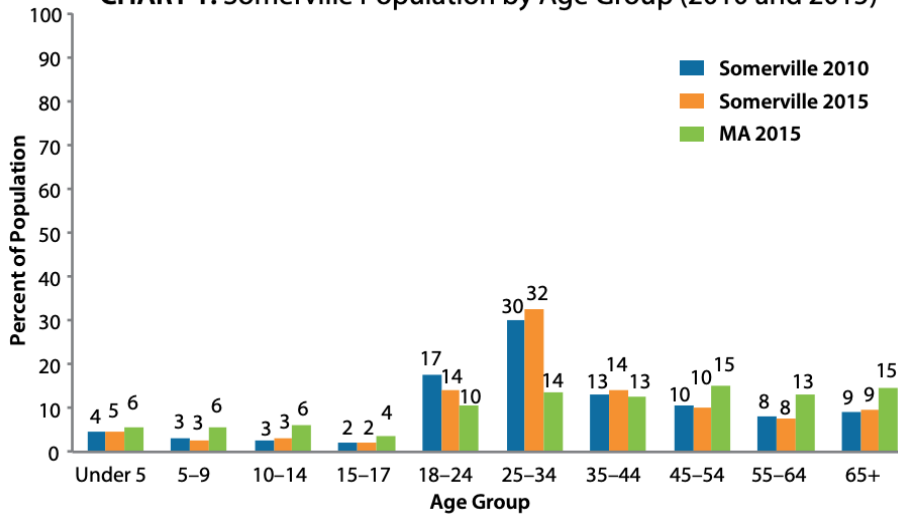
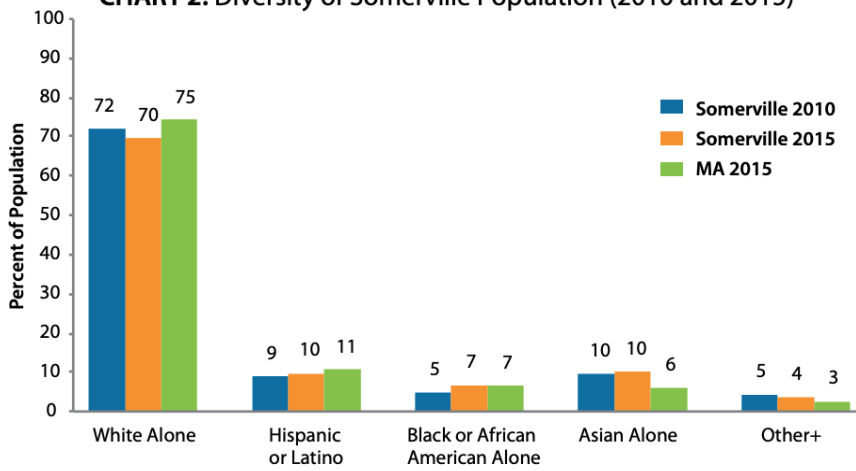


CHART 1: Somerville Population by Age Group (2010 and 2015)



Sources: Somerville and MA ACS (5-yr estimates)

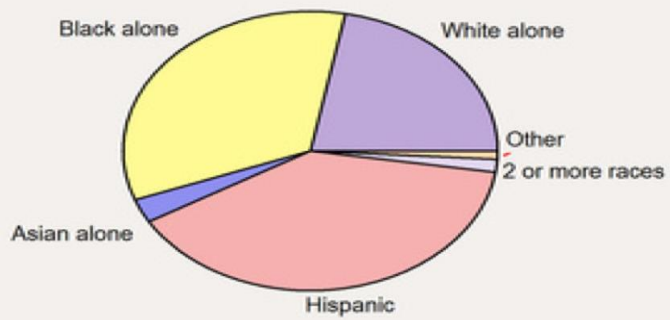
CHART 2: Diversity of Somerville Population (2010 and 2015)



Other+ includes: American Indian and Alaska Native, Native Hawaiian and Other Pacific Islander, Some Other Race, and Two or More races

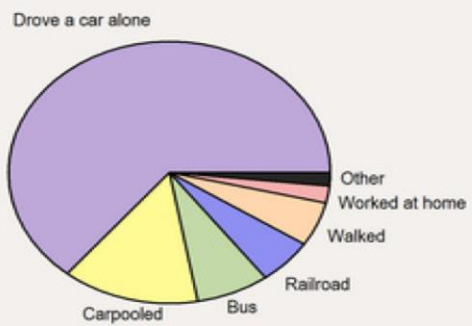
Sources: Somerville and MA ACS (5-yr estimates)

Races in Bridgeport, CT



city-data.com

Mode of transportation to work in Bridgeport, CT



city-data.com

Benchmarks and Deadlines Table

Dates 02/25/2019-April 28, 2018

Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Basic Research (Completed)	Complete Basic Research (Completed)	Policy recommendations (Completed)	Draft of Report (Completed)	Draft of Presentation (Completed)	Review, Revise, Prepare (In Process)	Presentation (Pending)

Meeting Notes

Green Worcester Strategic Plan:

- City manager wants to make Worcester the greenest city in America
- young people want to live in greener cities with parks, transportation, bike lanes
- Route 146- largest solar panels in the area, saving city \$1 million a year

1st step of project: Research what other cities are doing for economic plans and how to adapt that to Worcester

- whats the plan, (energy plan, climate plan) data
- is this working
- figure out who's leading the charge in these areas
- create google drive for other project group: what cities have plans, what are these plans
subfolder for each city and copy of plans with links

Create template/Checklist for research:

- What is the city
- What is the plan
- Key elements of the plan
- Address any of the 5 issues we are studying (climate change mitigation, resilience, open spaces, sustainable resource management, education and awareness)
- Where did you find the plan, is there a website
- Notes about whether possible or not in worcester
- Is there an evaluation tool on the website, how are they gauging this
- Include links

Next phase:

- Look at what's working-the evaluation
- How did they develop it? Consultant, or public meeting- contractors you might want to work with
- Project group will eventually hire a consultant who will use our data to hold public meetings and test out plans

*also note year

Jared:

Portland, ME

Augusta, ME

Portsmouth, NH

Manchester, NH

Brookline

Copenhagen

Charline:

Nashua, NH

Burlington, VT
Bridgeport, CT
Danbury, CT
Kigali, Rwanda
Portland Oregon

Daisy:

Waterbury, CT
Hartford, CT
New Haven, CT
Warwick, RI
New York, NY
Tokyo, Japan

Zack:

Providence, RI
Pawtucket, RI
Springfield, MA
New Bedford, MA
Seattle, WA
Hong Kong

Nina:

Fall River, MA
Lowell, MA
Lawrence, MA
Cambridge, MA
Austin, TX
Vancouver

Erin:

Newton, MA
Boston, MA
Pittsfield, MA
Somerville, MA
Marion, MA
Zurich

Additional: more advanced plans (tools they use to engage the public)

What cities have comprehensive plans (who funded)

Marion MA (seprd)

Seattle, WA

New York, NY choose things that may apply to worcester

How can smaller cities do this with less resources

Mid size international cities

How do they set goals, based on what already doing well, or something new?

Role in community of implementing plan

How do they promote plan

Project charter due next Friday

Best practices of how to engage community

Mega spreadsheet: (columns) key elements community participation, website, twitter, contact person, tracking progress (annual reports), population, climate zones in relation to new england, median income + housing cost, is there a committee involved, what were any major problems

Adjustments to charter:

Stakeholders

More cities

Research, best practices, whos doing the most outreach, promotion and engagement (scope)

Evaluation (scope)

JANUARY MONTHLY REPORT

City of Worcester Sustainability Capstone Team

Advisor: Mary Piecewicz and Joseph O'Brien

Report for January 2019

In the month of January, we worked on getting ourselves acquainted with the project and with our teammates. We exchanged contact info, set up a shared Google Drive folder, and expressed our interest in the project. Many of us were happy to be assigned this project, because it seemed particularly engaging or fit with our expertise in some way. Spending time getting to know each other laid a good foundation for the assignment and all the collaboration to come.

We had our first meeting with Joe O'Brien, and we learned that our main task was to do "best practices" research. Our job was to research other cities and see what they were doing around sustainability, and then maybe highlight a few that were particularly noteworthy. This was in preparation for bringing in a consultant. Joe also chose 24 mid-size New England cities for us to research. We divided them equally amongst our team members, and each of us began doing preliminary research on our cities' sustainability programs.

Next, we worked on developing our project charter. Two of us had already made project charters before, and other team members read through the example one person provided. With that knowledge base, we had an idea of how to complete it. We divided up the task and used it as a place to start planning for the rest of the semester. Though we continued working on the project charter into February, and our preliminary research wasn't finished until the beginning of March, the groundwork for everything we did afterwards was laid in the first few weeks of the semester.

FEBRUARY MONTHLY REPORT

City of Worcester Sustainability Capstone Team

Advisor: Mary Piecewicz and Joseph O'Brien

Report For February 2019

What we did In February 2019:

In the month of February, each of us got our own assigned 6 cities. At the same time we continue working on project charter, and we submitted it to Joe and Mary for review and signature after completion. Joe invited us to sit on a meeting of the group responsible for urban sustainable development project in City Hall. Therefore we got a clearer clue of what the client wanted us to accomplish, and also the general direction and project content. On the basis of the researches of six cities per person in January, we designed an excel table to present the results more vividly and conveniently of research results. Each of us also added two international cities' sustainability studies to our original table of twenty four American cities, which make our research with more international perspective. Simultaneously, we finished our first group peer evaluation. To sum up, this month's research on both domestic and international city sustainable development laid a good foundation for our follow-up project study.

What we planned for March 2019:

As our project progressed and team members became well-acquainted with the city research, we became more ready to present and identify main points and takeaways for the research. In addition we began to populate cities that we thought was worth researching in-depth. We

planned to create a “recommendation” word document which would help in organizing our research as a team. The recommendation word document would include the following sections “Cities with evaluation processes,” “Cities with a community outreach plan” “cities with reference to environmental justice” and finally our recommended cities. For the month of March, we plan to dive into the final paper report and discuss recommended cities. At this point, basic city research has been completed. The team will continue to check in with each other via Facebook, Zoom, and in person to coordinate how to write the final paper.

March Monthly Report

City of Worcester Sustainability Capstone Team
Advisor: Mary Piecewicz and Joseph O'Brien
Report for March 2019

In the month of March, our Capstone team has been focusing on completing our basic research, and forming our initial recommendations for the Green Worcester Working Group. Using the master excel spreadsheet created at the beginning of February, we outlined the research requested by the Green Worcester Working Group. Throughout the course of our project our group will be updating the master excel spreadsheet as needed.

Each team member finalized their initial research on assigned communities and incorporated their findings into the master spreadsheet. All initial research for each City/Town was documented on the group-developed research template and compiled in a "City Research" share drive. For our initial recommendations, we created a document outlining city plans we believe the Green Worcester Working Group should take into consideration when updating Worcester's own sustainability plans. We specifically highlighted cities that had evaluation processes for their plans, cities that had plans for community outreach, cities with comprehensive plans, and cities whose plans reference environmental justice. As the project continues, our group intends to update our recommendations for the Green Worcester Working Group as we see fit.

A tentative schedule was developed at an advisor meeting to lay out the group's plan for the remainder of the project. To date, our team is on track based on the schedule we developed. Work for the remainder of the month will include regularly scheduled group meetings to track progress and to ensure all group members on the same page. We will also be dividing up the work to complete the project report and each team member will begin drafting their respective sections. A date was also set for our final Capstone presentation, and by the end of the month, we will set a date to present our final research and recommendations to the Green Worcester Working Group.

April Monthly Report

City of Worcester Sustainability Capstone Team

Advisor: Mary Piecewicz and Joseph O'Brien

Report for April 2019

In the month of April, our team finalized our meeting schedule for the remainder of the project, as well as tentative meeting dates for a practice dry run of our presentation. In addition, our team has been preparing to participate in the Richard Beinecke Best Capstone Competition & Award, hosted by MassASPA at Suffolk University on May 1st.

In the first week of April, our team began an outline for both the final paper, and the capstone defense presentation. Once we had an objective set, we began to delegate each section between our team members. We also implemented a Decision Making Matrix that aided our team in analyzing the research in an objective manner. This matrix served as a tool for us to reaffirm discussions on which cities and towns should be recommended as the focus for further research by the Green Worcester Working Group and its consultant. The matrix helped us compare all cities, and facilitated group discussions on high scoring cities such as how and why each group member scored the city the way they did.

In the third week of April, our team sent a rough draft of the capstone paper to our advisor, Mary. Once she had provided comments, we made the suggested changes, and began populating our presentation outline. The week before our final defense presentation on April 22nd was spent making the finishing touches to our final paper and presentation, as well as doing practice runs of our presentation.

Bibliography

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